Technical Guidance Document for Environmental Action Plan (EAP)

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Environmental Quality Sector	*Corporate Management Representative	Secretary General
Originated By	Reviewed By	Approved By

* Refer to SG Circular S.G/C-08/12 Concerning Appointment and Responsibilities of the Corporate Management Representative at the Environment Agency – Abu Dhabi.

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List of Abbreviations

AD EHS Center	Abu Dhabi Environment, Health, and Safety Center
CEMP	Construction Environmental Management Plan
CEHSP	Construction Environment, Health and Safety Plan
DMP	Discharge Management Plan
EAD	Environment Agency–Abu Dhabi
EAP	Environmental Action Plan
EHS	Environment, Health, and Safety
EHSMS	Environment, Health and Safety Management System
EIA	Environment Impact Assessment
EMP	Environmental Management Plan
EMS	Environmental Management System
EPA	Environmental Permit Application
MSDS	Material Safety Data Sheet
NOC	No Objection Certificate
ODS	Ozone-Depleting Substance
PCB	Polychlorinated Biphenyls
PER	Preliminary Environmental Review
SRA	Sector Regulatory Authority

Definitions of Terms

Audit—A systematic, independent, and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled.

Audit Criteria—A set of policies, procedures, or requirements (used as a reference).

Auditor—A person with the competence to conduct an audit.

Audit Team Leader—An auditor with qualifications, competence, and accreditation to lead an audit team that includes at least one other auditor.

Code of Practice—Written documents issued by an official body to assist in complying with regulations, sometimes associated with a trade or profession. A systematic collection of rules, standards, and other information relating to the practices and procedures followed in an area. In general, a Code of Practice is designed to provide practical guidance; should be followed, unless there is a better method that achieves the same result; may be used in support of laws or provisions; and may be used to support prosecution for noncompliance.

Competence—The ability to perform a particular job in compliance with performance standards. This ability will usually require the necessary blend of skills, training, and experience.

Competent—Having adequate and sufficient training or experience (or a combination of both) to be capable of performing a task safely and efficiently.

Competent Authority—Person or organisation that has the legally delegated or invested authority, capacity, or power to perform a designated function.

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Competent Person—Someone with specialist knowledge, training, experience, and ability to perform defined work.

Consequences—Adverse effects or harm that causes the quality of human health or the environment to be impaired.

Continual Improvement—The process of enhancing the Environment, Health, and Safety Management System (EHSMS) to achieve improvements in overall performance that are in line with the organisation's overall performance and policy.

Contributing Factors—Additional failures that allow the situation, established by the root cause, to go unchecked, leading either to an incident or to an incident with more severe consequences than otherwise would have occurred.

Control Measure—A measure taken to reduce exposure to a hazard or risk.

Control Plan—A plan consisting of all the steps necessary to protect workers from exposure to a substance or system. This plan includes the procedures required to monitor worker exposure and health to hazards, such as chemicals, materials, or substances, or other types of hazards (e.g., noise, vibration).

Cost Benefit Analysis—A quantitative evaluation of the costs that would have incurred by implementing an environmental regulation versus the overall benefits to society of the proposed action.

Environment—Surroundings in which a nominated entity operates, including air, water, land, natural resources, flora and fauna, and humans and their interrelation.

Environment, Health, and Safety Management System—An integrated series of elements for establishing policy, objectives, plans, and arrangements for implementation and continual improvement in environment, health, and safety (EHS) performance.

Environment, Health, and Safety Management System Instruments—Legal procedures and documents that state some contractual or legal relationship or grant some right, giving permission to perform specific activities. The intent of these instruments (e.g., licenses, permits, approvals, notices, manifests, work permits) is to control or regulate activities within Abu Dhabi Emirate.

Environment, Health, and Safety Policy—A public statement of the intentions and principles of action of the nominated entity regarding its EHS effects, giving rise to its strategic and detailed objectives.

Environmental aspect—An element of the organisation's activities, products, or services that can interact with the environment. A significant environmental aspect is one that has significantly impacted or can significantly impact the environment.

Environmental Impact—Any change to the environment, whether adverse or beneficial, wholly or partially resulting from the nominated entity's activities, products, or services.

Environmental Management Plan—Documented procedures to define the environmental controls that are to be incorporated into a project at different stages in its life cycle. An Environmental Management Plan is also referred to as a Construction Environmental Management Plan or an Operation Environmental Management Plan.

Guideline—A detailed plan or explanation to be used as a guide in setting standards or determining a course of action that allows some scope for interpretation, implementation, and use.

Hazard Identification—The process of recognising that a hazard exists and defining its characteristics.

Impact—Any change to the environment or workplace, whether adverse or beneficial, wholly or partially resulting from nominated entities activities, products, or services.

Incident—An event or chain of events that has caused or could have caused fatality, injury, illness, or damage (loss) to assets, the environment, entity reputation, or third parties.

Induction—The process by which new employees are introduced to a workplace and its policies and processes.

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Inspection—Physical on-site verification that work is performed and equipment is maintained in accordance with existing EHS standards and procedures.

Law—The legislation, regulations, and decrees as issued by the United Arab Emirates (UAE) or Abu Dhabi Government Authorities.

