



Lam Geotechnics Limited
ISO 14001: 2015
Environmental Management
Manual

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Table of Contents

1. General	3
1.1 Revision History.....	3
1.2 Distribution List.....	4
1.3 Company Background	4
2. Scope.....	5
3. Environmental Organisation and Responsibilities	5
3.1 Environmental Organisation	5
3.2 Responsibilities and Authorities.....	5
4 Context of the organization	7
4.1 Understanding the organization and its context	7
4.2 Understanding the needs and expectations of interested parties	7
4.3 Determining the scope of the environmental management system.....	7
4.4 Environmental management system.....	8
5 Leadership	8
5.1 Leadership and commitment.....	8
5.2 Environmental policy.....	9
5.3 Organizational roles, responsibilities and authorities	9
6 Planning.....	10
6.1 Actions to address risks and opportunities.....	10
6.1.1 General.....	10
6.1.2 Environmental aspects	11
6.1.3 Compliance obligations.....	11
6.1.4 Planning action	11
6.2 Environmental objectives and planning to achieve them	12
6.2.1 Environmental objectives.....	12
6.2.2 Planning actions to achieve environmental objectives.....	12
7 Support.....	13
7.1 Resources	13
7.2 Competence	13

7.3	Awareness.....	13
7.4	Communication.....	13
7.4.1	General.....	13
7.4.2	Internal communication	14
7.4.3	External communication	14
7.5	Documented information.....	14
7.5.1	General.....	14
7.5.2	Creating and updating	15
7.5.3	Control of documented information.....	15
8	Operation.....	15
8.1	Operational planning and control	15
8.2	Emergency preparedness and response	16
9	Performance evaluation.....	17
9.1	Monitoring, measurement, analysis and evaluation.....	17
9.1.1	General.....	17
9.1.2	Evaluation of compliance.....	17
9.2	Internal audit.....	17
9.2.1	General.....	17
9.2.2	Internal audit programme.....	18
9.3	Management Review.....	18
10	Improvement.....	20
10.1	General.....	20
10.2	Nonconformity and corrective action	20
10.3	Continual improvement.....	20

Appendix 1 – Company Chart

Appendix 2 - Identification and Evaluation of Environmental Aspects

Appendix 3 - Register – Legal Requirement

Appendix 4 - Environmental Policy

Appendix 5 - Risk and Opportunities

Appendix 6 - Interested Parties and Requirements

Appendix 7 - Register – Environmental Aspects (Master)

Appendix 8 - Register – Environmental Procedures

1. General

1.1 Revision History

Issue No.	Description of Revision	Date
1.00	First Issue for HSE Steering Group's review	8 December 2005
1.10	Consolidation of comments received from SI and Lab management	20 February 2006
2.00	Second Issue for restructuring of EMS organization for SI and separating out laboratory	8 December 2006
2.10	Transfer of top management role in EMS to General Manager and associated changes	4 February 2008
2.20	Revise in response to internal audit, integration with Safety Management System revision for OHSAS18001 accreditation	16 January 2009
2.30	Revise in response to internal audit, integration with Safety Management System revision for OHSAS18001 accreditation	26 July 2010
2.40	Revise in response to internal audit and external audit; Review of role and responsibility for HSE Manager, Administrative Support Manager and Plant & Logistics team; Change of controlled document colour	11 March 2011
2.40	Document review in Dec 11 concluded no revision on system document is needed.	20 January 2012
2.50	Revise with respect to internal audit finding	10 January 2014
3.00	Revise with respect to internal audit findings, Waste Disposal (Amendment) Ordinance enacted in Aug 2014 and Air Pollution Control (Non-Road Mobile Machinery) (Emission) Regulation enacted in 1 Apr 2015	30 June 2015
3.10	Revise appendices 4.3.1a, 4.3.2a, 4.4.1b, 4.4.4 and 4.4.6 with respect to review in role and responsibilities, and new legislation related air emission and waste on barge	1 June 2017
4.0	Revision for fulfilling of ISO 14001:2015 requirements	1 December 2017

1.2 Distribution List

Copy Holder	Title	Controlled Hardcopy
SK Li	General Manager/Plant & Logistics Manager	No. 1
Spencer Kai	HSE Manager	No. 2
Ben Leung	Safety Officer	Access via Intranet
Chow Hon Ming	Project Manager	Access via Intranet
Ricky Wu	Project Manager	Access via Intranet
Winnie Leung	HR & Admin. Manager (Head Office)	Access via Intranet
Linda Wong	Administrative Support Manager	Access via Intranet

1.3 Company Background

Lam Geotechnics Limited (LGL) is one of the largest site investigation companies in Hong Kong and is on the Work Bureau List of Approved Group II Specialist Contractors qualified to bid for Ground Investigation Field Work projects of any scale. LGL is also a Registered Specialist Contractor in the category of Ground Investigation Field Works with the Buildings Department of Hong Kong.

