Advisory Circular

NCAA-AC-ARD035

NIGERIAN CIVIL AVIATION AUTHORITY (NCAA)
ISSUE NO 1 **12th October, 2021**

GUIDANCE ON THE DEVELOPMENT OF ENVIRONMENTAL MANAGEMENT PLAN (EMP)

1.0 GENERAL

Nigerian Civil Aviation Authority Advisory Circulars from Aerodrome Standards Department contain information about standards, practices and procedures that the Authority has found to be an Acceptable Means of Compliance (AMC) with the associated Regulations.
An AMC is not intended to be the only means of compliance with a regulation, and consideration will be given to other methods of compliance that may be presented to the Authority.

2.0 PURPOSE

This Advisory Circular provides methods, acceptable to the Authority, for showing compliance with the Environmental Management Plan requirements of Nig. CARs Part 12 as well as explanatory and interpretative material to assist in showing compliance.

3.0 APPLICATION

The material contained in this Advisory Circular mainly applies to aviation operations within and near the aerodrome that are likely to have impacts on the environment.

4.0 REFERENCE

The Advisory Circular relates specifically to Part 12.6.26 of the Nig.CARs.

5.0 STATUS OF THIS AC

This is the first AC to be issued on this subject

APPROVAL PAGE

GUIDANCE ON THE DEVELOPMENT OF ENVIRONMENTAL MANAGEMENT PLAN

ADVISORY-CIRCULAR-NCAA-AC-ARD0035

This document is approved by:

Captain Musa S. Nuhu
Director General

Date 15 DEC 2024

AMENDMENT PROCEDURES

The Director, Aerodrome and Airspace Standards is responsible for the development, issuance and control of amendments to this document. The Document Controller is responsible for distribution of amended copies of the AC to Departmental staff and technical library and in making it available on NCAA website: ncaa.gov.ng for public use.

Each page will show the document number, issue/amendment number, issue date and page number at the base of the page.

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Any observation made or contribution to the content of this document by the user should be directed to the following address for consideration and adoption:

Nigerian Civil Aviation Authority
Nnamdi Azikiwe International Airport.
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RECORD OF AMENDMENTS

Issue No/Amendment No	Page(s) Affected	Date Entered	Entered By	Signature

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DEFINITIONS

When the following terms are used in this AC, they have the following meanings:

(i) **Aerodrome**: A defined area on land or water (including any building, any installation, and equipment) used or intended to be used, either wholly or in part, for the arrival, departure and surface movement of aircraft.

(ii) **Environment:** The surroundings within which humans exist and that are made up of-

- The land, water and atmosphere of the earth
- Micro-organisms, plant and animal life
- Any part or combination of items above and the inter-relationships among and between them; and the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well- being.

(iii) **Environmental Aspect**: An element of an organisation's activities, products or services that can interact with the environment. Aspects = Causes.

(iv) **Environmental condition**: State or characteristic of the environment as determined at a certain point in time.

(v) **Environmental Impact**: Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services. Impacts = Effects.

(vi) **Environmental Incident:** An event that may cause harm or potential harm to an environmental receptor e.g. spills, erosion and sediment-laden water entering drains/waterways; non-compliance with environmental management plans.

(vii) **Environmental Management Plan**: An environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented; and that the positive benefits of the projects are enhanced".

(viii) **Environmental Management Measure**: A control or mitigation measure required to prevent or reduce an environmental impact.

(ix) **Environmental Management Programme:** Tool used to ensure that realistically avoidable environmental impacts of an organisation's products, services or activities are prevented and the environmental objectives and targets are achieved.

(x) **Environmental Objective:** Is an objective set by the organization consistent with its environmental policy.

(xi) **Environmental targets**: Are specific and measurable performance requirements that will lead to the achievement of an environmental objective.

(xii) **Executive management (management)**: Person or group of people who directs and controls an organisation at a highest level.

(xiii) **Objective:** Result to be achieved. An objective can be strategic, tactical, or operational.