Legal Requirement—Refers to UAE or Abu Dhabi laws, regulations, decrees, and any guidelines or Codes of Practice adopted by an entity on its own or because of these laws, regulations, or decrees. Legal requirement also refers to any international standards or treaties to which UAE or Abu Dhabi Emirate is a signatory or under which they have agreed in principle to operate.

Mitigation—Measures taken to reduce the consequences of a potential hazardous event. The limitation of undesirable effects of a particular event.

Monitoring—Measurement of the properties of a material (e.g., a discharge) or (usually) the sampling of a material together with immediate or subsequent analysis or other form of measurement. The following are three types of monitoring:

- *Discharge monitoring.* Monitoring of a discharge usually performed to acquire information of environmental significance.
- *Process monitoring.* Monitoring of process streams or materials usually performed to ensure a safe and efficient operation of a process operation. Process monitoring may be continuous or intermittent (results of process monitoring may sometimes be useful in calculating or estimating information on discharges).
- *Monitoring program.* A planned set of discharge monitoring activities.

Near Miss—An event or chain of events that could have resulted in fatality, injury, illness, or damage (loss) to assets, the environment, entity reputation, or third parties. A situation that was avoided or reduced by the circumstances at the time or under slightly different circumstances would have been more serious.

Nonconformance—Nonfulfillment of a requirement. Specifically, nonconformance is any deviation from work standards, practices, procedures, regulations, or management system performance that could directly or indirectly lead to an injury or an illness, property damage, damage to the workplace environment, or a combination of these.

Objective—The overall environmental or health and safety goal that an organisation sets itself to achieve. Objectives should be quantifiable wherever practicable.

Performance—Measurable results of the organisation's or facility's control of its environmental aspects and health and safety risks, based on its policy, objectives, and targets.

Policy—A plan or course of action intended to influence and determine decisions, actions, and other matters or a statement of an organisation's strategy (or intent) for achieving EHS performance. A policy should include the responsibility, organisation, and arrangements for pursuing and implementing the strategy.

Pollutant—Generally, any substance introduced into the environment that adversely affects the usefulness of a resource or the health of humans, animals, or ecosystems.

Pollution—Generally, the presence of a substance in the environment that, because of its chemical composition or quantity, prevents the functioning of natural processes and produces undesirable environmental and health effects.

Regulation (EHS)—A principle, rule, or law designed to control or govern conduct.

Relevant Authorities—Any relevant government or other regulatory agency that has jurisdiction over EHS activities, such as licensing, permitting, investigating, and reporting.

Responsible Person—A person designated by an employer who, through the appropriate training and experience in health and safety, is competent to implement, oversee, and manage the employer's health and safety program.

Root Cause—The initiating event that begins a chain of events, which leads to an incident.

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Standard—An acknowledged measure of comparison for quantitative or qualitative value; a criterion by the terms of which something can be judged.

System—A management tool for meeting an established objective that consists of the following four basic steps: plan, implement, measure/evaluate, and adjust.

Top Management—The person(s) at the highest level of organisational management (e.g., Chief Executive Officer, Managing Director, Secretary General) who has the day-to-day responsibilities of managing a corporation.

Training—Encompasses the steps necessary to ensure that employees and contractors have the job competencies (e.g., knowledge, skills, values) necessary to fulfil their EHS responsibilities.

Worker—Any employee, contractor, or subcontractor of the employer or another person. Workers are particularly those people who may be exposed to hazards in the course of their work, both under normal conditions and in foreseeable emergencies.

Purpose of This Guidance Document

This guidance document outlines the requirements for developing an Environmental Action Plan (EAP) in Abu Dhabi Emirate for review and evaluation by the Environment Agency–Abu Dhabi (EAD), which is the Competent Authority in the environmental field.

Environmental Action Plan (EAP)

Section I. Background Information

This document outlines the requirements for developing an Environmental Action Plan (EAP) in Abu Dhabi Emirate for review and evaluation by Environment Agency–Abu Dhabi (EAD), which is the Competent Authority in the environmental field. The preparation of an EAP helps to ensure that the operation of various establishments does not directly or indirectly cause pollution of the land, water, and air environments in accordance with the requirements outlined in Federal Law No. 24 of 1999 for the Protection and Development of the Environment and the Abu Dhabi Emirate Environment, Health and Safety Management System (EHSMS) Regulatory Framework (Decree 42 of 2009).

The Abu Dhabi Environment, Health, and Safety Center (AD EHS Center; i.e., the Competent Authority for the EHSMS Regulatory Framework) and/or the Sector Regulatory Authority (SRA; i.e., responsible for implementing EHSMS in each Emirate sector) reserves the right to request additional information from any entity that is nominated under the EHSMS Regulatory Framework. The AD EHS Center and/or the SRA will approve and monitor the information requested.

The Abu Dhabi Emirate EHSMS is a performance-based system that takes into consideration aspects related to the protection of the environment, as well as protection of the human health and safety of workers and the community at large. The SRAs are responsible for implementing EHSMS in each sector within the Emirate. The AD EHS Center is the Competent Authority for the EHS Management System, and EAD is the Competent Authority for environmental regulation at Emirate level.

As per Decree No. 42 of 2009 concerning implementation of the EHSMS, entities nominated under the EHSMS by SRAs are required to comply with the EHSMS Regulatory Framework. Any entity not yet nominated by these SRAs is considered to be in a transitional period. During the transitional period, project proponents must comply with the requirements set out in this guidance document for preparation of Environmental Management Plans. Future revisions to this guidance document will endeavor to provide greater clarifications on the requirements for environmental reporting under EAD and the AD EHS Center.

