ISO 9001 and ISO 14001
QUALITY and ENVIRONMENTAL
MANAGEMENT SYSTEMS

Alpha
Consulting Engineers Pte Ltd

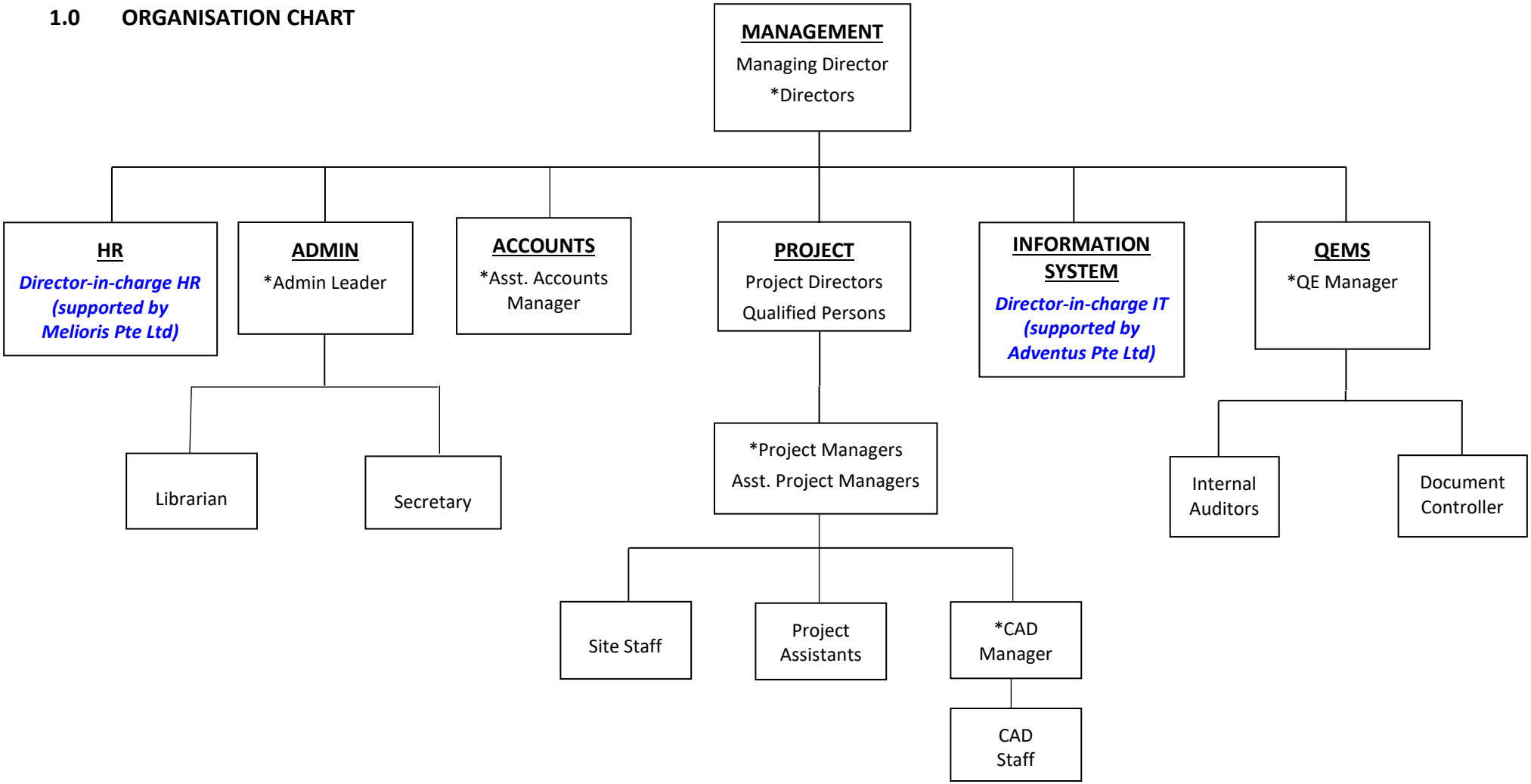
QUALITY
&
ENVIRONMENTAL
MANUAL

Copy No:	MASTER COPY

Content

Section	Description	Page No.	Revision Status
1.	***Organisation Chart***	***2***	***1/25***
2.	Organisation Profile	3	0/17
3.	Quality and Environmental Policy	4	0/17
4.	***Context of the Organisation***	***5 – 8***	***1/25***
5.	Leadership	9 – 16	1/21
6.	Planning	17 - 19	0/17
7.	Support	20 – 26	0/17
8.	Operation	27 – 36	0/17
9.	Performance Evaluation	37 - 39	0/17
10.	Improvement	40- 41	0/17
11.	Appendices		
	1. Quality and Environmental Management Systems Process Flow	Appendix 1	0/17
	2. Quality and Environmental Management Systems	Appendix 2	0/17
	3. List of Procedures	Appendix 3	0/17
	4. Intergrated Management System (IMS) Checklist	***Appendix 4***	***1/25***

1.0 ORGANISATION CHART



* denotes the person responsible for Risk Assessment

2.0 ORGANISATION PROFILE

2.1 Alpha Consulting Engineers Pte Ltd was established in January 1995 to undertake a whole spectrum of mechanical and electrical engineering consultancy services pertaining to building construction and other industries in Singapore and the region.

2.2 Since the inception of the Company in 1995, Alpha Consulting Engineers Pte Ltd (ACEPL) had completed numerous projects, ranging from condominiums, teaching institutions, hospitals, hotels, office buildings, shopping malls to aircraft hangars, wafer fabs etc. in Singapore, Indonesia, Vietnam, Thailand, China, Brunei and Myanmar.

2.3 ACEPL is committed to providing high quality services to the Clients. No effort will be spared by ACEPL in producing economical, practical and reliable electrical and mechanical building services design, in sympathy with the building architecture and structure, to meet the Client's requirements and satisfaction. ACEPL's quality and environmental management systems had achieved accreditation for compliance with ISO 9001 and ISO 14001 in February 1999 and March 2008 respectively.

3.0 QUALITY AND ENVIRONMENTAL POLICY

3.1 Our policy aims to rival those of the best mechanical and electrical engineering consultancy practices in the region in terms of professionalism, technical competence and work quality with emphasis on environmental consideration, while maintaining a competitive edge.

3.2 We are committed to practicing quality control, energy/resource conservation, pollution prevention and adherence to ongoing compliance with all applicable statutory and regulatory requirements meeting ISO 9001 and ISO 14001 standards.

3.3 We shall regularly review our policy and practice with a view to improve the effectiveness of our Quality and Environmental Management Systems. We aim to attain ultimate goals set for some major aspects of work as follows:

(a) Doing right things the first time, all the times and be on time in all our deliveries.

We target to have less than 5 noncompliances per department/project during each internal audit of our projects.

(b) Providing value and quality services to all our projects in meeting Clients' requirements.

We target to:

(i) achieve zero design error for all our projects;

(ii) receive at least 75% rating of satisfaction level in Clients' feedbacks

(c) Preventing resource depletion while maintaining a pollution free work environment.

We target to benchmark the office electricity consumption to less than 5% of 70kWh/m^2/year, being BCA Green Mark Platinum Criterion for office Energy Efficiency Index.

(d) Office paper waste reductions through the 3Rs – Reduce, Reuse, Recycle.

We target to restrict our paper consumption in the office by benchmarking on a 35% recycling rate.

4.0 CONTEXT OF THE ORGANISATION

4.1 Understanding the Company and Its Context

4.1.1 The external and internal issues that are relevant to the purpose and strategic direction, which will affect our ability to achieve the intended result(s) of the quality and environmental management systems are identified as follows:

(a) Political - ***Stringent requirements for Green Building (SLEB)*** - Industry push for design and implementation of building projects to increase productivity at construction site - ***Stringent WSH requirements for design and supervision of building projects*** - Tightened requirements on employment of foreign workers - Requirements on consultant registration to tender for large public sector projects	**(b) Economics** - ***Uncertainty in global economy outlook due to foreign tariffs imposed by US Government*** - Increasing public sector Infrastructure and institutional projects - Increasing overhead in business operation
(c) Social - Negative perception of construction industry resulting in difficulties in staff recruitment - Increasing expectation from property buyers - ***Influences of life style and changed social traits of generation Z*** - Use of social media for project communications including matters which may impinge on legal interpretation	**(d) Technology** - ***Implementation of Building Information Modelling (BIM) and Corenet X*** - ***Advancements in building services systems towards AI based platform*** - Advancement in information technology and personal mobile devices for use by staff working outside office - ***Threats from cyber security and online scams***

(e) Strength - Strong Senior Management commitment to projects - Good track records in large scale projects - Good track records in retrofitting of existing buildings - Good communications at project level - Young and motivated engineers - Up-to-date with knowledge on latest IT technology - Financially stable through practicing of conservative accounting - Capacious and good office environment	**(f) Weakness** - The need for reinforcement of experienced engineers who are able to work more independently with reasonable writing skill - The need to improve on dissemination of information and sharing of experiences among project teams - The need for staff training to adopt new technologies and software - The need for providing guidance to younger engineers
(g) Opportunity - Repeat Clients of past projects including their referrals to other prospective Clients - Government projects through GeBIZ requiring consultants of Panel 1 listing - Good reputation amongst fellow consultants leading to forming JV or collaboration for mega-projects	**(h) Threat** - ***Fierce and low fee competition among fellow consultants*** - Government's policy to tighten foreign manpower driving up staff cost to unsustainable level - Lack of competent engineering staff in the marketplace

4.1.2 The Company shall monitor and review information on these external and internal issues during the Management Review Meeting.

