

TECHNICAL GUIDANCE MATERIAL

on

Establishing and Maintaining EMPRs

Subject: GUIDANCE MATERIAL FOR THE ESTABLISHMENT AND MAINTANANCE OF ENVIRONMENTAL MANAGEMENT PROGRAMMES (EMPRs)

Date: 01 AUGUST 2023

1. APPLICABILITY:

This Technical Guidance Material (TGM) is applicable to all aviation operations that present or are likely to present negative impacts on the environment. It also applies to normal conditions and reasonably foreseeable situations in the aviation industry.

2. PURPOSE

2.1. The purpose of this document is to:

2.1.1. To ensure that the aviation industry stakeholders understand and takes into account all logical environmental impacts that result from their aviation related activities, products and services.

2.2. To provide stakeholders with guidelines for:

2.2.1. The identification of environmental aspects and impacts;

2.2.2. The significance rating for identified environmental aspects;

2.2.3. Setting objectives and targets; and

2.2.4. Drafting an emp to manage the identified significant aspects.

3. REFERENCE:

- i. South African Civil Aviation Regulations Parts 34 and 139
- ii. ICAO Annex 14, Volume I
- iii. ICAO Doc 9137 AN/898 Part 3 Wildlife Control and Reduction
- iv. ICAO Doc 9332, Manual on the ICAO Bird Strike Information System (IBIS)
- v. ICAO Annex 16, Volume I and II

4. TERMS AND ABBREVIATIONS:

TERM	DEFINITION
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Environment

The surroundings within which humans exist and that are made up of-

- i. the land, water and atmosphere of the earth
- ii. micro-organisms, plant and animal life
- iii. any part or combination of (i) and (ii) 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.

Environmental aspect	Element of an organisation's activities or products or services that interacts or can interact with the environment.
Environmental impact	Change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects.
Top management	Person or group of people who directs and controls an organisation at the highest level.
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.
Objective	Result to be achieved

ABBREVIATION	DESCRIPTION
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AECS	Aviation Environmental Compliance Specialist
E: ASI	Executive: Aviation Safety Infrastructure
ECC	Environmental Consultative Committees
EMPRs	Environmental Management Programmes
IAP	Interested and Affected Party
KPIs	Key Performance Indicators
AEPS	Aviation Environmental Protection Specialist
TGM	Technical Guidance Material
ToR	Terms of Reference

5. INTRODUCTION

- 5.1. Aviation growth has resulted in the surfacing of aviation-related environmental issues. Areas of environmental concern include but are not limited to:
- 5.1.1. Local and/or community issues (e.g. Aircraft noise exposure)
 - 5.1.2. Soil and water pollution
 - 5.1.3. Consumption of energy and natural resources (water, electricity management)
 - 5.1.4. Materials and chemicals management
 - 5.1.5. Air quality monitoring in the vicinity of airports
 - 5.1.6. Waste generation and management
 - 5.1.7. Bird/wildlife strike management
 - 5.1.8. Ecology conservation
 - 5.1.9. Environmental problems arising from the construction and expansion of airports or associated infrastructure

The flowchart in Annex A can be used to develop EMPR(s).

6. IDENTIFICATION OF ENVIRONMENTAL ASPECTS AND IMPACTS

Adverse aspects are the environmentally unfavourable byproducts or consequences of an organisation's activities, products and services. The impacts are the effects of aspects on the environment.

Environmental aspect	Environmental impact
Flying aircraft	Air pollution due to the release of aircraft emissions Depletion of natural resources
Generation of solid waste	Degradation of land (i.e. landfills) Natural resource depletion
Energy consumption (e.g. use of office lights, computer, printers)	Natural resource depletion Air emissions resulting from electricity generation

Table 1: Examples of aspects and their impacts

6.1. Evaluating significance of environmental aspects

After identifying or predicting the organisation'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 organisation is free to choose a different method from the one outlined in this guideline provided that its effectiveness can be justified. Annex B shows an example of a typical register of Aspects and Impacts.