Definition of EAP

The EAP is a site-specific plan developed to ensure that appropriate corrective and preventive action measures are taken to resolve problems identified during internal and/or external inspections and audits. A written EAP, with a description of the corrective actions, is developed to assist in site or project management implementation of the corrective actions. In addition, a review of the EAP allows EAD the opportunity to determine if the remedy or corrective actions appear to be appropriate to the problem or issue and sufficient to resolve the current issue and prevent reoccurrence. The extent of detail for the EAP should be determined based on the significance, impact, number, and complexity of the problems and corrective actions necessary to resolve the findings.

EAD may require that an EAP be prepared by a facility or project when an inspection or incident identifies an issue that has impacted or has the potential to impact the environment. The scope of the EAP can include any environment management aspect that would be in line with the EHSMS Regulatory Framework, for which the AD EHS Center is the Competent Authority. The EAP would be typically developed to address problems in the areas of air and water pollution control, noise abatement, solid and hazardous waste generation, hazardous materials management, and resource use and conservation. The EAP would typically outline corrective actions that include a combination of engineered and administrative controls and potentially remedial or clean-up activities.

Objective of the EAP Guidance

EAP guidance is provided to assist proponents, managers, and contractors in the development of a plan document that summarizes the planning, implementation, and closure of corrective action mechanisms for previously identified problem findings. The findings may be noncompliance with environmental regulations, identified as a result of incidents or internal and/or external inspections and audits, or they may be issues that identify the potential for impact to the environment for which corrective action is needed.

Before implementing a corrective action process, EAD requires that a comprehensive plan be submitted for review and approval. This document should outline the basic principles and concepts that managers and contractors should consider in planning and implementing corrective action programs based on their specific needs and the preparation of an appropriate EAP

document. The EAP guidance may be considered and applied based on a graded approach that considers the significance, criticality, sensitivity, risk, and/or impact of each problem finding to the mission, safety, and security of the facility, project, public, and the environment.

Applicability and Approach

An EAP will be required as directed by EAD for the successful resolution of problem findings from an inspection or audit. The facility or project should prepare the EAP according to accepted best practices in corrective action planning and implementation as is described in the following sections:

- The Corrective Action Process and the EAP
- Preparation and Submission of the EAP
- EAP Follow-Up and Closure.

The Corrective Action Process and the EAP

An EAP is a document developed for submission to EAD that summarizes the facility or project's corrective action planning and implementation process and outlines its commitment to the resolution of identified problem findings.

The development of the EAP is initiated by a discovery or an existing issue or by the identification of the potential for an issue to materialize. The process includes both the corrective measures applied to address an immediate need, as well as the identification and correction of the root cause of the issue to prevent occurrence or reoccurrence. **Figure 1** provides an overview of the corrective action planning and implementation process.

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Corrective & Preventive Action

Responsive branch (left):
- Identify non conformity (responsive)
- Fix immediate problem (correction)
- Determine root cause of non conformity
- Determine appropriate corrective action focused on root cause to avoid re-occurrence of non conformance
- Implement corrective action
- Evaluate effectiveness of action taken
- Close out
- CONTINUAL IMPROVEMENT