4.2 Understanding the Needs and Expectations of Interested Parties

4.2.1 The Company has identified the following needs and expectations of the interested parties in a project with a view to enhance the organisation's ability to consistently provide products and services to meet the requirements of Clients as well as stipulations of relevant codes and regulations:

Interested party	Needs and Expectations
(a) Clients and other Consultants	- Quality of products and services - Timely delivery of products and services - Good communication for prompt responses to enquiries/complaints - Environmental friendly design
(b) Shareholders	- Sustained profitability - Risk management - Compliance with regulations
(c) Employees	- Management support - Training to achieve job competency - Career progression - Conducive and safe work environment
(d) Suppliers	- Clear requirements - Fair evaluation of their performance, product quality and track record - Timely payment
(e) Statutory and Regulatory Bodies	Compliance with statutory and regulatory requirements as enforced from time to time
(f) Clients' Contractors	- Clear communications on directions and instructions as well as prompt responses to requests for information or clarifications - Timely certification of work done for payment - Timely assessment of variation work - Fair evaluation of their work performance and products quality

4.2.2 The Company shall monitor and review information on these needs and expectations of the interested parties during the Management Review Meeting.

4.3 Determining the Scope of the Quality and Environmental Management Systems

4.3.1 The scope of the Quality and Environmental Management Systems (QEMS) of the Company is:

"MECHANICAL and ELECTRICAL ENGINEERING CONSULTANCY SERVICES"

covering the following areas of work:

(a) Planning and scheme design.
(b) Design development and drafting.
(c) Tender documentation.
(d) Tender evaluation.
(e) Contract documentation.
(f) Contract administration and construction supervision.
(g) Project and construction management.
(h) Cost estimate, appraisal and control.
(i) Inspection and testing.

4.4 Quality and Environment Management Systems and Its Processes

4.4.1 The Company has established and implemented the QEMS, which is maintained and continuously improved upon according to the requirements of the SS ISO 9001:2015 and SS ISO 14001:2015 standards including the processes needed and their interactions.

REFERENCE

Appendix 4 – Integrated Management System (IMS) Checklist

5.0 LEADERSHIP

5.1 Leadership and Commitment

5.1.1 The Management is committed to providing resources and supports to ensure the achievement of the Quality and Environmental Policy and Quality and Environmental Objectives.

5.1.2 The Management is also committed to satisfying and complying with the ISO 9001 and ISO 14001 Standards requirements.

5.1.3 In order to ensure Client requirements are determined and met with the aim of enhancing Client satisfaction, the following have been established in the organisation:

(a) Tender and inquiry handling

The Client requirements are determined via project and design briefs, tender specifications, quotations and correspondences. The Project Director shall ensure that the Client's requirements, deliveries and any unstated needs are met and fulfilled.

(b) Statutory and regulatory requirements

Any statutory and regulatory requirements for compliance in the project shall be identified and communicated to all concerned staff by Project Director/Project Manager.

(c) Other requirements

The Project Director shall communicate to all concerned staff if additional requirements are identified by the organisation to enhance Client satisfaction.

(d) Monitoring of Client satisfaction

The Client's feedback on our performance shall be obtained every year and upon completion of the project, by way of prescribed form, to be administered by the Document Controller or the QE Manager. The feedbacks received shall be analysed by the Managing Director and the Project Director; action plans shall be established for improvement to any area that has rating below average.

5.2 Policy

5.2.1 The Company Policy is established, implemented and maintained to ensure the following:

(a) It is appropriate to the purpose and context of the organisation and supports its strategic direction.

(b) Provides a framework for setting the quality objectives.

(c) Includes a commitment to satisfy applicable requirements.

(d) Includes a commitment to continual improvement of the QEMS.

5.2.2 The Quality and Environmental Policies shall:

(a) be available and be maintained as documented information;

(b) be communicated, understood and applied within the organisation;

(c) be available to the relevant interested parties, as appropriate;

(d) be committed to the protection of the environment, including prevention of pollution and other specific commitment(s) relevant to the context of the organisation;

(e) be committed to fulfil compliance obligations;

(f) be committed to continual improvement of quality and environmental management systems.

5.3 Organisational Roles, Responsibilities and Authorities of Staff

5.3.1 Managing Director

(a) Communicate to the organisation the importance of meeting Client as well as statutory and regulatory requirements.

(b) Establish the quality and environmental policy.

(c) Ensure that the quality and environmental policy is communicated and understood within the organisation.

(d) Ensure that the quality and environmental policy is reviewed for continuing suitability.

(e) Ensure that quality and environmental objectives are established by the ISO 9001 and ISO 14001 Steering Committees.

(f) Ensure the availability of resources.

(g) Ensure that Client requirements are determined and are met with the aim of enhancing Client satisfaction.

(h) Ensure that the planning of the quality and environmental management systems are carried out and the integrity of the quality and environmental management systems are maintained when changes to the quality and environmental management systems are planned and implemented.

(i) Ensure that responsibilities and authorities are defined and communicated within the organisation.

(j) Besides the above, the Managing Director has the highest authority in the Company and has the ultimate responsibility for all aspects of the Company. He shall be responsible to formulate short and long term plan of the Company, formulate business strategy and budget. He shall also be responsible to appoint a Director-in-Charge to establish, implement and maintain the Company Quality and Environmental Management Systems accordingly to ISO 9001 and ISO 14001 standards.

(k) Externally, the Management builds up contacts to acquire new projects. The Management is overall responsible for projects and ensures that the Clients' requirements are met. They attend important meetings with Clients, architects, other consultants and contractors. The Management also acts in the capacity of the Professional Engineer who provides endorsement and certification to the design and important document (such as various submission forms to Authority) issued by the Company.

5.3.2 QE Manager

(a) Ensure that the processes needed for the quality and environmental management systems are established, implemented and maintained.

(b) Ensure the promotion of awareness of Client requirements throughout the organisation.

(c) Report to the management on the performance of the quality and environmental management systems for the purpose of review, including recommendations for improvement of the system.

(d) Ensure that the quality and environmental management systems meet with the latest revisions of ISO 9001 and ISO 14001 standards.

(e) Ensure that the updating and maintenance of the quality and environmental manuals are completed and communicated to the certification body and within the organisation.

(f) Initiate action to prevent the occurrence of any nonconformity relating to the service, process as well as quality and environmental management systems.

(g) Identify and record any problems relating to the service, process as well as quality and environmental management systems.

(h) Initiate, recommend or provide solutions to prevent recurrence of noncompliance.

(i) Verify the implementation of solutions.

(j) Responsible for the internal quality and environmental audit program in the organisation.

(k) Control, co-ordinate and monitor all nonconformities till the deficiency or unsatisfactory condition has been corrected.

5.3.3 Internal Auditors

(a) Internal auditors shall be appointed by the Management in consultation with the QE Manager.

(b) Perform audits to ensure that the quality and environmental management systems documentation complies with the requirements of ISO 9001 and ISO 14001 and is effectively implemented.

(c) Provide auditing services on the organisation's quality and environmental management systems.

(d) Report audit findings to the QE Manager for timely follow-up actions.

5.3.4 Project Director/Assistant Project Director

The director appointed to the project with overall responsibility for its successful completion in accordance with the contractual requirements.

5.3.5 Project Manager/Assistant Project Manager

The Project Manager is responsible for projects assigned to him by the Management; and aids the Management in the office management. For projects assigned to him, he ensures the Clients' overall requirements are met; and may represent the Management at meetings with Clients, architects, other consultants, contractors, and Authorities if necessary.

The Project Managers are responsible for the design and implementation of works in accordance to relevant Codes of Practice. They shall coordinate with the Project/Design Assistant their designs for production of drawings and check the drawings for accuracy. They shall also be responsible for the arrangement of all checked and signed calculations, forms and drawings for Authority submission and follow up till approval. They shall also liaise with external parties and attend meetings, where necessary, for the successful implementation of the project.

The Project Manager shall also work in coordination with the Site Staff to ensure that the contractor's works are carried out and completed in accordance with the requirements of the Client and Authorities.