Since its establishment in 1979, LGL has been commissioned to carry out site investigations for many major public works and private projects throughout Hong Kong. Those construction works have included reclamation, tunneling, building foundations (including pre-drilling and concrete coring), major structures, slopes and landslip studies. In more recent years, LGL have been increasingly involved in geo-environmental assessment works, requiring specialist drilling and sampling techniques.

LGL is committed to meeting our client's needs with total quality services. We are experienced in project control and programme management and meeting the tight deadlines that Hong Kong clients and the Government demand. All works are carried out in accordance with the contract requirements as well as Geoguide 2 "Guide to Site Investigation". LGL project management staff consists of over 20 professional engineers and geologists who oversee a team of over 50 highly qualified technical support staff, including various types and levels of site agents, geotechnical field technicians and office based computer technicians for data management.

2. Scope

Scope of the Environmental Management System documented in this Manual shall apply to the geotechnical and environmental investigation, monitoring and testing operation as well as associated support managed under Lam Geotechnics Limited.

Throughout this manual, the term “scope of application” shall be used to describe the first sentence in this section.

Other subsidiaries namely Lam Environmental Services and/or others, supporting functions, projects, procurement and supply chain interfaces can refer to whole/part of this EMS for adoption and implementation if applicable.

Company Address:

11/F, Centre Point, 181-185 Gloucester Road, Wanchai, Hong Kong.

3. Environmental Organisation and Responsibilities

3.1 Environmental Organisation

3.1.1 Organization Chart

Refer to Appendix 1 for Company Chart.

3.2 Responsibilities and Authorities

3.2.1 The main responsibility and authorities of the key members of LGL with respect to EMS are shown below.

3.2.2 **The General Manager (GM)** has the overall responsibility to co-ordinate with all Senior Management for the execution of environmental management system within the Company, including:

- (a) Developing and reviewing the Environmental Policy;
- (b) Defining EMS objectives and targets; and
- (c) Allocating adequate resources for the smooth operation of the EMS

3.2.3 **HSE Manager/Environmental Officer** shall act as the **Environmental Management Representative (EMR)** to assist **GM** in taking responsibility in reviewing and executing the EMS, and promoting the Environmental issues to team member in the company.

- (a) Planning, establishment, implementation and maintenance of the EMS;

- (b) Providing regular environmental performance reports to senior management;
- (c) Regularly reviewing the effectiveness of the EMS, and ensuring that the necessary changes are made;
- (d) Liaising with external parties on matters relating to the EMS.
- (e) Chair the Safety and Environmental Meeting;
- (f) Conducting management review meeting; and
- (g) Reporting on the performance and improvement items of the EMS related issues to the Management for review

3.2.4 **Project Manager/Plant & Logistics Manager/ HR & Admin. Manager** of different Departments shall assist in fulfilling the following responsibilities:

- (a) To assist the implementation of policies and procedures
- (b) Establishing controls for the identified significant environmental aspects for the department according to procedures and guidelines;
- (c) Ensuring that the EMS is properly implemented at within the managed area.
- (d) To sustain effective internal communication of environmental issues between management and employees, and promoting environmental awareness among departments;
- (e) Participating in the Safety and Environmental Meeting.
- (f) Making suggestions to improve the environmental conditions at work

3.2.5 All employees shall be responsible for carrying out duties in accordance with the environmental manual, procedures and instructions so as to sustain the EMS effectively, including:

- (a) Getting familiarised with the EMS requirements;
- (b) Putting forward suggestion so as to further improve the effectiveness of the EMS;

- (c) Participating in environmental activities and training as nominated by the Section Head;
- (d) Reporting any problems or deviations associated with environmental issues to the EMS committee.

4. Context of the organization

4.1 Understanding the organization and its context

Top management of LGL has determined external and internal issues that are relevant to its purpose and that affect its ability to achieve the intended outcomes of its environmental management system. Such issues are including environmental conditions being affected by or capable of affecting LGL. Refer to Appendix 5 for Risk and Opportunities.