Proactive branch (right):
- Identify potential non conformity or suggestion for improvement (proactive)
- Determine root cause of potential non conformity or cost/benefit analysis of suggestion for improvement
- Determine appropriate preventive action (focused on root cause) to avoid occurrence of non conformity or implement suggestion for improvement
- Implement preventive action
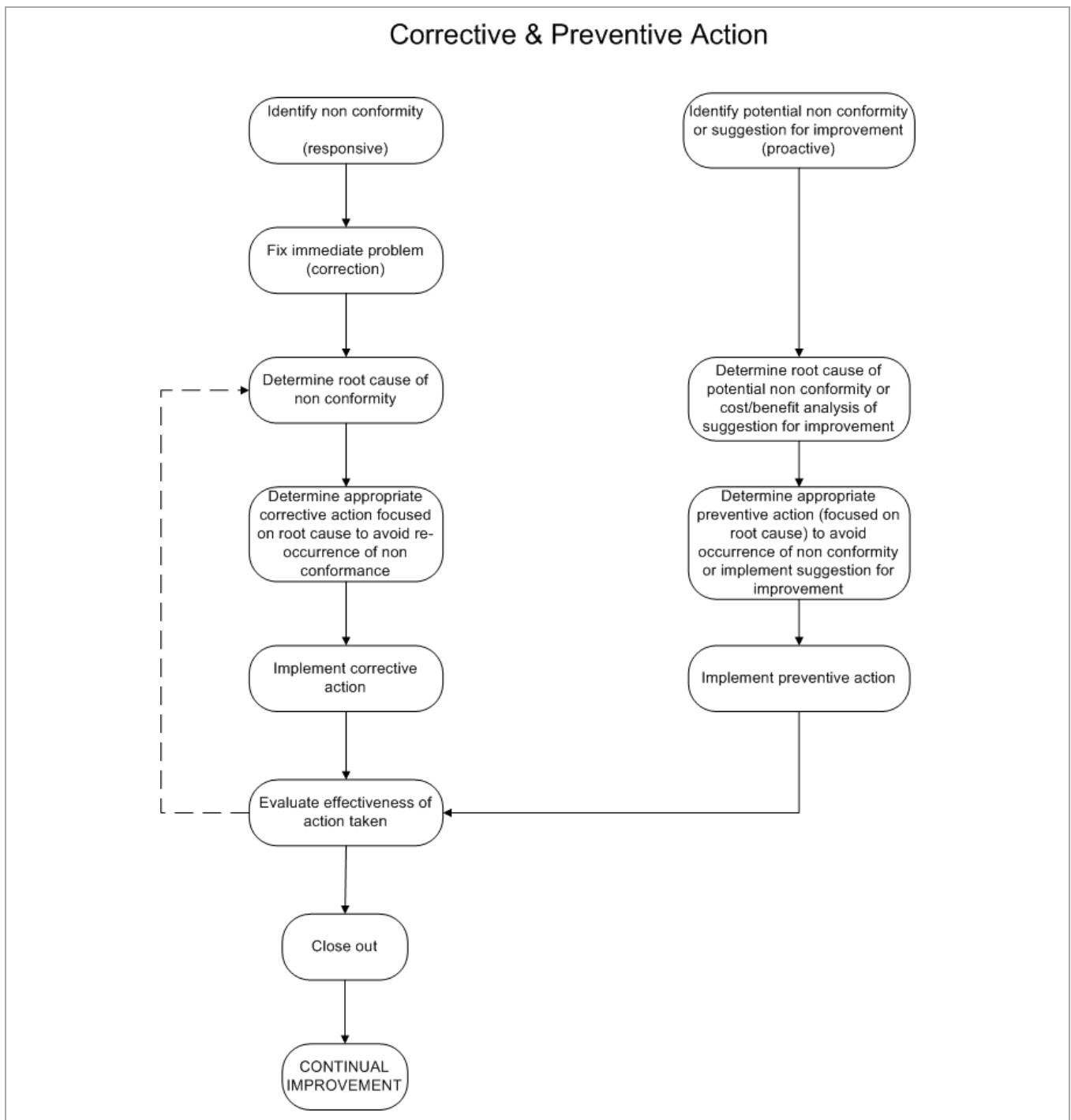- Evaluate effectiveness of action taken

Figure 1. Flow chart showing an overview of the corrective action planning and implementation process.

EAD is responsible for reviewing the EAP and providing comments, guidance, and approval for implementation of the corrective actions. EAD oversight of the implementation of the EAP-defined actions continues until the satisfactory resolution of the issues is documented. This would likely involve subsequent reporting by the facility/project on closure of the problem findings and/or re-inspection.

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Preparation and Submission of the EAP

The EAP should be written by an EAD–approved consultant retained by the site/organization responsible for the facility or project that was assessed or where the incident occurred. The document should be approved and signed by a representative of top management with the authority to provide the resources (e.g., funding, personnel, time) needed to successfully implement the corrective actions within the time specified in the plan.

In the instance where significant, complex problem findings indicate a need for sampling, monitoring, technical evaluation of emission control technology, and/or remedial action, the EAP should be prepared by or with the assistance of an EAD–approved EHS consultant. The site organization or project proponent should consult EAD to determine if the use of an approved EHS consultant is required for a particular situation.

Because the purpose of the EAP is to address deficiencies or problems that have been identified, the timely development and submission of the EAP is an important aspect for resolving the issues. When EAD determines the need for an EAP to be developed by an establishment, EAD will notify the establishment. The EAP should be submitted to EAD by the establishment within 10 working days from the date of notification from EAD of the requirement to develop a plan.

The submission should be addressed in the following order: EAD, unit name, address.

EAD will acknowledge receipt of the plan in writing and will conduct a review of the EAP. EAD's comments will be provided in writing to the site/project and/or EHS consultant. EAD's responses or comments may range from formal approval of the EAP through rejection of the plan in total with a request for resubmission. However, typically, EAD's comments will include requests for clarification or additional information, and/or schedule adjustments.

Again, in support of a timely resolution of the identified issues, EAD requires that the site/project management or consultant respond within 10 days of receiving EAD's comments with any requested information or, at minimum, a written response explaining the reason that more time is required for the submission and an anticipated submission date. All requests by EAD for more information or other correspondence regarding the status, approval, or rejection of the EAP will be provided to the site/project in writing with requested response dates.

Review of an EAP, Follow-Up, and Closure

The EAP should provide a documented process by which the site or project management will assure that all corrective actions have been appropriately completed or implemented. The outline includes who is responsible for what and when and provides the basis for development, both by the site or the project and EAD, of a follow-up mechanism to document the status of the EAP and/or individual corrective action implementation. Based on the schedule provided in the EAP, EAD will require that periodic follow-up reporting be submitted providing status updates. These reports are, at a minimum, produced monthly for short-term corrective actions and quarterly for long-term corrective actions. However, the frequency and type of reporting mechanism will depend on the immediacy and complexity of the issue and will be agreed upon and communicated to the site or project management during the EAP approval process.

To support a request for closure of the individual corrective actions or of the entire EAP, documentation should be provided to EAD for each corrective action (or the EAP in total) that the site or project management determines has been appropriately implemented. The documentation required may be as simple as a letter or more complex depending on the corrective action. EAD will review and evaluate the documentation and provide written confirmation of its agreement that the corrective action or EAP has been closed.