5.3.6 Project Assistant

The person assigned to assist the Project Manager in design and contract administration.

5.3.7 CAD Manager

The person assigned to assist the Project Manager in manpower scheduling for drafting and ensure that drawings are produced in accordance with acceptable requirements.

5.3.8 CAD Staff

The person responsible for the production and maintenance of drawings. They shall also maintain good drawing records in an easily retrievable form while assisting in the arrangement for issues of drawings as well as the safe keeping including recording of all internal and external drawings.

5.3.9 Site Staff

(a) The person(s) employed by the Company and assigned to the project site for full time supervision of the contractors' installation work. In the event that the Site Staff are not under the direct employment of the Company, the same scope of work shall be applicable except that the Company will not be fully responsible for the quality and environmental aspect of their performance.

(b) The responsibilities of the Site Staff include conducting all necessary supervision, including site administration and coordination, to ensure that the contractor's works are carried out and completed in accordance with the contract drawings and specifications which includes all applicable statutory requirements. All site inspections and tests, particularly testing and commissioning of plants and systems, shall be conducted in accordance with the prescribed manner and properly documented for record. Should any difficulties be encountered at site, these shall be immediately referred to the office for advice.

5.3.10 Assistant Accounts Manager

The person appointed to maintain and manage the finance and accounting matters of the Company.

5.3.11 HR Executive

The person appointed to manage matters related to the human resource of the Company.

5.3.12 Admin Leader

The person appointed to take charge of the general office administration of the Company.

5.3.13 Secretary

The person assigned to assist in daily secretarial work for the Managing Director or Directors.

The secretary shall be responsible for filing, typing and document control for the project assigned.

5.3.14 Document Controller

The Document Controller ensures that all documents and records related to the requirements of quality and environmental management systems are accessible to the relevant staff when required. The Document Controller shall ensure that documents are prepared in standardised formats and to achieve this, an up-to-date master list of documents shall be kept and made available for use or reference by the staff. The Document Controller shall also co-ordinate the preparation and approval before releasing all new and revised documents for use.

5.3.15 Librarian

The person assigned to maintain the records and movement of content in the Company Library.

5.3.16 IT Specialist

The person assigned to maintain and upkeep the Information System of the Company.

5.4 For important or urgent tasks, during the temporary absence of a staff member, his or her superior or assistant shall undertake or make necessary arrangements to fulfil his or her responsibilities and authority.

6.0 PLANNING

6.1 Actions to Address Risks and Opportunities

6.1.1 The Company shall consider the issues referred to in 4.1 and the requirements referred to in 4.2 and determine the risks and opportunities that need to be addressed to:

(a) give assurance that the quality and environmental management systems can achieve its intended result(s);

(b) enhance desirable effects;

(c) prevent, or reduce undesired effects;

(d) achieve improvement.

6.1.2 Environmental Aspects

6.1.2.1 The Company shall establish, implement and maintain procedures to identify the environmental aspects of its activities, products and services that it can control and over which it can be expected to have an influence taking into account planned or new developments, or new or modified activities, products and services, in order to determine those which have or can have significant impacts on the environment.

6.1.2.2 Aspects related to these significant impacts or other factors/changes in work environment shall be considered in establishing, implementing and maintaining the quality and environmental management systems. Information shall be kept up to date.

6.1.3 Compliance Obligations

6.1.3.1 The Company shall establish and maintain a procedure to identify, assess and update all applicable environmental, legal and other requirements to which the Company subscribes. These applicable legal and other requirements are to be taken into account in establishing, implementing and maintaining the quality and environmental management systems. The QE Manager is responsible for reviewing the information and ensuring relevant functions as well as interested parties are communicated on the changes and that the requirements are complied with.

6.1.3.2 The Company shall plan:

(a) actions to address these risks and opportunities, significant environmental aspects and compliance obligations;

(b) how to integrate and implement the actions into its quality and environmental management systems processes (see 4.4);

(c) how to evaluate the effectiveness of these actions.

6.1.3.3 Actions taken to address risks and opportunities shall be proportionate to the potential impact on the conformity of products and services.

6.2 Quality and Environmental Objectives and Planning to Achieve Them

6.2.1 The Company shall establish quality and environmental objectives at relevant functions, levels and processes needed for the quality and environmental management systems.

6.2.2 The quality and environmental objectives shall:

(a) be consistent with the quality and environmental policy;

(b) be measurable;

(c) take into account applicable requirements;

(d) be relevant to conformity of products and services and to enhancement of Client satisfaction;

(e) be monitored;

(f) be communicated;

(g) be updated as appropriate.

6.2.3 The Company shall maintain documented information on the quality and environmental objectives.

6.2.4 When planning how to achieve its quality and environmental objectives, the Company shall determine:

(a) what will be done;

(b) what resources will be required;

(c) who will be responsible;

(d) when it will be completed;

(e) how the results will be evaluated.

6.3 Planning of Changes

6.3.1 When the Company determines the need for changes to the quality and environmental management systems, the changes shall be carried out in a planned manner (see 4.4) and the following shall be considered:

(a) the purpose of the changes and their potential consequences;

(b) the integrity of the quality and environmental management systems;

(c) the availability of resources;

(d) the allocation or reallocation of responsibilities and authorities.

7.0 SUPPORT

7.1 Resources

7.1.1 Roles, responsibilities, accountability and authorities have been defined and documented in Section 5 of this manual. The Company shall ensure that responsibilities and authorities are communicated within the Company in order to facilitate effective quality and environmental management.

7.1.2 The Company shall identify resources requirements and provide adequate resources from time to time, including:

(a) assignment of competent personnel for management, performance of work and verification of activities;

(b) acquiring the relevant software for efficient and competent design, and for analysis of output.

7.1.3 The Management shall identify resources through systematic staff recruitment exercise that provides the necessary human resources requirements.

7.1.4 The new staff induction and training activities carried out by organisation are specified in the training procedure.

7.1.5 The resources include human resources and specialized skills, organisational infrastructure, technology and financial resources.

7.1.6 Infrastructure and Work Environment

7.1.6.1 The Company's office is generally air-conditioned and provided with the necessary furniture, office equipment, stationery, computers, printers, IT and design software, etc.

7.1.6.2 For projects under construction stage where the Site Staff is assigned for full-time supervision of the contractor's installation and work progress, the project site office will generally be provided by the Client/Contractor complete with air-conditioning, necessary furniture, office equipment, stationery, computers, printers, software, etc. Personal protective equipment such as safety helmets, safety boots, safety harness etc. will also be provided by the Client/Contractor.

7.1.6.3 In order to ensure that the work environment has a positive influence on motivation, satisfaction and performance of staff and to enhance the performance of the Company, from time to time, the Company will identify suitable work environment and consider the following should the need arises:

(a) Ergonomics

(b) Workplace location

(c) Facilities for staff in the HQ office and site offices

(d) Creative work methods

7.1.7 Monitoring and Measuring Resources

7.1.7.1 The Company shall determine and provide the resources needed to ensure valid and reliable results when monitoring or measuring is used to verify the conformity of products and services to requirements.

7.1.7.2 The appropriate documented information shall be retained as evidence of fitness for purpose of the monitoring and measurement resources.

7.1.7.3 Measurement traceability is an essential part of providing confidence in the validity of measurement results. All measuring equipment shall be:

(a) calibrated or verified, or both, at specified intervals, or prior to use, against measurement standards traceable to international or national measurement standards; when no such standards exist, the basis used for calibration or verification shall be retained as documented information;

(b) identified in order to determine their status;

(c) safeguarded from adjustments, damage or deterioration that would invalidate the calibration status and subsequent measurement results.

The Company shall determine if the validity of previous measurement results has been adversely affected when measuring equipment is found to be unfit for its intended purpose, and shall take appropriate action as necessary.

7.1.8 Organisational Knowledge

7.1.8.1 The Company shall determine the knowledge necessary for the operation of its processes and to achieve conformity of products and services.

7.1.8.2 This knowledge shall be maintained and be made available to the extent necessary.

7.1.8.3 When addressing changing needs and trends, the Company shall consider its current knowledge and determine how to acquire or access any necessary additional knowledge and the required updates.

7.2 Competence

7.2.1 Personnel performing work affecting product quality or environment shall be competent on the basis of appropriate education, training, skills and experience.

7.2.2 The Company shall:

(a) determine the necessary competence for personnel performing work affecting quality and environment and document it in the staff job description;

(b) provide training or take other actions to satisfy these needs;

(c) evaluate the effectiveness of the training or actions taken;

(d) maintain appropriate records of education, training, skills and experience.

7.3 Awareness

7.3.1 The Company shall ensure that persons doing work under the organisation's control are aware of:

(a) the quality and environmental policy;

(b) relevant quality and environmental objectives;

(c) the significant environmental aspects and impacts associated with their work;

(d) their contribution to the effectiveness of the quality and environmental management systems, including the benefits of improved performance;

(e) the implications of not conforming with the quality and environmental management systems requirements.