4.2 Understanding the needs and expectations of interested parties

Top management of LGL discussed and documented the following items:

- (a) the interested parties that are relevant to the environmental management system;
- (b) the relevant needs and expectations (i.e. requirements) of these interested parties;
- (c) which of these needs and expectations become its compliance obligations.

Refer to Appendix 6 for Interested Parties and Requirements.
Refer to Appendix 3 for Register - Legal Requirement.

4.3 Determining the scope of the environmental management system

Top management of LGL were based on the following consideration to determine the boundaries and applicability of the environmental management system, they are:

- (a) the external and internal issues referred to in 4.1;
- (b) the compliance obligations referred to in 4.2;
- (c) its organizational units, functions and physical boundaries;
- (d) its activities, products and services;
- (e) its authority and ability to exercise control and influence.

All activities, products and services of LGL within that scope need to be included in the environmental management system.

Those scopes have been maintained as documented information and be available to interested parties.

4.4 Environmental management system

For achieving the intended outcomes, including enhancing its environmental performance, LGL will establish, implement, maintain and continually improve an environmental management system, including the processes needed and their interactions, in accordance with the requirements of this International Standard.

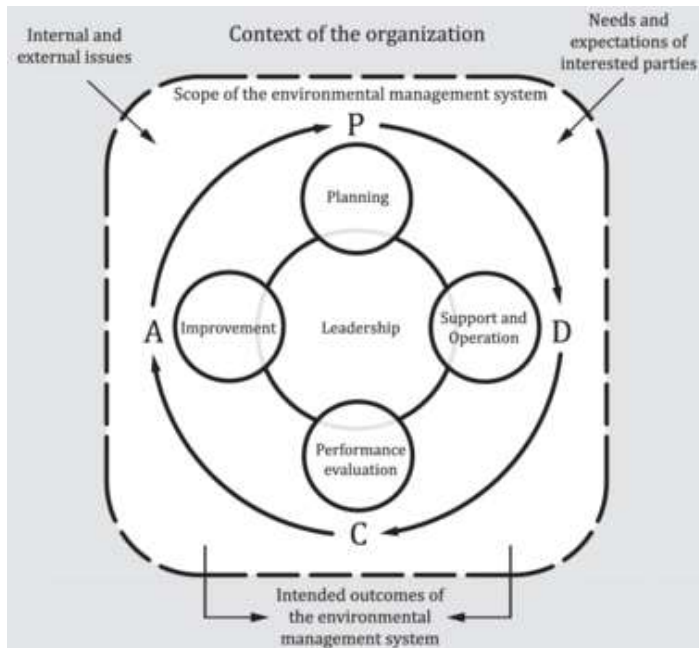


Fig. 1 Continual Improvement of the Environmental Management System

5 Leadership

5.1 Leadership and commitment

Top managements of LGL are demonstrating the leadership and commitment with respect to the environmental management system by:

- taking accountability for the effectiveness of the environmental management system;
- ensuring that the environmental policy and environmental objectives are established and are compatible with the strategic direction and the context of LGL;
- ensuring the integration of the environmental management system requirements into the organization's business processes;

- (d) ensuring that the resources needed for the environmental management system are available;
- (e) communicating the importance of effective environmental management and of conforming to the environmental management system requirements;
- (f) ensuring that the environmental management system achieves its intended outcomes;
- (g) directing and supporting persons to contribute to the effectiveness of the environmental management system;
- (h) promoting continual improvement;
- (i) supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility.

5.2 Environmental policy

Top management of LGL has established, implementing and maintains an environmental policy that, which is:

- (a) is appropriate to the purpose and context of LGL, including the nature, scale and environmental impacts of its activities, products and services;
- (b) provides a framework for setting environmental objectives;
- (c) includes a commitment to the protection of the environment, including prevention of pollution and other specific commitment relevant to the context of LGL;
- (d) includes a commitment to fulfil its compliance obligations;
- (e) includes a commitment to continual improvement of the environmental management system to enhance environmental performance.

The environmental policy will be communicated within LGL and be available to interested parties.

Refer to Appendix 4 for Environmental Policy.

5.3 Organizational roles, responsibilities and authorities

Top management of LGL ensures that the responsibilities and authorities for relevant roles are assigned and been communicated.

Top management has assigned the responsibility and authority for:

- (a) ensuring that the environmental management system conforms to the ISO 14001:2015 EMS requirements;
- (b) reporting to top management on the performance of the environmental management system.