Section II. Required EAP Contents and Recommended Format

EAD does not dictate the format of the EAP because the level of detail necessary to fully describe the identified problem, its root cause or causes, the evaluation process, and the corrective action(s) chosen will depend on the complexity of the finding. The EAP should, at a minimum, provide a discussion of each of the elements described in this section of the guidance document. With regard to each reported problem finding identified, the EAP should specifically provide the following:

- A clear understanding of the nature of the finding

- The ownership within the organization for the finding
- A detailed description of each corrective action developed in response to a finding
- The ownership within the organization for implementation of each corrective action
- A schedule for implementation and completion of each corrective action
- The process for tracking the status of the corrective action completion
- The process for reporting the status of EAP completion both internally and to EAD
- A process for evaluating the effectiveness of the corrective action to ensure successful resolution and prevent reoccurrence of each problem finding.

The EAP's descriptions of the problem findings and corrective actions should be detailed enough to allow appropriate evaluation by EAD. Furthermore, some discussion should be included as to the corrective and preventive action evaluation process that was conducted to determine the corrective actions chosen. Again, this discussion should be detailed enough for EAD to evaluate whether the issue has been appropriately assessed. It is recommended that the EAP include an Executive Summary that contains a description of the event/assessment report that resulted in identification of the problem findings, a synopsis of the findings, the results of the finding evaluations, a synopsis of corrective actions, and an implementation and review plan.

EAD requires the inclusion of a Summary Report that provides specific information in a tabular format. Annex 1 of this guidance document provides the Summary Report format to be included with all EAP submissions. **Table 1** outlines the suggested sections of the EAP. The following subsections provide more information on content suggestions.

Table 1. Recommended Format for the EAP

Table of Contents		
Section 1	Facility Description and Overview	1.1 Contact Information 1.2 Site Activities 1.3 Facility/Project Inspection/Audit Program
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Section 4	Corrective Action Development	4.1 Selection of Corrective Actions 4.2 Schedule
Section 5	Closure and Effectiveness Review	
Section 6	Recordkeeping Requirements and Documentation	
Section 7	EAP Annexes and Supporting Documentation	7.1 Pollution Control or Prevention Technology Evaluation or Implementation 7.2 Environmental Monitoring 7.3 Remediation of Contamination

1. Facility Description and Overview

1.1 Contact Information

Contact information should include, at a minimum, the proponent's name, address, telephone, and fax number; the name and designation of the contact person responsible for the submittal of the EAP; and the responsible organizations and managers to approve and manage implementation of the EAP.

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1.2   Site Activities

Site activities should provide an overview of the current activities at the site, with a focus on those activities that have the potential to create environmental impacts. At a minimum, the overview should include the name of each operation, any hazard presented, the names of hazardous materials used, the environmental aspect, and a description of any actual or potential impact. Where appropriate, process flowcharts, site maps, and photographs should be included in the EAP to provide sufficient detail on the site activities so that EAD can assess the nature of a problem finding and any proposed corrective action.

1.3   Facility/Project Inspection/Audit Program

The process for the identification and reporting of problem findings that is implemented at the facility/site should be documented and include the following information:

- The purpose, objectives, and scope of the overall problem identification process
- The frequency of internal and external inspections or audits and internal/external parties involved in performing the inspections
- The entity (e.g., external consultant, EAD) that performed the inspection for which the EAP is being developed with detailed information on the scope of the inspection performed
- The methods for collecting, preserving, analyzing, and documenting information concerning the identified finding(s)
- The procedures for communicating the results of the identified findings (i.e., written and oral) to those organizations and individuals affected. Results of these assessments and investigations should be thoroughly documented to provide clear, factually accurate information on the purpose; scope; results, including positive attributes, opportunities for improvement, and problem findings; and conclusions.

2.   Summary of Problem Findings

The EAP should provide descriptions of the source of the findings for which the EAP is being developed (e.g., inspection, audit, suggestion, incident) and each reported problem. The description should include additional background information on the problem to allow evaluation of the nature and extent of the deficiency. The information included should also describe how long the deficiency is known to have existed and if there is an ongoing release or exposure or a threat of a release or exposure. To the extent that information is available in an inspection or incident report, a copy of the report should be included; at minimum, all pertinent details should be included so that EAD can determine if the corrective actions are appropriate to resolve the issue.

For example, it would not be sufficient to state, "Hazardous waste is improperly stored at the facility." An appropriate description would include the container size, content, location, and quantity of improperly stored hazardous waste, as well as a description of the improper storage practice, the reason for the practice, and the duration of the activity. **Table 2** provides additional examples of appropriate descriptions of findings.

Table 2. Examples of Descriptions of Findings

Finding	Description
Improper training documentation	Training provided for workers using and handling hazardous materials or hazardous waste during safety meetings was not documented.
Containers not appropriately labeled	The labels of several drums of acetone and other solvents in the paint booth area are in a language that is not consistent with the native language of the workers.

3.   Root Cause Analysis

After the problem finding has been identified and reported, it should be evaluated to determine the contributing factors to the issue to develop the corrective actions that will effectively resolve the finding and prevent recurrence.

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For each identified problem finding, a discussion of the contributing factors that resulted in the violation should be provided. The inclusion of root cause(s) will enable the facility not only to resolve the issue immediately, but also to prevent recurrence. Sufficient detail also should be provided to explain why the root cause that was chosen is appropriate.