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ACRONYMS

AC	Advisory Circular
EMP	Environmental Management Plan Environmental Management Programme
EMS	Environmental Management System
ICAO	International Civil Aviation Organization
ISO	International Organization for Standardization
KPI	Key Performance Indicator
PDCA	Plan, Do, Check, Act
Nig.CARs	Nigeria Civil Aviation Regulations
NCAA	Nigerian Civil Aviation Authority

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CHAPTER 1

1.0 INTRODUCTION

a) An Environmental Management System (EMS) is a set of management principles intended to identify, evaluate, monitor, and reduce the negative environmental impacts of an organization's activities. It benefits an organization by offering a systematic approach for assessing and controlling ongoing activities, increasing environmental awareness, and complying with relevant regulations.

b) An EMS provides many different and useful tools for detecting, understanding and managing those elements involved in its activities, products and services which have the potential to impact the environment.

c) The International Organization for Standardization (ISO) defines EMS as the part of the management system that is used to manage environmental aspects, fulfil compliance obligations, and address both risks and opportunities.

d) Implementation by aerodrome operator is intended to be in line with the methodologies described in this AC and is consistent with those specified by ICAO.

1.1 OBJECTIVE OF AN ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

The main objective of an EMS is to effectively reduce the impacts of an organization's activities on the environment through a systematic management practice. For instance, in order to mitigate its environmental impacts, an organization has to plan in advance, create a corporate environmental policy and implement different sets of actions. The EMS aims to assist with this entire process.

1.1.1 Plan, Do, Check, Act (PDCA)

The PDCA principle is a continuous approach applied to both an EMS as a whole and each of its elements. This approach uses a systematic process to identify goals, complete them, determine progress, and make changes to ensure continual improvement.

- Plan: The advanced establishment of environmental objectives, along with the set of processes and practices necessary to achieve the defined objectives, and in accordance with the organization's environmental policy.
- Do: The implementation of the set of processes and practices according to the defined plan.
- Check: Constant monitoring and assessing processes and practices compared to the defined environmental policy. Results of this evaluation must be reported.
- Act: Take actions to continually improve.

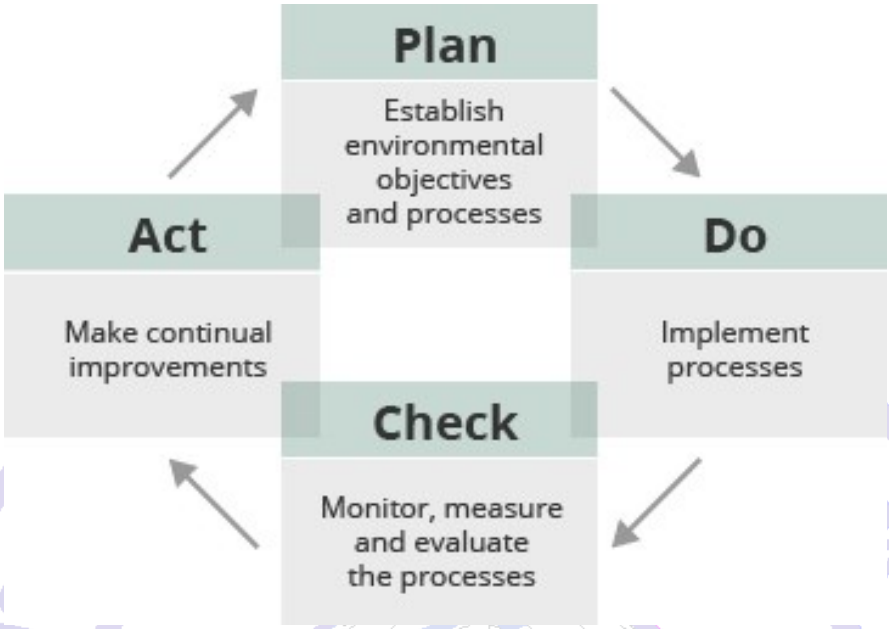


Figure 1: PDCA CYCLE

1.2 COMPONENTS OF THE ENVIRONMENTAL MANAGEMENT SYSTEM

The EMS components include, but are not limited to, the following:

- Environmental Policy
- Environmental Management Plan
- Monitoring and Reporting
- Training and Communication
- Auditing

1.2.1 Environmental Policy

The environmental policy must be a written document signed by the Airport Director or Manager, or the Head of the airport's governing Board. The Policy must at a minimum include commitments to continual improvement, compliance with legal and other requirements, and pollution prevention. The Policy (not the entire EMS) must be made available to the public and given to personnel working for or on behalf of the aerodrome operator.