Refer to Appendix 1 for Company Chart.

6 Planning

6.1 Actions to address risks and opportunities

6.1.1 General

LGL has committed to establish, implement and maintain the process needed to meet the requirements in 6.1.1 to 6.1.4.

When planning for the environmental management system, LGL will consider all external & internal issues, all relevant requirements, and the scope of environmental management system;

LGL also determined the risks and opportunities, related to designated environmental aspects, compliance obligations and other issues & requirements, those have been identified in 4.1 and 4.2, that need to be addressed to:

- give assurance that the environmental management system can achieve its intended outcomes;
- prevent or reduce undesired effects, including the potential for external environmental conditions to affect LGL;
- achieve continual improvement.

Within the scope of the EMS, LGL will determine potential emergency situations, including those that can have an environmental impact.

Refer to Appendix 5 for Risk and Opportunities.

6.1.2 Environmental aspects

Within the defined scope of the environmental management system, LGL has determined the environmental aspects of its activities, products and services that it can control and those that it can influence, and their associated environmental impacts, considering a life cycle perspective.

When determining environmental aspects, LGL will review regularly to take into account of:

- (a) change, including planned or new developments, and new or modified activities, products and services;
- (b) abnormal conditions and reasonably foreseeable emergency situations.

LGL communicates the significant environmental aspects among the various levels and functions as appropriate.

LGL will maintain documented information of:

- environmental aspects and associated environmental impacts;
- criteria used to determine its significant environmental aspects;
- significant environmental aspects.

Refer to Appendix 2 for Identification and Evaluation of Environmental Aspects.
Refer to Appendix 7 for Register - Environmental Aspects (Master).

6.1.3 Compliance obligations

LGL has:

- (a) determine and have access to the compliance obligations related to its environmental aspects;
- (b) determine how these compliance obligations apply to LGL;
- (c) take these compliance obligations into account when establishing, implementing, maintaining and continually improving its environmental management system.

Refer to Appendix 3 for Register - Legal Requirement.

6.1.4 Planning action

LGL has planned:

- (a) to take actions to address the:

- (1) significant environmental aspects;
- (2) compliance obligations;
- (3) risks and opportunities identified in 6.1.1;

(b) and how to:

- (1) integrate and implement the actions into its environmental management system processes, or other business processes;
- (2) evaluate the effectiveness of these actions.

Refer to Appendix 5 for Risk and Opportunities.

Refer to Appendix 6 for Interested Parties and Requirements.

6.2 Environmental objectives and planning to achieve them

6.2.1 Environmental objectives

LGL has established annual specific environmental objectives at relevant functions and levels, taking into account the organization's significant environmental aspects and associated compliance obligations, and considering the risks and opportunities.

The environmental objectives will be:

- (a) consistent with the environmental policy;
- (b) measurable (if practicable);
- (c) monitored;
- (d) communicated;
- (e) updated as appropriate.

6.2.2 Planning actions to achieve environmental objectives

LGL has established reasonable feasibility and action plans for achieving the environmental objectives and targets within a target period. The plan shall be reviewed on a regular basis. Where necessary, the Plan will be amended to address changes to the activities, services or operating conditions.

The plan will include:

- (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, including indicators for monitoring progress toward achievement of its measurable environmental objectives.

7 Support

7.1 Resources

LGL will determine and provide the resources needed for the establishment, implementation, maintenance and continual improvement of the environmental management system.

7.2 Competence

The HSE Manager is responsible for identifying staff training needs, and for delivering appropriate training to relevant personnel, to ensure that these persons are competent on the basis of appropriate education, training or experience. Where applicable, take actions to acquire the necessary competence, and evaluate the effectiveness of the actions taken. Records of training shall be maintained.

The nature and the frequency of staff training depends on how well the EMS is being implemented, what training needs are proposed by the staff, and which nonconformities are most frequently being detected.

LGL staff is also actively encouraged to identify and reflect any training needs to their Department Manager.

7.3 Awareness

LGL ensures that all staffs are aware of the environmental policy, related environmental aspects together with environmental impacts associated with their work and the implications of not conforming with the environmental management system requirements, including not fulfilling the organization's compliance obligations; LGL also encourages staff contribution to the effectiveness of the environmental management system, including the benefits of enhanced environmental performance.

7.4 Communication

7.4.1 General

LGL has established, implemented and maintained the process needed for internal and external communications relevant to the environmental management system, including:

- (a) on what it will communicate;
- (b) when to communicate;
- (c) with whom to communicate;
- (d) how to communicate.