Examples of root causes for problem findings can include, but are not limited to, the following:

- EHS management is not aware of applicable regulations
- EHS management misinterpreted applicable regulations
- Inadequate oversight of contractor operations
- EHS responsibilities are not clearly defined
- Internal plans for EHS compliance (e.g., Construction Environmental Management Plan or Operation Environmental Management Plan) are not developed or are inadequate
- Training is not performed or is inadequate
- Document control and reporting is inadequate
- Environmental monitoring is not performed or is inadequate
- Equipment malfunction
- Emergency situation.

Each problem should be evaluated as follows:

- Begin as soon as possible after identifying the problem to obtain and preserve evidence and data that can be used to describe the problem and determining the contributing factors. Any delays could result in changes, deterioration, or loss of information that may have been a contributing or direct causal factor involved in the problem.
- Ensure that evaluating individuals or teams possess technical expertise in the area being evaluated and that they are qualified to conduct analytical techniques for determining contributing factors involved in the problem and for conducting a root cause analysis.
- Review all information to determine the facts of what actually occurred. These facts should be continually validated and analyzed, individually and together, for relevance and accuracy in determining what and the way in which it happened. Any missing information or inconsistencies identified during analysis of the finding should be reviewed and followed up.
- Ensure that information and physical evidence collected concerning the identified problem finding (e.g., recorded data on equipment and instruments, inspection and test results, the actual defective item or photographs) of it is verified, documented, and preserved.
- Solicit input from both the assessor who identified the problem finding and the organization or the individual responsible for the activity where the problem finding was identified.
- Determine the significance and the potential or actual impact of the problem finding to the following:
    - EHS and security of the site and public
    - Compliance with laws and regulatory requirements
    - Resource costs (e.g., funding, personnel, time)
    - Consequences if the finding is not resolved or if it recurs
    - Extent the finding has on other activities, facilities, or equipment not directly involved in the finding.
- Determine if the same or similar problems have previously occurred or been identified. If so, review the assessment or event that identified the problem finding, the results of the finding evaluation, and the effectiveness of the corrective actions implemented to resolve and prevent recurrence of that finding. This information should be included in the current evaluation of the problem finding.
- Consider developing a prioritization process based on the significance, complexity, and impact of each problem finding to determine the sequential order for development and implementation of the corrective actions. Other factors (e.g., resource costs) should also be considered. The prioritization process may include numerical prioritization of each individual finding or the establishment of a number of priority categories.
- For identified problem findings with lower significance, investing in a rigorous evaluation to identify the contributing factors may be deemed unnecessary. The focus should then be on correcting the immediate or apparent cause without

addressing the root cause. If similar problems subsequently occur, then the evaluation of trends may assist in identifying the commonalities of the problems and determining their causes.

- Identify, validate, and categorize the contributing factors, which include the events and conditions (e.g., who, what, when, where, how, why) concerning the problem finding. These factors may include causes that directly resulted in the problem finding, contributing causes that collectively increased the likelihood of the finding but did not individually cause it, and the root cause that, if corrected, would prevent recurrence of the finding and similar findings.

- Develop conclusions based on the facts identified and an analysis of the contributing factors to determine the details of the specific problem and how and why it became a problem. The conclusions may also address specific concerns to the site/organization in relation to the identified problem.

- For significant problem findings that are more complex or require segmented or multilevel evaluations, conduct a quality review and critique of the finding evaluation process upon completion of the evaluation to validate the facts and contributing factors (including root causes) that support the conclusions. Any identified inconsistencies should be re-examined and resolved before the development of corrective actions.

- Analyze identified problem findings and their associated causes to determine the existence of trends to identify the same or similar occurrences, generic problems, vulnerabilities, and cross-functional weaknesses at the lowest level before significant problems result.

4.   Corrective Action Development

Based on the results of the root cause analysis, the responsible site/organization should develop, prioritize, approve, track, and complete all corrective actions in a timely manner to effectively resolve and prevent recurrence of each problem finding.

The level of significance and impact of each identified problem finding defined during the evaluation of the findings should be the major factors in determining the amount and priority of resources (e.g., funding, personnel, time) used to implement the corrective actions and the type and degree of tracking and reporting of the status of corrective actions to successful completion.

Considerations in developing corrective actions to resolve each problem finding effectively include the following:

- Ensure that the contributing factors and conclusions from the evaluation of the problem finding are logical and comprehensive.

- Ensure that the corrective actions address all aspects of each causal factor identified for the problem finding. These may entail one or several corrective actions to resolve the finding. The corrective actions may include both remedial actions (to remedy the finding) and preventive actions (to prevent the same and similar findings from recurring).

- If immediate actions are considered sufficient to correct a minor problem or an opportunity for improvement, it may be determined to close the problem finding without further evaluation. The reported problem finding should remain in the corrective action data collection process to allow for the identification of trends. This minor problem may be a symptom or an indicator of a more significant problem. For example, evidence of minor oil spills could indicate lack of equipment maintenance, which could lead to a serious accident or injury if not properly assessed during the corrective action development process.

- Prioritize the corrective actions based on the significance and impact of each problem finding. Determine the consequences of implementing or not implementing the corrective actions.

- Determine the resources (e.g., funding, personnel, time) needed to successfully complete each corrective action. This determination will also have a major impact on determining the planned completion date of the corrective action.