7.4 Communication

7.4.1 The Company shall determine the internal and external communications relevant to the quality and environmental management systems, including:

7.4.1.1 Internal Communication Process

The following communication processes are established by the organisation for effectiveness of the quality and environmental management systems:

Item	Communication Process
Internal communication to all staff for: (a) All relevant activities that are related to quality and environmental policy, objectives, quality and environmental management systems audits and achievements.	Emails, Intranet
(b) Any new changes to quality and environmental management systems.	Emails, Intranet

Item	Communication Process
(c) Quality and environmental issues such as improvements, corrective actions, preventive action, nonconforming products, nonconformances and complaints in the project.	Emails, Intranet, meetings
(d) Project schedule, planning and activities.	Circulations of documents, emails, project meetings
(e) Technical information/updates, authorities requirement, etc.	Circulations of documents, emails
(f) Review of internal audit results, performance of Company's quality and environmental management systems, corrective and preventive action etc.	Annual Management Review Meeting

7.4.1.2 External Communication Process

The following communication processes are established by the organisation for communication with external parties such as, Clients, Client's representatives, other project team members, etc.

Item	Communication Process
(a) Enquiries, contracts or order handling	Faxes, emails, letters, telephone discussions, meetings
(b) Project correspondences, exchange of information, design outputs, etc.	Faxes, emails, letters, telephone discussions, meetings & Internet
(c) Authorities submissions and general correspondences	Faxes, emails, letters, telephone discussions, meetings & Internet
(d) Client feedbacks, including Client complaints	Client feedback reports, verbal feedbacks to be recorded in the Feedback Form

7.5 Documented Information

7.5.1 The quality and environmental management systems documentation shall include:

(a) documented statements of quality and environmental policy and objectives;

(b) this quality and environmental manual;

(c) documented procedures required by ISO 9001 / ISO 14001 standards;

(d) documents needed by the Company to ensure the effective planning, operation and control of its processes;

(e) records required by ISO 9001 / ISO 14001 standards.

7.5.2 The structure of the quality and environmental management systems is closely linked and takes the form of:

(a) Quality and Environmental Manual.

(b) Quality and Environmental Management Systems Procedure.

(c) Project Quality Plan.

(d) Supporting documentation (if any).

7.6 Quality and Environmental Manual

7.6.1 The main purpose of the Quality and Environmental Manual is to communicate Alpha Consulting Engineers Pte Ltd.'s commitment to product and service excellence as well as to environmental management through the implementation of a quality and environmental management systems that meets or exceeds the requirements of the International Standards, ISO 9001 and ISO 14001. The scope of the quality and environmental management systems, including details of and justifications for any exclusion are spelt out in the Quality and Environmental Manual.

7.6.2 The Company's commitment to excellent quality product and service as well as environmental management is depicted in the Quality and Environmental Policy and Quality and Environmental Objectives, which are contained in this Manual.

7.6.3 The various procedures developed to meet or exceed ISO 9001 and ISO 14001 requirements are listed and cross-referenced to respective ISO 9001 and ISO 14001 section in this Quality and Environmental Management Manual; in addition, the interactions among the processes, where applicable, are also included.

7.7 Quality and Environmental Management Systems Procedure

The manual comprises the procedures developed for various processes to support all the applicable sections of the ISO 9001 and ISO 14001 standards and the Company's quality and environmental management systems.

7.8 Project Quality Plans

Project Quality Plan is prepared for each project and defines the quality management requirements including environmental considerations of the project.

7.9 Supporting Documentation

Supporting documentation comprising external documents (e.g. standards) and various Work Instructions (where applicable) may be used to provide information or describe how specific activities are being performed.

7.10 Control of Documents

7.10.1 Documents required by the quality and environmental management systems shall be controlled. A documented procedure shall be established to define the controls needed to:

(a) approve documents for adequacy prior to issue;

(b) review and update as necessary and re-approve documents;

(c) ensure that changes and the current revision status of documents are identified;

(d) ensure that relevant versions of applicable documents are available at points of use;

(e) ensure that documents remain legible and readily identifiable;

(f) ensure that documents of external origin are identified and their distribution controlled;

(g) prevent the unintended use of obsolete documents, and to apply suitable identification to them if they are retained for any purpose.

8.0 OPERATION

8.1 Operational Planning and Control

8.1.1 The Company shall plan, implement and control the processes needed to meet the requirements for the provision of products and services, and environmental management system requirements and to implement the actions determined in Section 6, by:

(a) determining the requirements for the products and services;

(b) establishing criteria for:

(i) the processes;

(ii) the acceptance of products and services;

(c) determining the resources needed to achieve conformity to the product and service requirements;

(d) implementing control of the processes in accordance with the criteria;

(e) determining, maintaining and retaining documented information to the extent necessary:

(i) to have confidence that the processes have been carried out as planned;

(ii) to demonstrate the conformity of products and services to their requirements. The output of this planning shall be suitable for the organisation's operations.

8.1.2 The Company shall control planned changes and review the consequences of unintended changes, taking action to mitigate any adverse effects, as necessary.

8.1.3 Where applicable, the Company shall ensure that outsourced processes are controlled (see 8.4).

8.2 Requirements for Products and Services

8.2.1 Client Communication

Communication with Clients shall include:

(a) providing information relating to products and services;

(b) handling enquiries, contracts or orders, including changes;

(c) obtaining Client feedback relating to products and services, including Client complaints;

(d) handling or controlling Client property;

(e) establishing specific requirements for contingency actions, when relevant.

8.2.2 Determining the Requirements for Products and Services

When determining the requirements for the products and services to be offered to Clients, the Company shall ensure that:

(a) the requirements for the products and services are defined, including:

(i) any applicable statutory and regulatory requirements;

(ii) those considered necessary by the organisation;

(b) the Company can meet the claims for the products and services it offers.

8.2.3 Review of the Requirements for Products and Services

8.2.3.1 The Company shall ensure that it has the ability to meet the requirements of products and services to be offered to Clients. The Company shall conduct a review before committing to supply products and services to a Client.

8.2.3.2 The Company shall ensure that contract or order requirements differing from those previously defined are resolved.

8.2.3.3 The Client's requirements shall be confirmed by the Company before acceptance, when the Client does not provide a documented statement of their requirements.

8.2.3.4 The Company shall retain documented information, as applicable:

(a) on the results of the review;

(b) on any new requirements for the products and services.

8.2.4 Changes to Requirements for Products and Services

8.2.4.1 The Company shall ensure that relevant documented information is amended, and that relevant persons are made aware of the changed requirements, when the requirements for products and services are changed.

8.2.5 Emergency Preparedness and Response

8.2.5.1 The Company shall establish, implement and maintain the process needed to prepare for and respond to potential emergency situations identified in Section 6.1.1.

8.2.5.2 The Company shall:

(a) prepare to respond by planning actions to prevent or mitigate adverse environmental impacts from emergency situations;

(b) respond to actual emergency situations;

(c) take action to prevent or mitigate the consequences of emergency situations, appropriate to the magnitude of the emergency and the potential environmental impacts;

(d) periodically test the planned response actions, where practicable;

(e) periodically review and revise the process and planned response actions, in particular after the occurrence of emergency situations or test;

(f) provide relevant information and training related to emergency preparedness and response, as appropriate, to relevant interested parties, including persons working under its control.

8.2.5.3 The Company shall maintain documented information to the extent necessary to have confidence that the process is carried out as planned.

8.3 Design and Development of Products and Services

8.3.1 General

The Company shall establish, implement and maintain a design and development process that is appropriate to ensure the subsequent provision of products and services.

8.3.2 Design and Development Planning

In determining the stages and controls for design and development, the Company shall consider:

(a) the nature, duration and complexity of the design and development activities;

(b) the required process stages, including applicable design and development reviews;

(c) the required design and development verification and validation activities;

(d) the responsibilities and authorities involved in the design and development process;

(e) the internal and external resources needed for the design and development of products and services;

(f) the need to control interfaces between persons involved in the design and development process;

(g) the need for involvement of Clients and users in the design and development process;

(h) the requirements for subsequent provision of products and services;
(i) the level of control expected for the design and development process

by Clients and other relevant interested parties;

(j) the documented information needed to demonstrate that design and development requirements have been met.

8.3.3 Design and Development Inputs

8.3.3.1 The Company shall determine the requirements essential for the specific types of products and services to be designed and developed.

The Company shall consider:

(a) functional and performance requirements;

(b) information derived from previous similar design and development activities;

(c) statutory and regulatory requirements;

(d) standards or codes of practice that ACE has committed to implement;

(e) potential consequences of failure due to the nature of the products and services.