1.2.2 Environmental Management Plan

The EMP is designed to assist in the delivery of the environmental management principles described in the Airport Environment Policy. It should be structured to address potential environmental impacts associated with airport Operations (Airside Operations, Terminal Operations; Engineering Services and ancillary services).

The aerodrome operator should amend the Environmental management plan as necessary with the changing environmental, organisational, and legal requirements. It should also be amended with new or changed activities and operations within the aerodrome.

1.2.3 Environmental Management Programme (EMP)

Within the environmental management plan, environmental management programmes are developed to address areas of environmental concern which include but not limited to the following:

- Waste Management.
- Noise Management.
- Air quality management
- Local and/or community issues
- Water and soil management
- Bird and wildlife management
- Ecology conservation
- Emergency Response (spill response)
- Materials and chemicals management
- Consumption of Energy and natural resources (Water and electricity management)
- Environmental problems arising from the expansion of airports or construction of associated infrastructure

The EMP is a tool for the aerodrome operator's management to document tasks, responsibilities, and other operational details to achieve the environmental objectives and targets.

Flowchart in appendix A can be used to develop EMP(s)

CHAPTER 2

2.0 IDENTIFICATION OF ENVIRONMENTAL ASPECTS AND IMPACTS

Adverse aspects are the environmental consequences of an aerodrome operator's activities and services. The impacts are the effects of aspects on the environment.

Table 1: Examples aspects and their impacts

Environmental Aspect	Environmental Impact
Aircraft Operations (Take-off and Landing)	Air pollution due to release of aircraft emissions.
Terminal and ground operations	Airport vehicles and ground service equipment (tugs for aircraft and baggage, fuel and catering lorries, buses and vans that transport passengers etc.) generate NO_x, CO_2, particulates through the burning of petrol and diesel fuel.
Generation of solid waste	Degradation of land (i.e. Landfills)

2.1 Evaluating significance of environmental aspects

After identifying or predicting the aerodrome operator's aspects and impacts, quantify the significance of each impact on the environment. There are numerous methods used to determine what is significant and what is not. Each aerodrome operator is free to choose a different method from the one outlined in this guideline provided that its effectiveness can be justified.

Appendix B shows an example of a typical register of Aspects and Impacts.

Table 2: Severity Scale

Severity	Value	Environment and community
Catastrophic	A	• Catastrophic irreversible environmental harm • Community outrage potential large scale mass action
Major	B	• Major environmental harm caused – long term recovery • High profile community concerns raised – requiring significant rectification
Moderate	C	• Measurable environmental harm caused – medium term recovery • Community complaints voiced privately
Minor	D	Medium term, immaterial effect on environment
Negligible	E	Short term transient impact on environment or community- negligible action required

Table 3: Probability Rating

Rating	Value	Qualitative Impact Probability Scale
Frequent	5	Likely to occur many times (has occurred frequently)
Reasonably probable	4	Likely to occur sometimes (has occurred infrequently)
Remote	3	Unlikely to occur (has occurred rarely)
Extremely remote	2	Very unlikely to occur (not known to have occurred)

Extremely improbable	1	Almost inconceivable that the event will occur

Impact significance level= Severity scale matched with Probability rating
1E (GREEN) = 'Insignificant' severity matched with 'Extremely improbable' probability

Table 4: Impact significance rating matrix

IMPACT PROBABILITY	SEVERITY MATRIX					
	Frequent	5A	5B	5C	5D	5E
	Reasonably probable	4A	4B	4C	4D	4E
	Remote	3A	3B	3C	3D	3E
	Extremely remote	2A	2B	2C	2D	2E
	Extremely improbable	1A	1B	1C	1D	1E
		Catastrophic	Major	Moderate	Minor	Insignificant
	IMPACT SEVERITY					