- Determine if the corrective actions are reasonable and achievable within the ability of the site or organization to develop and implement. If the site or organization does not possess the capability to implement a corrective action (e.g., need of additional resources beyond the capability of the site or organization, development of a directive from a higher or support organization), ensure that this situation, along with an evaluation of the consequences of not implementing the corrective action, is brought to the attention of senior site or project management.

- Determine the feasibility and impact of the corrective actions for a specific finding to the other facilities, operations, equipment, and personnel on the site to ensure that the findings will not conflict with or degrade mission accomplishment, requirements, practices, performance, and safety of personnel and activities on the site.

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- Clearly specify the corrective action deliverable, which will provide objective evidence that the corrective action is completed (e.g., revised procedure, record of completed training). The corrective action should be achievable, measurable, and closable to determine when the action has been completed.

- Designate a single, responsible point of contact (e.g., EHS Manager, Maintenance Supervisor) responsible for managing and coordinating the preparation, completion, and effective implementation of each corrective action.

- Plan what activities or mechanisms can be used to independently verify completion and conduct the effectiveness review of the completed corrective actions for each problem finding.

- Develop a systematic process for tracking and reporting the status of each corrective action to successful completion. Develop procedures for reporting corrective action progress, including report format, whom to report to, and reporting frequency.

4.1 Selection of Corrective Actions

For each identified problem finding, provide a detailed description of the corrective actions that will be taken to resolve the finding and the name and organization of individual(s) responsible for the preparation and implementation of the corrective action. Each corrective action should be a clear and concise description of the actions to be performed and include sufficient detail to allow all personnel directly and indirectly involved in the corrective action to understand the specific activities to be conducted.

Corrective actions should be chosen based on their ability to fully resolve the finding and prevent recurrence. Their selection should directly address the root causes identified, as specified in the Section 3 of this guidance document. Corrective actions may include, but many not be limited to, implementation of best management practices, use of additional technologies or emission controls, training, and development or revision of internal procedures. For any new technologies chosen, the EAP should provide technical details on the design, efficiency, conditions under which the technology is required, and operating procedures.

When complex or major problems are identified and there is the risk of immediate impact to the environment, the selection of corrective actions should reflect the severity of the problem. In such instances, the decision process should be provided for the methods or technologies chosen, including a cost/benefit analysis. This will enable EAD to evaluate if all potential options for corrective actions were considered in making the decision and that the most applicable option was chosen.

For those problem findings that may require remediation of past contamination, the corrective action should detail sampling, monitoring, and/or remediation activities to be performed at the site. Although remediation of site contamination would be necessary to clean up the existing contamination, the remediation activity alone would not fully resolve the finding because it does not address the root cause of the release. Therefore, the EAP should include details of the clean-up activities, as well as remedies for improper activities that caused the contamination. All sampling, analysis, and monitoring proposed in an EAP should be according to EAD–approved standards and methodologies. In addition, the EAP should include detailed sampling, analysis, monitoring, or remediation plans that cite EAD or internationally recognized standards or methodology being implemented.

Please not that an Abu Dhabi Waste Management Centre-approved environmental service provided must be used for waste collection, treatment, transportation and disposal.

4.2 Schedule

The EAP should include a schedule with projected dates for initiating, completing, and implementing each of the corrective actions. The planned completion date should be reasonable based on priority of the corrective action, availability of resources needed, amount of time needed to close each activity (e.g., publish the procedure, implement the procedure, train workers on the procedure), and evidence needed to verify closure.

The schedule should include the planned EAP completion date when all corrective actions are to be completed. If corrective actions will require significant time to complete and implement, interim corrective actions and/or compensatory measures should be developed that will be implemented pending completion of the corrective action to reduce the possibility of an event or

condition occurrence. A description of these interim or compensatory actions, including when they will be implemented, should be addressed in the EAP.

5. Closure and Effectiveness Review

Each of the corrective actions addressed in the EAP should be tracked for two purposes:

- Verification of completion and implementation of the corrective actions or closure
- Determination of the effectiveness of the corrective actions in successfully resolving and preventing recurrence of each finding.

It is important to determine whether the corrective actions collectively resolve the contributing factors, including the root causes involved in that specific problem finding, and if they will prevent recurrence.

The EAP should detail the process for verifying closure of the corrective actions, including a description of the ways in which the EAP and associated corrective actions will be tracked and reported internally and to EAD until completion.

If applicable, where corrective actions have not effectively resolved the finding or prevented recurrence, the reason(s) that the corrective actions were ineffective should be determined and reported to EAD in follow-up or subsequent status reports. This would include a review of the problem finding evaluation, development of the corrective actions, and implementation of those corrective actions. Revised or additional corrective actions should then be identified to effectively resolve the finding and prevent recurrence.

For example, reasons for ineffective corrective actions may include the following:

- The site/organization did not fully understand or adequately state the identified problem finding or it did not accept ownership.
- The contributing factors (e.g., root cause) were not all identified or were incorrectly identified.
- The contributing factors were misunderstood (e.g., no one on the finding evaluation team had the technical expertise to comprehend some of the contributing factors identified).
- The contributing factors were all correctly identified, but inadequate or insufficient corrective actions were developed in response to the finding evaluation.
- The corrective actions were not adequately closed or not implemented as intended (e.g., the revised procedure was published but not adequately promulgated or understood by the workers).
- The corrective actions were not implemented in a timely manner.