8.3.3.2 The Company shall retain documented information on design and development inputs.

8.3.4 Design and Development Controls

The Company shall apply controls to the design and development process to ensure that:

(a) the results to be achieved are defined;

(b) reviews are conducted to evaluate the ability of the results of design and development to meet requirements;

(c) verification activities are conducted to ensure that the design and development outputs meet the input requirements;

(d) validation activities are conducted to ensure that the resulting products and services meet the requirements for the specified application or intended use;

(e) any necessary actions are taken on problems determined during the reviews, or verification and validation activities;

(f) documented information of these activities is retained.

8.3.5 Design and Development Outputs

8.3.5.1 The Company shall ensure that design and development outputs:

(a) meet the input requirements;

(b) are adequate for the subsequent processes for the provision of products and services;

(c) include or reference monitoring and measuring requirements, as appropriate, and acceptance criteria;

(d) specify the characteristics of the products and services that are essential for their intended purpose and their safe and proper provision.

8.3.5.2 The Company shall retain documented information on design and development outputs.

8.3.6 Design and Development Changes

8.3.6.1 The Company shall identify, review and control changes made during, or subsequent to, the design and development of products and services, to the extent necessary to ensure that there is no adverse impact on conformity to requirements.

8.3.6.2 The Company shall retain documented information on:

(a) design and development changes;

(b) the results of reviews;

(c) the authorisation of the changes;

(d) the actions taken to prevent adverse impacts.

8.4 Control of Externally Provided Processes, Product and Services

8.4.1 General

8.4.1.1 The Company shall ensure that externally provided processes, products and services conform to requirements.

8.4.1.2 The Company shall determine the controls to be applied to externally provided processes, products and services.

8.4.1.3 The Company shall determine and apply criteria for the evaluation, selection, monitoring of performance, and re-evaluation of external providers, based on their ability to provide processes or products and services in accordance with requirements. The Company shall retain documented information of these activities and any necessary actions arising from the evaluations.

8.4.2 Type and Extent of Control

8.4.2.1 The Company shall ensure that externally provided processes, products and services do not adversely affect the organisation's ability to consistently deliver conforming products and services to its Clients.

8.4.2.2 The Company shall:

(a) ensure that externally provided processes remain within the control of its quality management system;

(b) define both the controls that it intends to apply to an external provider and those it intends to apply to the resulting output;

(c) take into consideration:

(i) the potential impact of the externally provided processes, products and services on the organisation's ability to consistently meet Client and applicable statutory and regulatory requirements;

(ii) the effectiveness of the controls applied by the external provider;

(d) determine the verification, or other activities, necessary to ensure that the externally provided processes, products and services meet requirements.

8.4.3 Information for external providers

8.4.3.1 The Company shall ensure the adequacy of requirements prior to their communication to the external provider.

8.4.3.2 The Company shall communicate to external providers its requirements for:

(a) the processes, products and services to be provided;

(b) the approval of:

(i) products and services;

(ii) methods, processes and equipment;

(iii) the release of products and services;

(c) competence, including any required qualification of persons;

(d) the external providers' interactions with the organisation;

(e) control and monitoring of the external providers' performance to be applied by the organisation;

(f) verification or validation activities that the organisation, or its Client, intends to perform at the external providers' premises.

8.5 Products and Services Provision

8.5.1 Control of Production and Service Provision

The Company shall implement production and service provision under controlled conditions.

8.5.2 Identification and Traceability

8.5.2.1 The Company shall use suitable means to identify outputs when it is necessary to ensure the conformity of products and services.

8.5.2.2 The Company shall identify the status of outputs with respect to monitoring and measurement requirements throughout production and service provision.

8.5.2.3 The Company shall control the unique identification of the outputs when traceability is a requirement, and shall retain the documented information necessary to enable traceability.

8.5.3 Property Belonging to Clients or External Providers

8.5.3.1 The Company shall exercise care with property belonging to Clients or external providers while it is under the organisation's control or being used by the organisation.

8.5.3.2 The Company shall identify, verify, protect and safeguard Clients' or external providers' property provided for use or incorporation into the products and services.

8.5.3.3 When the property of a Client or external provider is lost, damaged or otherwise found to be unsuitable for use, the Company shall report this to the Client or external provider and retain documented information on what has occurred.

8.5.3.4 A Client's or external provider's property can include materials, components, tools and equipment, premises, intellectual property and personal data.

8.5.4 Preservation

8.5.4.1 The Company shall preserve the outputs during production and service provision, to the extent necessary to ensure conformity to requirements.

8.5.4.2 Preservation can include identification, handling, contamination control, packaging, storage, transmission or transportation, and protection.

8.5.5 Post-delivery Activities

8.5.5.1 The Company shall meet requirements for post-delivery activities associated with the products and services.

8.5.5.2 In determining the extent of post-delivery activities that are required, the Company shall consider:

(a) statutory and regulatory requirements;

(b) the potential undesired consequences associated with its products and services;

(d) the nature, use and intended lifetime of its products and services;

(e) Client requirements;

(f) Client feedback.

8.5.6 Control of Changes

8.5.6.1 The Company shall review and control changes for production or service provision, to the extent necessary to ensure continuing conformity with requirements.

8.5.6.2 The Company shall retain documented information describing the results of the review of changes, the person(s) authorising the change, and any necessary actions arising from the review.

8.6 Release of Products and Services

8.6.1 The Company shall implement planned arrangements, at appropriate stages, to verify that the product and service requirements have been met.

8.6.2 The release of products and services to the Client shall not proceed until the planned arrangements have been satisfactorily completed, unless otherwise approved by a relevant authority and, as applicable, by the Client.

8.6.3 The Company shall retain documented information on the release of products and services. The documented information shall include:

(a) evidence of conformity with the acceptance criteria;

(b) traceability to the person(s) authorising the release.

8.7 Control of Nonconforming Outputs

8.7.1 The Company shall ensure that outputs that do not conform to their requirements are identified and controlled to prevent their unintended use or delivery.

8.7.2 The Company shall take appropriate action based on the nature of the nonconformity and its effect on the conformity of products and services. This shall also apply to nonconforming products and services detected after delivery of products, during or after the provision of services.

8.7.3 A Timer shall deal with nonconforming outputs in one or more of the following ways:

(a) correction;

(b) segregation, containment, return or suspension of provision of products and services;

(c) informing the Client;

(d) obtaining authorisation for acceptance under concession.

8.7.4 Conformity to the requirements shall be verified when nonconforming outputs are corrected.

8.7.5 The Company shall retain documented information that:

(a) describes the nonconformity;

(b) describes the actions taken;

(c) describes any concessions obtained;

(d) identifies the authority deciding the action in respect of the nonconformity.

9.0 PERFORMANCE EVALUATION

9.1 Monitoring, Measurement, Analysis and Evaluation

9.1.1 General

9.1.1 The Company shall determine:

(a) what needs to be monitored and measured;

(b) the methods for monitoring, measurement, analysis and evaluation needed to ensure valid results;

(c) when the monitoring and measuring shall be performed;

(d) when the results from monitoring and measurement shall be analyzed and evaluated.

9.1.2 The Company shall evaluate the performance and the effectiveness of the quality management system. The Company shall retain appropriate documented information as evidence of the results.

9.1.2 Client Satisfaction

9.1.2.1 The Company shall monitor Clients' perceptions of the degree to which their needs and expectations have been fulfilled. The Company shall determine the methods for obtaining, monitoring and reviewing this information.

9.1.2.2 Examples of monitoring Client perceptions can include Client surveys, Client feedback on delivered products and services, meetings with Clients, market-share analysis and compliments.

9.1.3 Analysis and Evaluation

The Company shall analyze and evaluate appropriate data and information arising from monitoring and measurement.

9.1.4 Evaluation of Compliance

9.1.4.1 The Company shall establish, implement and maintain the process needed to evaluate fulfillment of its compliance obligations.

9.1.4.2 The Company shall:

(a) determine the frequency that compliance will be evaluated;

(b) evaluate compliance and take action if needed;

(c) maintain knowledge and understanding of its compliance status.

The Company shall retain documented information as evidence of the compliance evaluation results.

9.2 Internal Audit

9.2.1 The Company shall conduct internal audits at planned intervals to provide information on whether the quality and environmental management systems:

(a) conforms to:

(i) the organisation's own requirements for its quality and environmental management system;

(ii) the requirements of the ISO 9001 & ISO 14001 standards;

(b) is effectively implemented and maintained.

9.2.2 The Company shall:

(a) plan, establish, implement and maintain an audit programme(s) including the frequency, methods, responsibilities, planning requirements and reporting, which shall take into consideration the importance of the processes concerned, changes affecting the organisation, and the results of previous audits;

(b) define the audit criteria and scope for each audit;

(c) select auditors and conduct audits to ensure objectivity and the impartiality of the audit process;

(d) ensure that the results of the audits are reported to relevant management;

(e) take appropriate correction and corrective actions without undue delay;

(f) retain documented information as evidence of the implementation of the audit programme and the audit results.