When establishing its communication process, EMR will:

- take into account its compliance obligations;
- ensure that environmental information communicated is consistent with information generated within the environmental management system, and is reliable.

EMR will respond to relevant communications on its environmental management system. And assist the GM to lead the SHEQ Committee Meeting.

Documented information will be retained as evidence of its communications, as appropriate.

EMR will review the adequacy, efficiency and effectiveness of the communication mechanisms with senior management regularly.

7.4.2 Internal communication

LGL will:

- (a) internally communicate information relevant to the environmental management system among the various levels and functions of the organization, including changes to the environmental management system, as appropriate, through staff briefings or corresponding training;
- (b) ensure its communication process enable persons doing work under LGL's control to contribute to continual improvement.

7.4.3 External communication

An external communications platform is established as following for communicating the environmental activities and relevant information to external interested parties, and for receiving, documenting and responding to suggestions, inquires or complaints received from external parties.

External communications platform:
HSE Manager -
Contact Phone Number: (852) 2882-3939/
Fax Number : (852) 2882-3331 /
Email addresses: info@lamgeo.com

7.5 Documented information

7.5.1 General

LGL has established a documentation system for the EMS. It includes:

- (a) the documented information as required by ISO 14001:2015
- (b) documented information determined internally as being necessary for the effectiveness of the environmental management system.

The EMS Manual provides a board description of EMS core elements and provides references to the EMS procedures.

The EMS procedures provide detailed descriptions for the core elements, and contain information about who should do what, how and when.

The guidelines or checklists are specific working document supporting implementation of the EMS. Other reference documents, which may be of external origin, are also identified and maintained.

7.5.2 Creating and updating

When creating and updating documented information, LGL will ensure that all the information of identification, description, format, media, review and approval for suitability and adequacy are appropriated.

7.5.3 Control of documented information

LGL has established and maintained a document system in computer server to ensure documents:

- (a) properly located;
- (b) available and suitable for use, where and when it is needed;
- (c) adequately protected;

Departmental representatives shall retain the hard copies of their corresponding documented information, and maintain/modify the documents where needed. Both the hard and soft copies shall be kept for not less than three years, or at the discretion of the departmental representatives.

8 Operation

8.1 Operational planning and control

LGL has established, implemented, controlled and maintained the processes needed to meet environmental management system requirements, and to implement the actions identified in 6.1 and 6.2, by:

- establishing Operation Procedure, Work Instructions or Guidelines for the process;

- implementing control of the process, in accordance with the Operation Procedure, Work Instructions or Guidelines.

Refer to Appendix 8 for Register – Environmental Procedures.

Environmental Officer will control all planned changes and review the consequences of unintended changes, taking action to mitigate any adverse effects, as necessary.

LGL ensures that all outsourced processes are controlled or influenced. The type and extent of control or influence to be applied to the process will be defined within the environmental management system.

Consistent with a life cycle perspective, LGL will:

- (a) establish controls, as appropriate, to ensure that its environmental requirement(s) is (are) addressed in the design and development process for the product or service, considering each life cycle stage;
- (b) determine environmental requirements for the procurement of products and services, as appropriate;
- (c) communicate relevant environmental requirements to external providers, including contractors;
- (d) consider the need to provide information about potential significant environmental impacts associated with the transportation or delivery, use, end-of-life treatment and final disposal of its products and services.

LGL has established, implemented and maintained operation procedures to control all activities associated with the identified environmental aspects and impacts, resulted in fulfilling the commitments made in the Environmental Policy, and achieving the environmental objectives and targets.

LGL shall communicate with suppliers, contractors and interested parties on its environmental policy and relevant EMS procedures and instructions.

8.2 Emergency preparedness and response

LGL has established, implemented and maintained a Emergency Preparedness & Response Procedure, which identifies the scope, role of responsibilities, flow of responses to the specific emergency incidents defined that can have an impact to the environment and safety.

Individual departments carry their own emergency response procedures associated with the activities and services that may have influence to the environment in case of accident or emergency situations.

The emergency preparedness and response instructions and plans will be reviewed after the periodical testing and occurrence of incidents or emergency situations.

The emergency preparedness and response instructions and plans will be reviewed after the periodical testing and occurrence of incidents or emergency situations.