The overall corrective action program should be continually monitored and assessed for effectiveness in reporting, evaluating, resolving, and preventing recurrence of identified problem findings. Continual site/organization feedback on the status and success of program implementation should be emphasized.

Senior site/organization management should ensure that all managers are held accountable for completing and determining the effectiveness of the corrective actions in response to identified findings and for ensuring that the resources necessary to address the findings are available.

6. Recordkeeping Requirements and Documentation

The EAP should include requirements to maintain copies of the EAP and related documents (e.g., audit reports, sampling and monitoring data, reports submitted to EAD or other agencies or local authorities). These documents should be easily accessible for inspection.

Environmental Action Plan (EAP)

7.   EAP Annexes and Supporting Documentation

Additional supporting documentation may be necessary for an EAP that includes any technology or technical methodologies to resolve an issue. This documentation would include evaluations of pollution control or prevention technologies, investigative techniques that include environmental sampling or monitoring, and methods for the remediation of contamination. Because the technologies, methods, and standards that should be met vary depending on the environmental, aspect being addressed, the details of the content of this supporting documentation cannot be provided within this guidance. However, the following sections provide a brief overview of the types of information that should be included in support of the EAP where these types of activities are involved.

7.1   Pollution Control or Prevention Technology Evaluation or Implementation

After the root cause analysis is complete, and if the corrective action chosen includes installation or enhancement of existing pollution control equipment, the site/project should provide details about the design of the control system, its applicability to the pollutants and emission stream of concern, its intended efficiency, the estimated capital investment required, and any effects on the site or project processes. The documentation should also include an overview of different options considered, if applicable, and the reason for selection of the chosen option. If control equipment is envisioned (e.g., cyclones, bag filters, oil-water separator), documentation should be included in the form of manufacturer's specifications and as-built drawings with respect to the control's placement in the process producing the emission. Similarly, if structural changes are envisioned, design drawings should be provided, along with any calculations supporting the capability of the structure to address the issue (e.g., design specifications as to size and type of coating used for berming a hazardous materials storage area). Whether equipment, structural or procedural pollution control, or prevention technology is applied, EAD requires that the site/project provide a citation in the EAP of supporting, accepted international conventions or best practices.

7.2   Environmental Monitoring

The site/facility (or an EAD–approved EHS consultant on behalf of the site/facility) should submit a monitoring or sampling plan to EAD for approval. In addition, all environmental sampling and monitoring should be conducted, analyzed, and reported by an EAD–approved EHS consultant. The sampling, analysis, and reporting, including appropriate quality assurance and quality control techniques, should meet minimum standards and requirements as published in current guidance by EAD, and Abu Dhabi EHSMS Regulatory Framework – Standards and Guideline Values should be referenced. Where not addressed by local guidance, these actions should be consistent with accepted international standards and practices.

The EAP supporting documentation should provide the results of the sampling and monitoring and any evaluation of the results that led to the determination of the chosen corrective action(s). Where the EAP indicates that ongoing monitoring will be conducted, it should state the frequency, duration, parameters, and levels of readings or information that would initiate further corrective action.

7.3   Remediation of Contamination

Existing contamination to soil, surface water, or groundwater that requires remediation activities should be evaluated to determine the methodology for remediation and disposal that provides the most effective resolution of the issue while being environmentally desirable and protective of human health, both on site and off site. Typically, remediation action involves some level of investigative sampling to determine the extent and level of contamination, followed by a feasibility study of available remedial, implementation, and disposal options. This process can be lengthy and complex, depending on the type and level of contamination. Therefore, the EAP supporting documentation should provide EAD with enough detail as to the intended remediation action so that the determination can be made that all aspects have been addressed. Because the scope and complexity of these types of activities can vary widely, specific guidance will not be included here. The site/project is expected to confer with EAD and an approved EHS consultant on the appropriate level of effort and proceed accordingly.

References

Abu Dhabi EHSMS Regulatory Framework, including Standards and Guideline Values for Air, Water, Land and Noise and associated Technical Guidelines..

Australian Government, Department of the Environment, Water, Heritage and the Arts, *Environmental Management System Tool Manual*. Available at http://www.environment.gov.au/settlements/government/ems/tool.html.

The International Finance Corporation, *Procedure for Environmental and Social Review of Projects:* Guidance Note C: Outline of an Environmental Action Plan (EAP), December 1998.

U.S. Department of Energy *Corrective Action Program Guide,* DOE G 414.1-5, March 2006.

Annex 1:
Environmental Action Plan Summary Report

Facility Description and Overview			
Facility Name		**Location**	
EAP Prepared by		**EPD License**	
Site Activities			
EAD Inspection Record			
Inspection Report #		**Inspection Date**	
Inspected by			
Scope of Inspection			

Identify, Analyse, and Resolve Finding			
Summary of Noncompliance	**Root Cause**	**Corrective Action**	**Resolution Schedule**
1.			
2.			
3.			
4.			
5.			
6.			
Responsible Manager		**Report Date**	

Note:

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Document Change History

Doc. No.	Rev. No.	Rev. Date	Revision Description	Page No.	Approved by
EAD-EQ-PCE-TG-08	00	01 April 2010	First Issue		SG
EAD-EQ-PCE-TG-08	01	14 April 2014	Reformat document and add abbreviations	All	SG
Remarks:					

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