9.3 Management Review

9.3.1 General

The management shall review the QEMS annually to ensure its continuing suitability, adequacy, effectiveness and alignment with the strategic direction of the Company.

10.0 IMPROVEMENT

10.1 General

10.1.1 The Company shall determine and select opportunities for improvement and implement any necessary actions to meet Client requirements and enhance Client satisfaction.

10.1.2 These shall include:

(a) improving products and services to meet requirements as well as to address future needs and expectations;

(b) correcting, preventing or reducing undesired effects;

(c) improving the performance and effectiveness of the quality and environmental management systems.

10.1.3 Examples of improvement can include correction, corrective action, continual improvement, breakthrough change, innovation and re-organisation.

10.2 Nonconformity and Corrective Action

10.2.1 When a nonconformity occurs, including any arising from complaints, the Company shall:

(a) react to the nonconformity and, as applicable:

(i) take action to control and correct it;

(ii) deal with the consequences;

(b) evaluate the need for action to eliminate the cause(s) of the nonconformity, in order that it does not recur or occur elsewhere, by:

(i) reviewing and analyzing the nonconformity;

(ii) determining the causes of the nonconformity;

(iii) determining if similar nonconformities exist, or could potentially occur;

(c) implement any action needed;

(d) review the effectiveness of any corrective action taken;

(e) update risks and opportunities determined during planning, if necessary;

(f) make changes to the quality and environmental management systems, if necessary.

10.2.2 Corrective actions shall be appropriate to the effects of the nonconformities encountered.

10.2.3 The Company shall retain documented information as evidence of:

(a) the nature of the nonconformities and any subsequent actions taken;

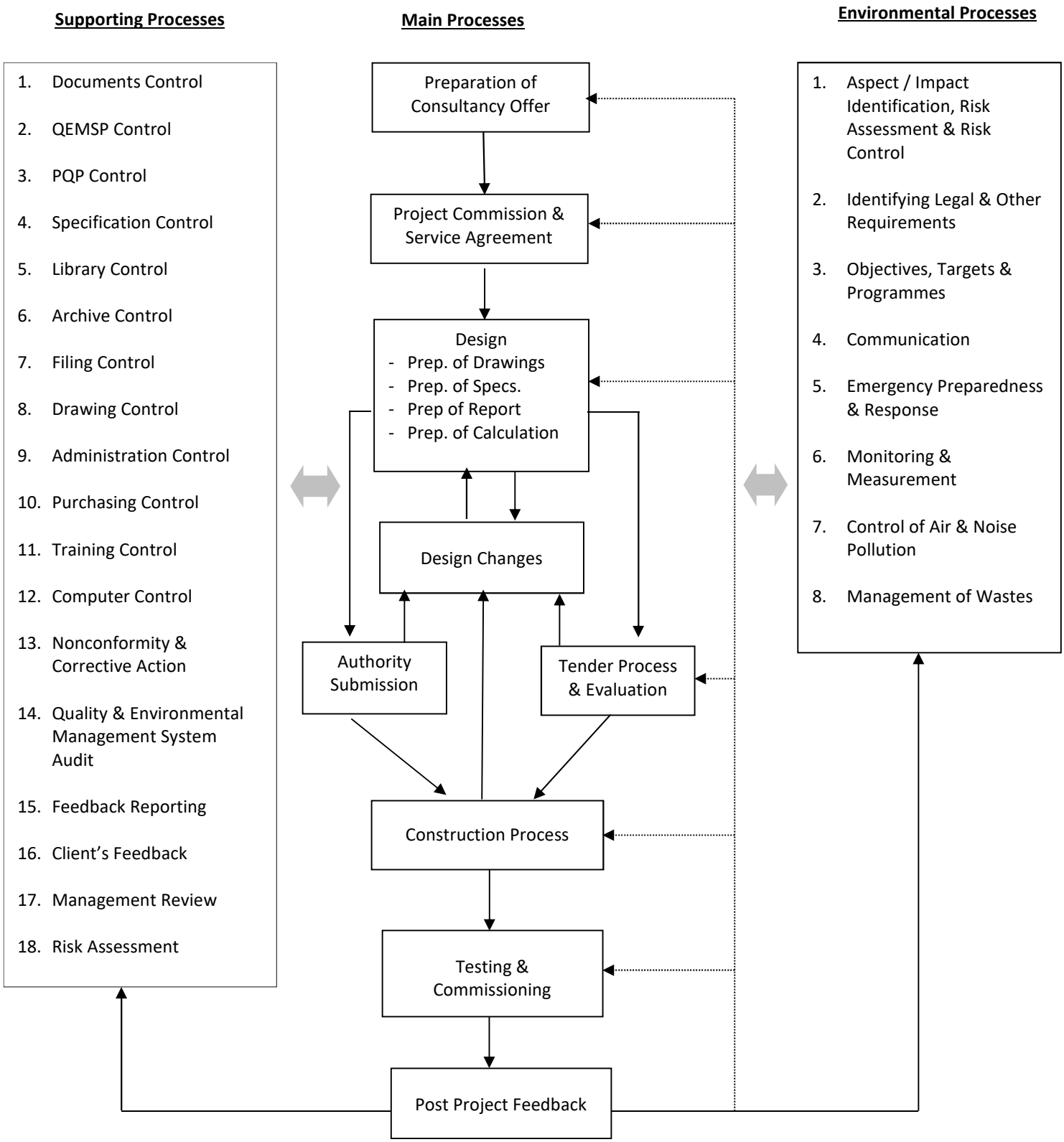
(b) the results of any corrective action.

10.3 Continual Improvement

10.3.1 The Company shall continually improve the suitability, adequacy and effectiveness of the quality and environmental management systems.

10.3.2 The Company shall consider the results of analysis and evaluation, and the outputs from management review, to determine if there are needs or opportunities that shall be addressed as part of continual improvement.

APPENDIX 1 -QUALITY & ENVIRONMENTAL MANAGEMENT SYSTEMS PROCESSES



APPENDIX 2 – QUALITY MANAGEMENT SYSTEM PLAN

Process	Process Owner	Input	Output	Resources	Facilities/ Equipment	Controlled Parameters	Supporting Documents
Preparation of Consultancy Offer	Managing Director/ Directors	- Newspaper - Written Enquiries - Verbal Enquiries	Form MC1.A - Project Enquiry Doc - Letter of Offer/Quotation - Bid Document	- Secretary	- Computer	- P. No. - Review Checklist	QEMSP Section M1
Project Commission & Service Agreement	Managing Director/ Directors	Output from Form M1.A - Project Enquiry Doc - Letter of Offer/ Quotation - Bid Document	Form MC2.A - Project Announcement	- Secretary	- Computer		QEMSP Section M2
Design	Project Manager	- Architectural Drawings - Structural Drawings - Client's Requirement - Input from other Consultant/project team member	- System Schematics - Design Drawings - Design Calculations - Design Reports - Design Specifications	- Project Assistant - Design Assistant - Draughting Leaders	- Computer - CAD software	- Statutory Requirements - Check Prints	QEMSP Section M3, M4, S4 & S8
Tender Process & Evaluation	Project Manager	- Design Drawings - Design Specifications	- List of Tenderers - Tender Reports - Contract Documents	- Project Assistant - Design Assistant	- Computer	- List of Approved Contractors - Tender Report approval from Project Director	QEMSP Section M5

APPENDIX 2 – QUALITY MANAGEMENT SYSTEM PLAN (Cont'd)

Process	Process Owner	Input	Output	Resources	Facilities/ Equipment	Controlled Parameters	Supported Documents
Authority Submission	Project Manager	- Design Drawings - Design Calculations	- Submission Drawings - Submission Forms	- Project Assistant - Design Assistant	- Computer - CAD software	- Statutory Requirements	
Construction Process	Project Manager	- Control Documents	- Verification of shop drawings, samples, equipment selection and deviations - Progress Payment Valuation - Project Meeting Minutes	- Project Assistant - Design Assistant - Site Staff	- Computer - Site Office	- Statutory Requirements - Verification by site staff	QEMSP Section M7
Testing & Commissioning	Project Manager	- Contract Documents - Submission Drawings - Shop Drawings - Samples and equipment selection	- Completion Certificate - Certificate of Supervision	- Project Assistant - Design Assistant - Site Staff	- Computer - Relevant measurement equipment	- Statutory Requirements - Verification by site staff - Equipment calibration	QEMSP Section M8
Contract Close-out	Project Manager	- Contract Documents - Progress Report - Design Change Control	- Statement of Final Account - Evaluation of Extension of Time	- Project Assistant - Design Assistant - Site Staff	- Computer	- Verification by site staff	QEMSP Section M8
Post Project Feedback	Project Manager	- Client's Feedback	- Feedback Report Form	- Project Assistant	- Computer	- Contract Requirements	QEMSP Section S15, S16

APPENDIX 3 – LIST OF PROCEDURES

The table below shows the list of procedures applicable for the Quality & Environmental Management Systems.