The Impact Significance levels are colour coded and ranked from low to High/Extreme

Table 5: Impact significance Level

5A, 5B, 5C, 4A, 4B, 3A	High/Extreme	Managed by executive management and responsible for intervention with regular reporting on the progress, results as well as performance to the Board of Directors.
5D, 5E, 4C, 4D, 4E, 3B, 3C, 2A, 2B, 2C	Medium/Moderate	• Managed by management intervention and policies • Managed by executive management and responsible for intervention.
3D, 3E, 2D, 1A, 1B, 1C, 1D, 1E	Negligible/low	Managed by routine policies and operational procedures.

The table below can be used to assist management in evaluating the effectiveness of controls to mitigate or reduce the environmental impact.

Table 6: Qualitative Assessment of Control Effectiveness (Environment Management Measure)

Effectiveness Factor	Qualification Criteria
Controlled 90%	The risk is effectively controlled and managed.
Adequate 80%	Majority of risk exposure is effectively controlled and managed.
Partially Adequate 50%	Some of the risk exposure appears to be controlled, but there are major deficiencies.
Inadequate 20%	Control measures are ineffective.

CHAPTER 3

3.0 DEVELOPMENT OF AN EMP REGISTER

I. After determining the ratings of each impact, the significant impacts need to be addressed in the EMP(s). Specific management objectives and measurable targets are set for each significant impact (when setting objectives and targets, consideration should be given to legal requirements that may be linked to the impact).

II. Measures/actions to meet the objectives and targets are established.

III. Environmental key performance indicators (KPIs) are set for the objectives and targets.

IV. Assign a responsible person and resources needed to achieve the objectives.

V. Agree on the time frame for each programme.

VI. Implement the action plan or measures taken.

The high/extreme significant impacts are given the first priority when developing EMP(s) (Appendix A).

Note: Any impact that has a legal implication is rated as high/extreme.

Table 7: Examples of Environmental Objectives and Targets.

Environmental Objective	Environmental Target
Publish water quality management procedures by XX date.	The associated targets with the environmental objective would be to: • Coordinate draft by xx date • Incorporate review comments and issue the final procedures by [the objective] date.
Reduce solid wastes going to landfill by 25% by the end of XXXX	The associated targets with the environmental objective would be to: • Monitor sources, types, and amounts of solid wastes going to landfill from every area of the organization for six months. • Identify the best opportunities for solid waste reductions by end of the first quarter of xxxx

3.1 Maintenance of the EMP(s) register

EMPs need to be reviewed after a specific set period. This period can be determined by the aerodrome operator. Reporting guidelines should be established to give an account of the environmental performance of the KPIs. Audits can be done to identify non-conformances or corrective actions of the EMPs as well as perfect the EMPs.

CHAPTER 4

4.0 IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT PLAN (EMP)

4.1 Training and Environmental Awareness

Training is essential for ensuring that the EMP provisions are implemented efficiently and effectively. Training needs should be identified based on the available and existing capacity of the aerodrome, its operations and aerodrome personnel (including Contractors and Sub-contractors) to undertake the required EMP management actions and monitoring activities.

It is vital that all personnel are adequately trained to perform their designated tasks to an acceptable standard. In addition to training, general environmental awareness must be fostered among the aerodrome operator's workforce to encourage the implementation of environmentally sound practices. This ensures that environmental accidents are minimized and environmental compliance maximized.

Environmental training courses must be given by suitably qualified training providers and in a language and medium understood by workers/employees.

4.2 Documentation and Record Keeping

A document handling system must be established to ensure accurate updating of EMP documents, and availability of all documents required for the effective functioning of the EMP. Responsibilities must be assigned to relevant personnel for ensuring that the EMP documentation system is maintained and that document control is ensured through access by, and distribution to, identified personnel. Where an adequate document management system already exists, then the environmental documentation should be integrated into this system rather than creating a new system.

Note:
Records showing compliance with extant environmental protection laws, regulations, guidelines and directives of relevant government agencies shall be included in the environmental management plan and made available to the Authority whenever requested.

