AIRPORTS COUNCIL INTERNATIONAL

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AIRPORT ENVIRONMENTAL MANAGEMENT

04-08 October 2015 | **Abu Dhabi, UAE**

Module 5: Environmental Management Systems

Module Objectives

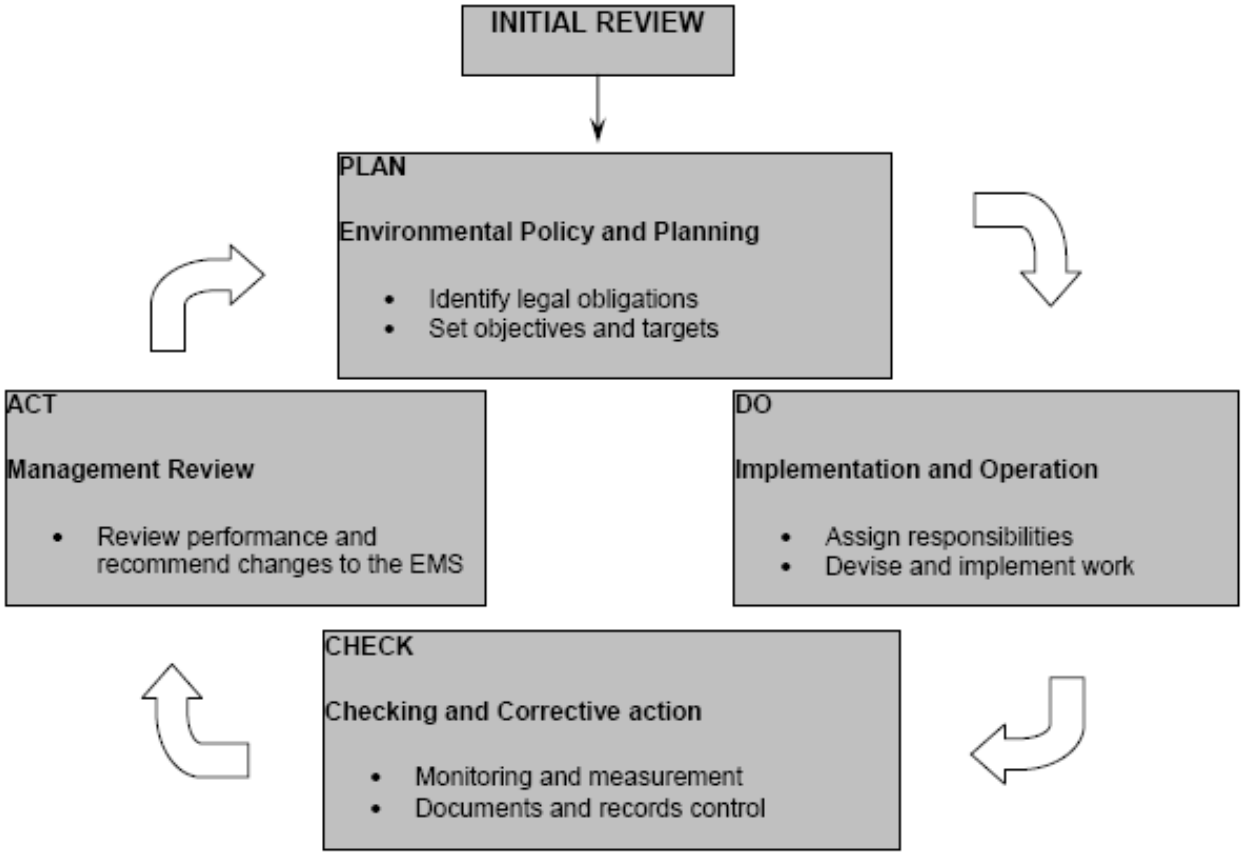
- To illustrate cyclical nature of continuous improvement
- To describe the core stages of environmental management systems (EMS)
- To review core phases of EMS implementation

EMS: A definition

- International Standards Organisation (ISO) defines an environmental management system (EMS) as a management tool that enables an organisation to:
  - *identify and control the environmental impact of its activities, products or services*
  - *improve its environmental performance continually*
  - *implement a systematic approach to setting environmental objectives and targets, to achieving these, and to demonstrating that they have been achieved'.*

- For a description of the nature of the ISO approach to EMS see http://www.iso.org/iso/iso14000

Plan Do Check Act



What is involved?