9 Performance evaluation

9.1 Monitoring, measurement, analysis and evaluation

9.1.1 General

LGL has established, implemented and maintained procedures to monitor, measure, analyse and evaluate key characteristics of operations that can have a significant environmental impact, and to keep track on the performance, effectiveness and conformity with the objectives and targets, including the following concerned.

Measurable data is regularly collected from Departments for analysis. Knowledge gained from this information can be used to implement corrective and preventive action.

Measuring equipment should be calibrated or verified at specified intervals in order to maintain the accuracy, where records of calibration and maintenance activities and results are retained.

9.1.2 Evaluation of compliance

In order to sustain legal compliance and other requirements to which LGL subscribes, LGL has established, implemented and maintained procedures for periodically evaluating compliance, and retained records of the results of the periodic evaluations during management review meeting.

9.2 Internal audit

9.2.1 General

Internal audits will be conducted at planned intervals to provide information on whether the environmental management system:

(a) conforms to:

- (1) the organization's own requirements for its environmental management system;

- (2) the requirements of this International Standard;
- (b) is effectively implemented and maintained.

9.2.2 Internal audit programme

Internal audits are planned and conducted at regular intervals. A documented audit plan shall be established to define the responsibility, audit criteria, scope, frequency, and method. Corrective actions will be taken by responsible parties for all nonconformities found.

Audit Checklists shall be provided to the audit team members, for checking those activities defined in the audit plan. Special attention shall be paid to previous findings. Staff shall be questioned to ensure that Work Instructions are being followed and appropriate training has been effectively given.

The EMR and relevant Department representatives shall follow up each recorded finding requiring corrective action.

The EMR shall consolidate all EMS Non-Conformance Reports into an EMS Audit Report, which shall be circulated to the senior management for reference. The EMS Audit Report shall also be used as part of the required input to the Management Review. The effectiveness of corrective actions taken is verified. Records of internal audit and associated corrective actions are maintained.

9.3 Management review

Management review is conducted, at least once a year, by the senior management to review the performance of the environmental management system to ensure its continuing suitability, adequacy and effectiveness. Changes and improvement of the EMS, once identified, will be implemented as a result of the management review.

Review Input

The input to management review includes, but not limited to:

- (a) Follow-up action from previous management reviews,
- (b) Environmental policy, objectives and targets,
- (c) Changing circumstances, including developments in legal and other requirements related to its environmental aspects, and the following concerns:
 - (1) external and internal issues that are relevant to the environmental management system;

- (2) the needs and expectations of interested parties, including compliance obligations;
- (3) its significant environmental aspects;
- (4) risks and opportunities;
- (d) Status of where the environmental objectives have been achieved,
- (e) Status of preventive, nonconformities, and corrective action,
- (f) Information on monitoring and measurement results,
- (g) Evaluation of compliance,
- (h) Internal audit results,
- (i) Adequacy of resources available for the EMS,
- (j) Communications from external and internal interested parties, including complaints,
- (k) Environmental performance and conformity,
- (l) Predictable changes that will affect the Environmental Management System,
- (m) Recommendations for improvement.

Review Output

The output of the management review includes the conclusion and decision as to:

- (a) Whether there is improvement of the effectiveness of the Environmental Management System and its processes,
- (b) Whether there is improvement of the services related to customer requirements,
- (c) Whether there is any additional resources needed.
- (d) The continuing suitability, adequacy and effectiveness of the environmental management system;
- (e) Decisions related to continual improvement opportunities;
- (f) Decisions related to any need for changes to the environmental management system, including resources;

- (g) Actions, if needed, when environmental objectives have not been achieved;
- (h) Opportunities to improve integration of the environmental management system with other business processes, if needed;
- (i) Any implications for the strategic direction of the organization.

10 Improvement

10.1 General

The organization shall determine opportunities for improvement (see 9.1, 9.2 and 9.3) and implement necessary actions to achieve the intended outcomes of its environmental management system.

10.2 Nonconformity and corrective action

LGL has established, implemented and maintained a mechanism to identify, investigate, correct and prevent actual or potential instances of nonconformity against LGL EMS. Each Business Unit / Department implements the mechanism in its own activities and operations, and when any nonconformity is detected, the BU / Department Management is responsible for:

- (a) Handling and investigating the cause of the nonconformity;
- (b) Taking appropriate and effective corrective and preventive action to mitigate any adverse environmental impact(s); and
- (c) Minimizing the recurrence of the problem and the potential for future nonconformity.

10.3 Continual improvement

LGL will continually improve the suitability, adequacy and effectiveness of the environmental management system to enhance environmental performance.