Supplementary EMP documentation should include:

- Emergency preparedness and response procedures;
- Incident reports;
- Training records;
- Monitoring reports;
- Auditing reports; and
- Complaints received.

A designated personnel e.g. Environmental Control Officer is usually responsible for ensuring that the registration and updating of all relevant EMP documentation is carried out.

It is usually the responsibility of the Airport Manager or its equivalent to ensure that all personnel are performing according to the requirements of this procedure and to initiate the revision of controlled documents when required by changes in process, operating procedures, legislation, specifications, audit findings or any other circumstances, by informing the Environmental Control Officer of the changes. A controlled document is official only if the issue/revision has been approved.

The EMP documents must be numbered and only distributed according to a distribution list compiled by the Environmental Control Officer. These documents should be marked "controlled copy". Holders of controlled documents should sign the distribution list when they receive a new or revised document and must destroy the old version. Copies of all EMP documentation should be kept in the Aerodrome. The documents should be kept as hardcopies as well as in electronic format.

Distribution lists and document change control sheets must be kept for all documents. All records must be kept.

4.3 Reporting procedures

Reporting procedures for conveying information from the monitoring activities must be developed in order to ensure that management is able to take rapid corrective action when required.

4.4 Auditing

An audit analyses the results obtained from monitoring, assesses whether objectives and targets have been met and whether there are variances from the stipulated EMP and legal requirements. In addition, the audit assesses whether EMP implementation has been undertaken according to planned arrangements and that the EMP itself is being appropriately updated.

The audit should confirm that identified corrective actions have been undertaken and then assess the effectiveness of such actions. The timing of audits should be included in the implementation schedule in the EMP.

The key steps in a successful audit are:

- Establish audit procedures.
- Determine the frequency of audits.
- Ensure that the auditors are competent, in that they must be able to undertake the audit objectively and competently.
- Maintain records of audits

A procedure should be developed by the environmental management team for conducting EMP audits and should incorporate processes for scheduling and reporting, as well as the timing and frequency of the audits. This procedure should also address responsibilities and required resources. The Environmental Control Officer is usually responsible for the maintenance of the environmental audit information that is required prior, during and after an audit.

The Airport Manager is usually responsible for scheduling and ensuring execution of the audit, as well as for the verification of the implementation of corrective action.

Note:
The plan shall include records/evidence(s) of regular environmental audit by independent qualified experts once every 2 years to ensure the appropriateness and compliance with the environmental management plan**.**