Significance can be determined with regard to:

- i. The **severity** of the impact on the environment and community
- ii. The **probability** of the impact occurring

Score	Rating	Environment and Community
5	Catastrophic	Catastrophic irreversible environmental harm
		Community outrage potential large scale mass action
4	Major	Major environmental harm caused – long term recovery
		High profile community concerns raised – requiring significant rectification
3	Medium/ moderate	Measurable environmental harm caused - medium term recovery
		Community complaints voiced privately
2	Minor	Medium term, immaterial effect on environment.
1	Insignificant	Short term transient impact on environment or community – negligible action required

Table 2: Severity Scale

Score	Rating	Qualitative Impact Probability Scale
5	Almost Certain	Is currently occurring within the organisation or expected to occur in future.
4	Likely	Will probably occur in most circumstances within the organisation
3	Possible	Might occur at some time in the future in the organisation
2	Unlikely	Is not expected to occur or have a material implication on the organisation
1	Rare	May occur in exceptional circumstances with immaterial implication on the organisation

Table 3: Probability rating

Impact significance level=Severity scale matched with Probability rating

1(green) = 'insignificant' severity matched with 'rare' probability

IMPACT PROBABILITY	Severity Matrix					
	Almost Certain	5	10	15	20	25
	Likely	4	8	12	16	20
	Possible	3	6	9	12	15
	Unlikely	2	4	6	8	10
	Rare	1	2	3	4	5
		Insignificant	Minor	Moderate	Major	Catastrophic
	IMPACT SEVERITY					

Table 4: Impact Significance rating matrix

The Impact significance levels are colour coded and ranked from Low to High/Extreme.

1 to 4	Negligible/ Very Low	Managed by routine policies and operational procedures
5 to 9	Low	Managed by management intervention and policies
10 to 16	Medium / Moderate	Managed by executive management and responsible for intervention
17 to 25	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

Table 5: Impact Significance level

Error! Reference source not found. below can be used to assist management in quantifying the effectiveness of controls to mitigate or reduce the environmental impact.

Effectiveness Factor	Qualification Criteria
Over-controlled - 90%	The risk is effectively controlled and managed, but in some regards over-controlled.
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.



Table 6: Table 7: Qualitative Assessment of Control Effectiveness

7. DEVELOPMENT OF AN EMP(s) REGISTER

- 7.1. 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).
- 7.1.1. Measures/actions to meet the objectives and targets are established.
 - 7.1.2. Environmental Key Performance Indicators (KPIs) are set for the objectives and targets.
 - 7.1.3. Assign a responsible person and resources needed to achieve the objectives.
 - 7.1.4. Agree on the time frame for each programme.
 - 7.1.5. Implement the action plan or measures to be taken.
 - 7.1.6. The high/ extreme significant impacts are given the first priority when developing EMP(s) (Annex A). It must be noted that any impact that has a legal implication is rated as high/ extreme.