- Organisational commitment
- Initial environmental review
- Environmental aspects register
- Environmental policy
- Goals, objectives and targets (including KPIs)
- Establish the environmental management programme
- Organisation and training
- E.M. documentation and control procedures
- Environmental management records (monitor)
- Regular audits to establish system (audit)
- E.M. reviews (another cycle of improvement)

Organisational commitment

- Top level management commitment is crucial to the success of the EMS
- Without it, it is likely to fail
- Middle management responsibility to make it happen

- Everyone's responsibility!

Initial environmental review

- The review should focus on 3 areas:

1. Identification of significant environmental impacts and their priority
2. Identification of legal and regulatory requirements.
3. Examination of existing environmental management practices and procedures.

Environmental aspects and impacts

- A key review task is to link organisational activities with potential environmental consequences – EMS terminology refers to environmental aspects and impacts
- ***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.
- ***Environment:*** surroundings in which an organisation operates including air, water, land, natural resources, flora, fauna, humans and their interrelations.

Exercise: Identifying aspects and impacts

- For a given area of airport operation identify aspects that could give rise to environmental impacts (Exercise in Module 3 will help)

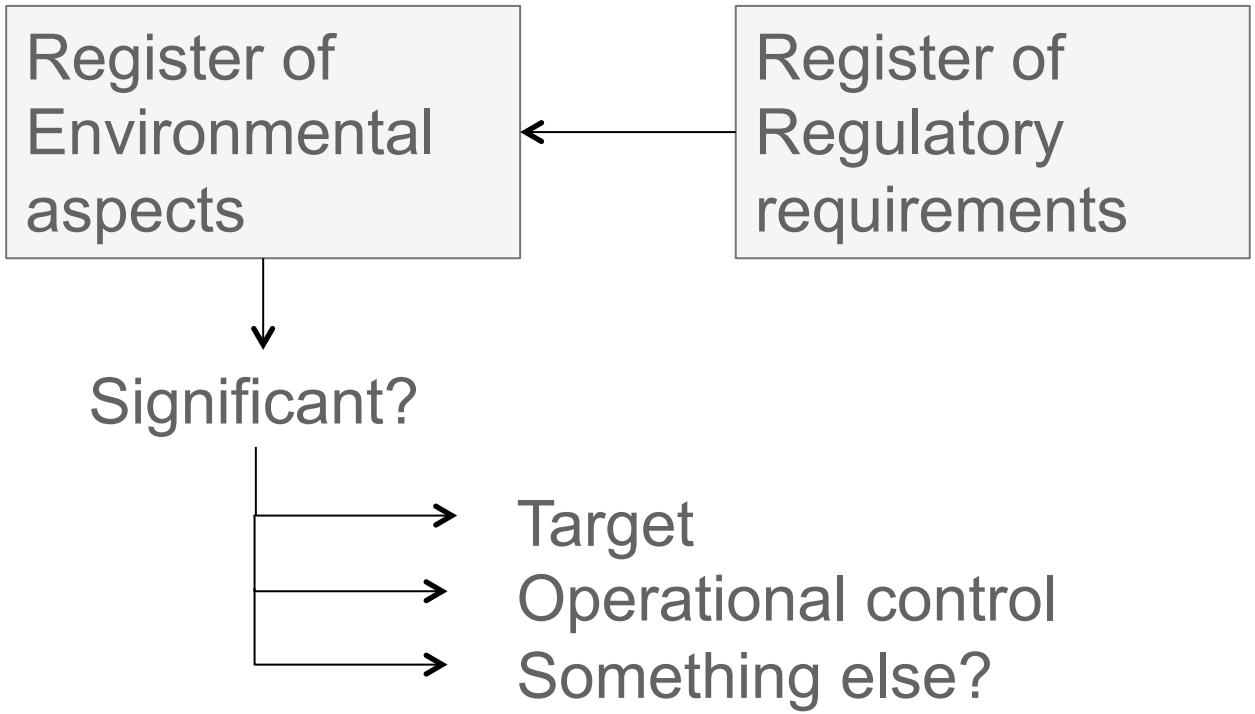
Airport activity	Environmental aspect(s)	Environmental impact(s)

- What criteria might be used to establish which aspects and impacts need to be given priority in any environmental improvement plan?

Areas covered in the environmental review

- Evaluation, control and reduction of noise emissions
- Local Air Quality Management
- Greenhouse Gas Emissions
- Energy Management
- Resource Management
- Waste Prevention and Management
- Operational processes
- Service planning (design, implementation, transportation)
- Environmental performance and practices of contractors, sub contractors and suppliers
- Prevention and limitation of environmental accidents
- Contingency procedures in case of environmental accidents
- Staff information and training on environmental issues
- External information and communications on environmental issues
- Legislative and regulatory requirements

Registers


Register of Environmental aspects
Register of Regulatory requirements
Significant?
Target
Operational control
Something else?