4.5 Management review and revision of the Environmental Management Plan

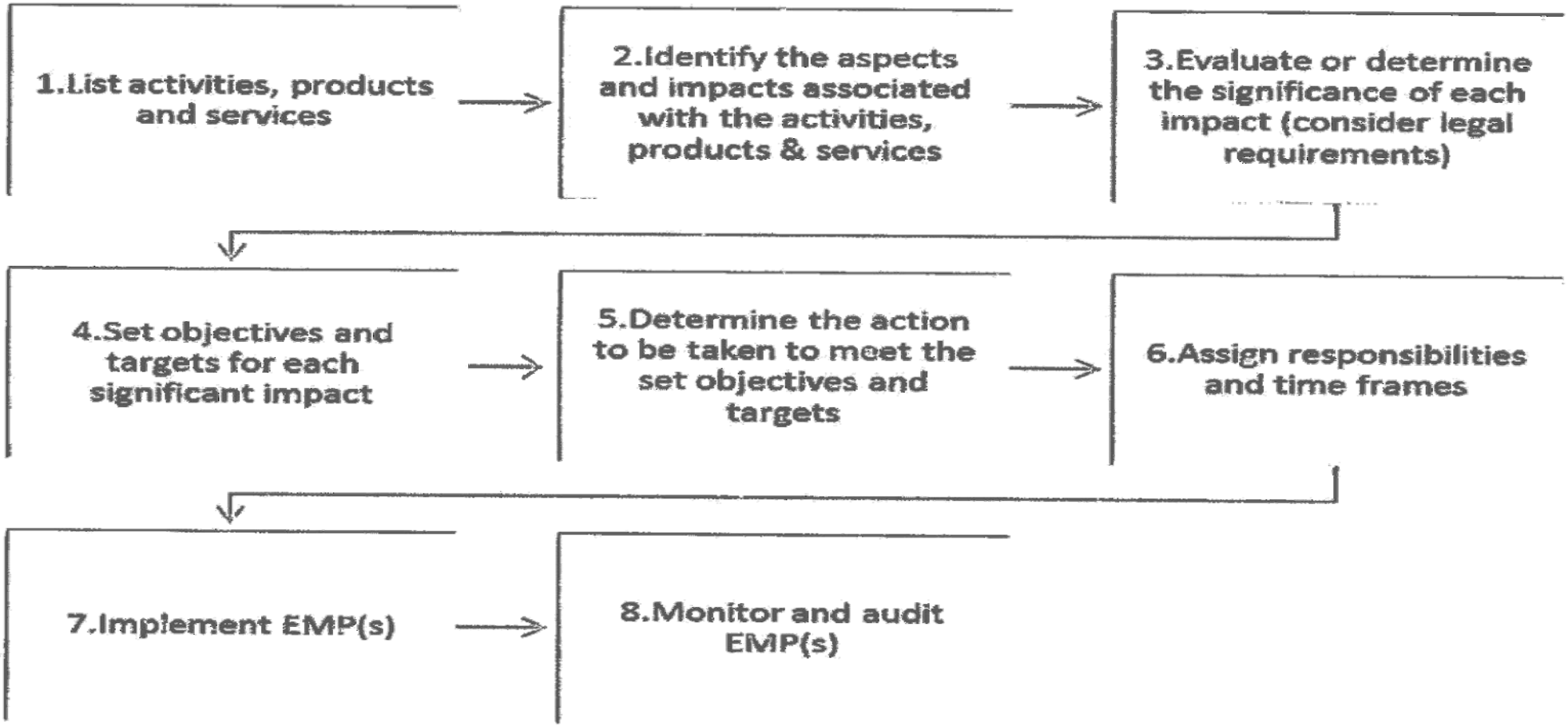
The EMP should be dynamic, flexible and subject to periodic review. The extent to which EMPs should be reviewed will vary depending on the scale and complexity of operations within the aerodrome.

Conditions under which the EMP would require revision include:

- Changes in legislation;
- Occurrence of unanticipated impacts or impacts of greater intensity, extent and significance than predicted;
- Inadequate mitigation measures (i.e. where environmental performance does not meet the required level despite the implementation of the mitigation measure); and
- Secondary impacts occur as a result of the mitigation measures.

It is the responsibility of the aerodrome operator's Executive/Senior Management to conduct a review of the EMP and its implementation to ensure that the EMP remains effective and appropriate.

APPENDIX A: PROCESS TO DEVELOP EMP(s)



APPENDIX B: SAMPLE ASPECT AND IMPACT REGISTER

Aerodrome Operator	Document Aspects and Impact Register		Ref No: Total Pages:	Revision No Review Date
Prepared By	(Name, Title)	Approved by	(Name, Title)	

#	Activity/Product/ Service	Environmental aspect	Environmental impact	Impact significance before considering controls			Key management controls	Impact significance after considering controls			Control adequacy	Applicable legislation	Applicable Organisation Procedure
				Probability	Severity	Significance (H,M,L)		Probability	Severity	Significance (H,M,L)			
1													
2													
3													
4													
5													
6													

APPENDIX C: SAMPLE ENVIRONMENTAL MANAGEMENT PROGRAMME

Aerodrome Operator	Document and Environmental Management Programme(s)		Ref No: Total Pages:	Revision No Review Date
Prepared By	(Name, Title)	Approved by	(Name, Title)	

Activity	Environmental Impact	Significance Level	Objective(s)	Target(s) *How much, by when*	Measure(s) taken/ Programme	KPI(s)	Responsible person	Resource allocated (financial, human etc.)	Start date	Completion date	Actual results	Verification of Action by Functional Manager (Name)	Signature