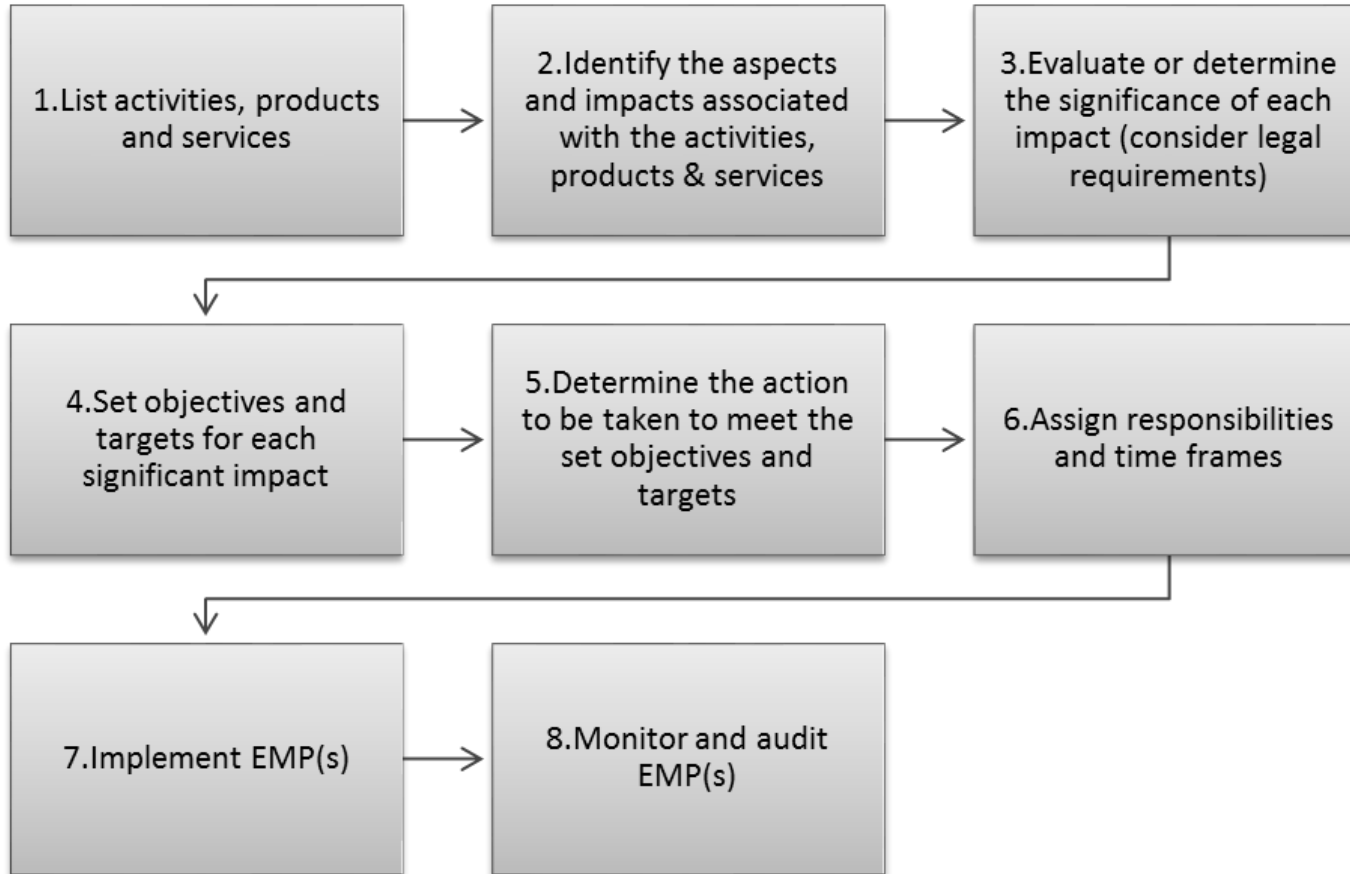
8. MAINTENANCE OF THE EMP(S) REGISTER

EMPRs need to be reviewed after a specific set period. This period can be determined by the organisation. 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 EMPRs as well as perfect the EMPRs.

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ANNEX A: PROCESS TO DEVELOP AN EMP(S)



ANNEX B: SAMPLE ASPECTS AND IMPACTS REGISTER

Company	Document Aspects and Impacts Register	Ref No.:	Revision No.:
		Total pages:	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
				Probabilit	Severity	Significan ce (H,M,L)		Probabilit	Severity	Significan ce (H,M,L)			
1													
2													
3													
4													
5													
6													



Section / Department / Division **Aviation Environmental Compliance**

ANNEX C: SAMPLE EMP

Annex C: Sample EMP

Company	Document Environmental Management Programme(s)	Ref No.:	Revision No.:
		Total pages:	Review date:
Prepared by:	(Name, Title)	Approved by:	(Name, Title)

Activity	Environmental Impact	Significance Level	Objective(s)	Target(s) <i>How much, by when</i>	Measure(s) taken/ Programme	KPI(s)	Responsible person	Resource allocated	Start date	Completion	Actual results	Verification of Action by	Signature