Environmental registers

- Time consuming stage.
- Understanding impacts of airport activities.
- Compilation of environmental aspects register and register of legal, regulatory and policy requirements.
- Includes emissions to atmosphere, discharges to sewers, all waste, land contamination, resource use, energy use, effects on specific environments and ecosystems.
- Impacts need to be assessed in terms of their significance – in a structured way

Register of regulatory requirements

- Legal requirements – national, international e.g. UK, European Union
- Regulations – e.g. Civil Aviation Authority (CAA)
- Planning conditions
- At Manchester Airport, UK 180 environmental regulatory requirements!

- Number
- Title of legislation
- Link to full document
- Summary
  - Key aspects and scope
- Relevance to Airport
  - Key activities and areas of the business

Register of environmental aspects

SECTION 2 – EMISSIONS TO SURFACE WATER

	ASPECT	ACTIVITY	O/C	LEG. REF. (Page No.)	PRIORITY	MEASURES	CONTROLS
2.01	glycol and acetate based deicants	de-icing of runway, taxiway and walkways	N	23	High	Total deicant up to 600,000 litres annually	E003 / E027/ A0I-7 / FSM 06 / SWPS
2.02	glycol based deicant	de-icing of aircraft	N	23	High	Total deicant up to 600,000 litres annually	E003 / E027 / A0I-7 / FSM 06 / SWPS
2.03	glycol based	spillage during storage, decanting or heating prior to use	P	23, 24	Med	Stored in large quantities by RFFS and tenants	E005, E018, AOI-7 SWPS
2.04	oils, solids and debris	surface run-off from contaminated areas	P	23, 24	High	Monthly monitoring evidence of failures	E012 Oil interceptors Maintenance (FSM 09)
2.05	surface run off (containing oils and solids)	rain on vulnerable sites particularly following construction work	P	23, 24	High	Incidents during construction projects, 4 consent failures in 2007	E006 Contractor's HSE book Monthly monitoring
2.06	various detergents	washing of vehicles, aircraft and surfaces	P	23	Med	Monthly monitoring few failures	E012, E018 Surface water pumping system
2.07	detergent	apron cleaning	A	23	Med	Infrequent	E012 Surface water pumping system
2.08	petrol and diesel	drips and spills from fuelling areas	P	23, 24	Med	In total 60 recorded spillages in last 12 months	E005 Oil interceptors Surface water pumping
2.09	fuel, foam and debris	fire fighting	P	23	Med	-	E005 Oil interceptors Surface water pumping
2.10	aviation fuel	spills on apron	P	23	Med	In total 60 recorded spillages in last 12 months	E005 Oil interceptors

*O/C=operating condition (N=normal, A=abnormal and P=potential)