Section no.	Title
M1	Preparation of Consultancy Offer
M2	Project Commission and Service Agreement
M3	Design Control
M4	Design Change Control
M5	Tender Process and Evaluation
M6	Authority Submission
M7	Construction Process Control
M8	Testing and Commissioning
S1	Document Control
S2	Documentation of Quality and Environmental System Procedures
S3	Documentation of Project Quality Plan
S4	Specification Control
S5	Library Control
S6	Archive Control
S7	Filing Control
S8	Drawing Control
S9	Administration Control
S10	Purchasing Control
S11	Training Control
S12	Computer Control
S13	Non-Conformity and Corrective Action Procedures
S14	Quality & Environmental System Audit
S15	Feedback Reporting
S16	Client's Feedback
S17	Management Review
S18	Risk Identification, Assessment & Control

APPENDIX 3 – LIST OF PROCEDURES (Cont'd)

Section no.	Title
E1	Aspect / Impact Identification, Risk Assessment & Risk Control
E2	Identifying Legal & Other Requirements
E3	Objectives, Targets & Programmes
E4	Communication
E5	Emergency Preparedness & Response
E6	Monitoring & Measurement
E7	Control of Air & Noise Pollution
E8	Management of Wastes

APPENDIX 4 – INTEGRATED MANAGEMENT SYSTEM (IMS) CHECKLIST

S/No.	External Issues	Internal Issues	Interested Parties	Risks	Mitigating Plans (to address risks)	Opportunities	Capitalising Plans (to capitalise on opportunities)
1	***Stringent requirements for Green Building (SLEB)***	*NA*	*- Clients and other Consultants* *- Employees* *- Statutory & Regulatory Bodies* *- Clients' Contractors*	*1. Lack of capability/competency to implement new requirements* *2. Reduced profitability due to additional manhour required to implement new requirements*	*1. Send staff for training to understand BCA's environmental sustainability legislative framework, underlying performance standards and BCA Green Mark assessment systems.* *2. Create awareness of new requirements through sharing sessions and e-mail circulars to all staff* *3. Conduct design review to ensure new requirements are implemented correctly*	*1. Enhance staff competency from new knowledge gain from implementation* *2. Showcase of technical competency to potential Client as value add* *3. Increased exposure to potential Clients through award ceremonies*	*1. Send staff for training to learn the methods to optimise building design for greener buildings.* *2. Maintain organisational knowledge gained from training* *3. Appoint domain experts within organisation to standardise implementation*
2	*Industry push for design and implementation of building project to increase productivity on construction site*	*NA*	*- Clients and other Consultants* *- Employees* *- Statutory & Regulatory Bodies* *- Clients' Contractors*	*1. Lack of capability/competency to implement new requirements* *2. Reduced profitability due additional manhour required to implement new requirements*	*1. Send staff for training to learn latest construction productivity trends and technology.* *2. Create awareness of new requirements through sharing sessions and e-mail circulars to all staff* *3. Review potential contractors for project to ensure they have the equivalent capabilities*	*1. Enhance staff competency from new knowledge gain from implementation* *2. Showcase of technical competency to potential Client as value add*	*1. Send staff for training to gain critical knowledge in the processes, management skills and understanding on the new construction technologies in construction productivity.* *2. Maintain organisational knowledge gained from training* *3. Appoint domain experts within organisation to standardise implementation*
3	***Stringent WSH requirements for design and supervision of building projects***	*NA*	*- Clients and other Consultants* *- Employees* *- Statutory & Regulatory Bodies* *- Clients' Contractors*	*Reduced profitability due additional manhour required to implement new requirements*	*1. Send staff for training to understand and implement the relevant WSH regulations for projects.* *2. Create awareness of new requirements through sharing sessions and e-mail circulars to all staff* *3. Conduct design review to ensure new requirements are implemented correctly*	*NA*	*NA*
4	*Tightened requirements on employment of foreign workers*	*NA*	*- Clients and other Consultants* *- Employees* *- Statutory & Regulatory Bodies*	*1. Lack of resources to take on larger and more projects* *2. Higher operating cost due to reduced pool of talents*	*1. Joint ventures with other firms to take on large projects* *2. Provide good office environment and employee benefits to recruit and retain local employees*	*NA*	*NA*
5	*Requirements on consultant registration to tender for large public sector projects*	*NA*	*- Clients and other Consultants* *- Statutory & Regulatory Bodies*	*1. Lack of capability/competency to implement new requirements* *2. Reduced opportunity to tender for project due to additional requirements* *3. Unable to tender for new projects due to non-performance in previous public sector projects*	*1. Send staff for training to meet public sector projects tender requirement.* *2. Monitor current project performance more rigorously*	*NA*	*NA*
6	***Uncertainty in global economy outlook due to foreign tariffs imposed by US Government***	*NA*	*- Clients and other Consultants* *- Employees* *- Clients' Contractors*	***1. Spillovers & growth deceleration globally.*** ***2. Persistently higher inflation.*** ***3. Greater volatility / uncertainty***	***1. Conduct Cost Impact and Scenario Analysis*** ***2. Internal Preparedness and Business Continuity Planning*** ***3. Improve Financial and Cost Management***	***Government Support & Incentives***	*NA*

APPENDIX 4 – INTEGRATED MANAGEMENT SYSTEM (IMS) CHECKLIST

S/No.	External Issues	Internal Issues	Interested Parties	Risks	Mitigating Plans (to address risks)	Opportunities	Capitalising Plans (to capitalise on opportunities)
7	*Increasing public sector Infrastructure and institutional projects*	*NA*	*- Clients and other Consultants* *- Employees* *- Clients' Contractors*	*Lack of capability/competent staff to deliver project*	*1. Joint ventures with other firms to take on large projects* *2. Send staff for training to enhance competency of staff to fulfil public sector project requirements.*	*1. Expand potential clients' network* *2. Exposure due to infrastructure and institutional projects*	*NA*
8	*NA*	*- Increasing overhead in business operation*	*- Clients and other Consultants* *- Employees* *- Suppliers* *- Statutory & Regulatory Bodies* *- Clients' Contractors*	Company running into loss	*1. Implement cost cutting measures* *2. Increase staff productivity* *3. Reduce manpower*	*NA*	*NA*
9	*Negative perception of construction industry resulting in difficulties in staff recruitment*	*NA*	*- Clients and other Consultants* *- Employees* *- Suppliers* *- Statutory & Regulatory Bodies* *- Clients' Contractors*	*1. Lack of resources to take on larger and more projects* *2. Higher operating cost due to reduced pool of talents*	*1. Joint ventures with other firms to take on large projects* *2. Provide good office environment and employee benefits to recruit and retain local employees*	*Enhanced competency of staff*	*1. Send staff for training to enhance their knowledge and performance.* *2. Maintain organisational knowledge gained from training*
10	*Increasing expectation from property buyers*	*NA*	*- Clients and other Consultants* *- Employees* *- Statutory & Regulatory Bodies* *- Clients' Contractors*	*1. Increasing dissatisfaction level from Client* *2. Reduced profitability due additional manhour required to attend to complaints*	*1. Send staff for training to deal with customer complaints.* *2. Create awareness of increasing expectations through sharing sessions and e-mail circulars to all staff* *3. Conduct project review to ensure higher expectations are met*	*NA*	*NA*
11	***Influences of lifestyle and changed social traits of Generation Z***	*NA*	*- Clients and other Consultants* *- Employees* *- Statutory & Regulatory Bodies* *- Clients' Contractors*	*Younger staff not able to maintain the performance expected by the older Client and gain their trust. Vice versa for older staff dealing with younger Client's representative*	*1. Establish communication process with staff.* *2. Close monitoring of the project emails and staff by Project Director at all stages of project & counsel the staff where necessary*	*NA*	*NA*
12	*Use of social media for project communications including matters which may impinge on legal interpretation*	*NA*	*- Clients and other Consultants* *- Employees* *- Statutory & Regulatory Bodies* *- Clients' Contractors*	*Details of project communications not recorded formally and authorised properly.*	*Close monitoring of the project emails and staff by Project Director at all stages of project & counsel the staff where necessary*	*NA*	*NA*
13	*NA*	***Implementation of Building Information Modelling (BIM) and Corenet X***	*- Clients and other Consultants* *- Employees* *- Suppliers* *- Statutory & Regulatory Bodies* *- Clients' Contractors*	*1. Lack of capability/competency to implement new requirements* *2. Reduced profitability due additional manhour required to implement new requirements*	*1. Send staff for training to learn the practical 3D BIM MEP Modelling skills and technical knowledge to start and support a project using BIM.* *2. Create awareness of new requirements through sharing sessions and e-mail circulars to all staff* *3. Conduct design review to ensure new requirements are implemented correctly*	*1. Enhanced competency of staff* *2. Offer solutions/value-add clients*	*1. Maintain organisational knowledge gained from training* *2. Appoint domain experts within organisation to standardise implementation*
14	*NA*	***Advancements in building services systems towards AI based platform***	*- Clients and other Consultants* *- Employees* *- Suppliers* *- Statutory & Regulatory Bodies* *- Clients' Contractors*	*1. Lack of capability/competency to implement new requirements* *2. Reduced profitability due additional manhour required to implement new requirements*	*1. Send staff for training to be familiar with the e–submission guideline & e-portal on reviewing shop drawings.* *2. Create awareness of new requirements through sharing sessions and e-mail circulars to all staff* *3. Conduct project review to ensure new requirements are implemented correctly*	*1. Enhanced competency of staff* *2. Offer solutions/value-add clients*	*1. Maintain organisational knowledge gained from training* *2. Appoint domain experts within organisation to standardise implementation*

APPENDIX 4 – INTEGRATED MANAGEMENT SYSTEM (IMS) CHECKLIST

S/No.	External Issues	Internal Issues	Interested Parties	Risks	Mitigating Plans (to address risks)	Opportunities	Capitalising Plans (to capitalise on opportunities)
15	*NA*	*Advancement in information technology and personal mobile devices for use by staff working outside office*	*- Clients and other Consultants* *- Employees* *- Suppliers* *- Statutory & Regulatory Bodies* *- Clients' Contractors*	*Computer server failure resulting in loss of data*	*Regular backups & hard drive redundancy*	*1. Reduction in paper usage in the office* *2. Reduction of physical space required for storage of documents*	*NA*
16	***Threats from cyber security and online scams***		***- Clients and other Consultants*** ***- Employees*** ***- Suppliers*** ***-Statutory & Regulatory Bodies*** ***- Clients' Contractors***	***1. Computer server failure resulting in loss of data*** ***2. Financial Loss*** ***3. Operational Disruption*** ***4. Increased Cost for Recovery and Strengthening Controls***	***1. Regular Cybersecurity Awareness Training*** ***2. Regular backups & hard drive redundancy*** ***3. Engage external IT expertise to strengthen Cybersecurity measure***	*NA*	*NA*
17	*NA*	*Repeat Clients of past projects including their referrals to other prospective Clients*	*- Clients and other Consultants* *- Employees* *- Clients' Contractors*	*Staff not able to maintain the performance expected by the client and might loss the client's trust.*	*Need to reinforce relevant experienced engineers to work with the clients*	*NA*	*NA*
18	*NA*	*Government projects through GeBIZ requiring consultants of Panel 1 listing*	*- Clients and other Consultants* *- Employees* *- Statutory & Regulatory Bodies*	*Unable to tender for new projects due to non-performance in previous public sector projects*	*Monitor current project performance more rigorously*	*NA*	*NA*
19	*NA*	*Good reputation amongst fellow consultants leading to forming JV or collaboration for mega-projects*	*- Clients and other Consultants* *- Employees* *- Statutory & Regulatory Bodies* *- Clients' Contractors*	*1. Disagreement over demarcation of works* *2. Reputation ruined by non-performance of JV partners*	*1. Have clear demarcation during review of scope of works* *2. Take pro-active measures as team member*	*Opportunity to learn from fellow JV partners*	*NA*
20	*NA*	***Fierce and low fee competition among fellows consultants***	*- Clients and other Consultants* *- Employees* *- Statutory & Regulatory Bodies* *- Clients' Contractors*	*1. Company have to cut cost & employees might leave due to low pay* *2. Work overload of competent staff who need to undertake many projects thus compromising efficiency and focus on critical stages of the project.*	*Provide good office environment and employee benefits to recruit and retain employees*	*NA*	*NA*
21	*NA*	*Government's policy to tighten foreign manpower driving up staff cost to unsustainable level*	*- Clients and other Consultants* *- Employees* *- Statutory & Regulatory Bodies* *- Clients' Contractors*	*1. Lack of resources to take on larger and more projects* *2. Higher operating cost due to reduced pool of talents*	*1. Joint ventures with other firms to take on large projects* *2. Provide good office environment and employee benefits to recruit and retain local employees*	*NA*	*NA*

APPENDIX 4 – INTEGRATED MANAGEMENT SYSTEM (IMS) CHECKLIST

S/No.	External Issues	Internal Issues	Interested Parties	Risks	Mitigating Plans (to address risks)	Opportunities	Capitalising Plans (to capitalise on opportunities)
22	*NA*	*Lack of competent engineering staff in the marketplace*	*- Clients and other Consultants* *- Employees* *- Clients' Contractors*	*1. Lack of resources to take on larger and more projects* *2. Higher operating cost due to reduced pool of talents*	*1. Joint ventures with other firms to take on large projects* *2. Provide good office environment and employee benefits to recruit and retain local employees*	*NA*	*NA*

Notes:

1. Issues identified and the corresponding mitigating/capitalising plans must be applicable at the ORGANISATION LEVEL. Different business units and project teams should develop separate management programmes to implement such plans.
2. Not all issues will result in risks and opportunities; it could be either or both.
3. The mitigating/capitalising plans must address the needs and expectations of interested parties identified.
4. The organisation shall review this table from time to time.

LIST OF INTERESTED PARTIES

S/No.	Interested Parties	Needs and Expectations
1	Clients, other consultants and JV partner consultants	- Quality of product and services
		- Timely delivery of product and services
		- Good communication for prompt response to enquiries/complaints
		- Environmental friendly design
2	Shareholders	- Sustained profitability
		- Risk management
		- Compliance with regulations
3	Employees	- Management support
		- Training to achieve job competency
		- Career progression
		- Conducive and safe work environment
4	Suppliers	- Clear requirements
		- Fair evaluation of their performance, product quality and track record
		- Timely payment
5	Statutory and Regulatory Body	- Compliance with statutory and regulatory requirements as enforced from time to time
6	Clients' Contractor	- Clear communications on directions and instructs as well as prompt responses to requests for information or clarifications
		- Timely certification of work done for payment
		- Timely assessment of variation work
		- Fair evaluation of their performance and product quality

Notes:

1 Reference should be made to these identified interested parties and their corresponding needs and expectations when mitgating / capitalising plans are developed.

2 The organisation shall review this table from time to time.

SCOPE OF QUALITY AND /OR ENVIRONMENTAL MANAGEMENT SYSTEM

Please include a write-up on your organisation's business profile, products and/or services, and interactions with the enviroment and interested parties.

Please also indicate the applicability of the ISO 9001:2015 and/or ISO 14001:2015 standard(s) in relation to the scope of your organisation's quality and/or environmental management system(s).

Alpha Consulting Engineers Pte Ltd was established in January 1995 to undertake a whole spectrum of mechanical and electrical engineering consultancy services pertaining to building construction and other industries in Singapore and the region.

Since the inception of the Company in 1995, Alpha Consulting Engineers Pte Ltd (ACEPL) had completed numerous projects, ranging from condominiums, teaching institutions, hospitals, hotels, office buildings, shopping malls to aircraft hangars, wafer fabs etc. in Singapore, Indonesia, Vietnam, Thailand, China, Brunei and Myanmar.

ACEPL is committed to providing high quality services to the Clients. No effort will be spared by ACEPL in producing economical, practical and reliable electrical and mechanical building services design, in sympathy with the building architecture and structure, to meet the Client's requirements and satisfaction. ACEPL's quality and environmental management systems had achieved accreditation for compliance with ISO 9001 and ISO 14001 from February 1999 and March 2008 respectively.

Our policy aim to rival those of the best mechanical and electrical engineering consultancy practices in the region in terms of professionalism, technical competence and work quality with emphasis on environmental consideration, while maintaining a competitive edge.

We are committed to practicing quality control, energy/resource convervation, pollution prevention and adherence to ongoing compliance with all applicable statutory and regulatory requirements meeting ISO 9001 and ISO 14001 standards.

We shall regularly review our policy and practice with a view to improve the effectiveness of our Quality and Environmental Management Systems. We aim to attain ultimate goals set for some major aspects of works as follows:

(a) Doing right things the first time, all the times and be on time in all our deliveries.

We target to have less than 5 non-compliances per department/project during each internal audit of our projects.

(b) Poviding value and quality services to all our projects in meeting Client's requirements.

We target to:

i) achieve zero design error in all our projects
ii) receive at least 75% rating of satisfaction level in Clients' feedbacks

(c) Prevent resource depletion while maintaining a pollution free work environment.

We target to benchmark the office electricity consumption to less than 5% below 70kWh/m^2/year, being BCA Green Mark Platinum Criterion for office Energy Efficiency Index.

(d) Office paper waste reduction through the 3Rs – Reduce, Reuse, Recycle.

We target to restrict our paper consumption in the office by benchmarking on a 35% recycling rate.