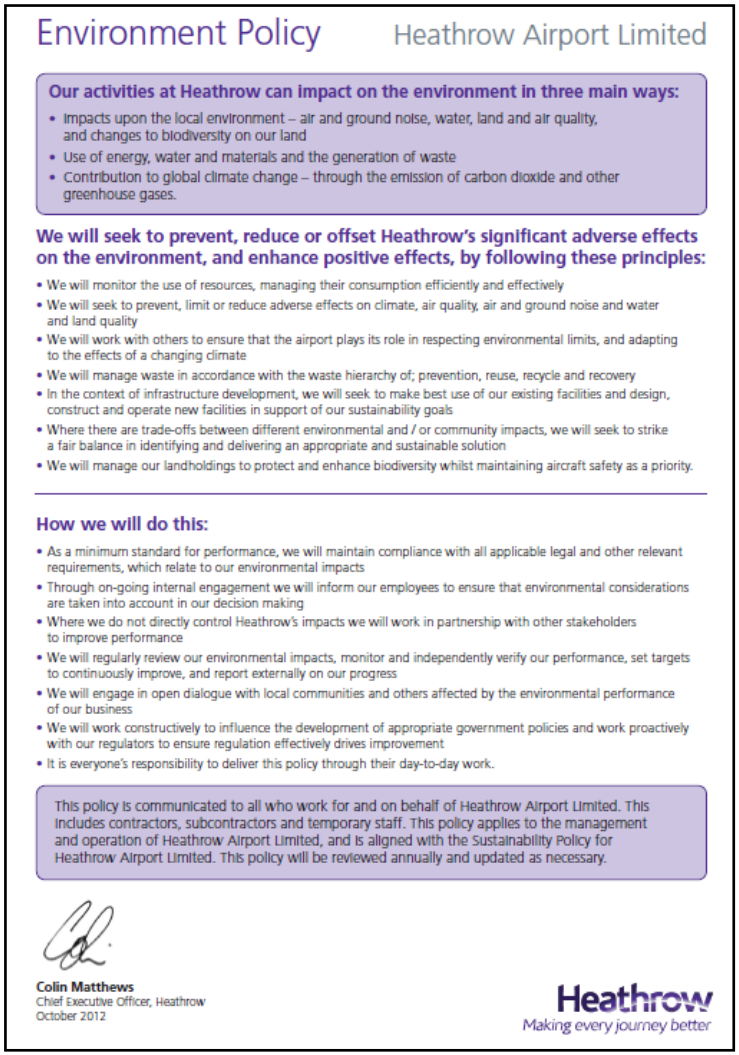
Register of environmental aspects

1	Issue	No.	Aspect	Airport Activity	Impact	Normal/Abnormal/Potential	Direct/Indirect	Legislation	Impact	Stakeholders	Quantity/Probability	Score	Significant	PROCEDURE	ASSOCIATED TARGET
19	Discharge to Sewer	2.02	Discharge to sewer	Drainage of detergents oils and debris from aircraft wash bay	Deterioration of water quality in local water courses	N	I	2	2	1	1	5	YES	EP-09, EP11	
20	Discharge to Sewer	2.03	Discharge to sewer	Spills on the apron when in containment	Increased loading of trade effluent	P	D	2	2	1	1	5	YES	EP-10	
21	Discharge to Sewer	2.04	Discharge to sewer	Spills on the apron when in containment	Increased loading of trade effluent	P	I	2	2	1	1	5	YES	EP-10	
22	Discharge to Sewer	2.05	Discharge to sewer	Discharge of grease/fat from catering areas	Increased loading of trade effluent	N	I	1	1	0	2	4	NO	EP-09, EP11	
23	Discharge to Sewer	2.06	Discharge to sewer	drainage of Fire fighting foam and hydrocarbon residues from fire training	Increased loading of trade effluent	N	D	1	1	0	1	2	NO	EP-09, EP11	
24	Discharge to Sewer	2.07	Discharge to sewer	Disposal of compressor condensate	Increased loading of trade effluent	N	D	1	1	0	1	2	NO	EP-09, EP11	
25	Discharge to Sewer	2.08	Discharge to sewer	Disposal of compressor condensate	Increased loading of trade effluent	N	I	1	1	0	1	2	NO	EP-09, EP11	
26	Discharge to Sewer	2.09	Discharge to sewer	Drainage of detergents oils and debris from vehicle wash bay	Deterioration of water quality in local water courses	N	I	2	2	2	1	6	YES	EP-09, EP11	
27	Discharge to Sewer	2.10	Discharge to sewer	drainage of anti-icing agents on airfield	Increased loading of trade effluent	N	I	2	1	1	1	4	YES	EP-09, EP11	
28	Discharge to Sewer	2.11	Discharge to sewer	drainage of de-icing products following de-icing of aircraft	Increased loading of trade effluent	N	D	2	1	1	1	4	YES	EP-09, EP11	
29	Waste and resource use	3.01	Disposal of Waste	Aircraft cabin cleaning - Category 1 International Catering Waste	offsite ground contamination, resource/energy use, contribution to climate change	N	I	3	1	1	3	15	YES	EP-18	
30	Waste and resource use	3.02	Disposal of Waste	Disposal of dead animals	offsite ground contamination and contribution to climate change	N	D	2	1	0	1	3	YES	EP-18	
31	Waste and resource use	3.03	Disposal of Waste	Solid residue from road sweeper used for aircraft stand cleaning and recovery of fuel spillages	offsite ground contamination and contribution to climate change	N	D	2	1	1	2	8	YES	EP-18	
32	Waste and resource use	3.04	Disposal of Waste	Disposal of batteries used for mobile phones, torches, radios etc	offsite ground contamination and contribution to climate change	N	D	2	2	1	1	5	YES	EP-18	
33	Waste and resource use	3.05	Disposal of Waste	Disposal of batteries used for mobile phones, torches, radios etc	offsite ground contamination and contribution to climate change	N	I	2	2	1	1	5	YES	EP-18	
34	Waste and resource use	3.06	Disposal of Waste	Disposal of Biologically contaminated waste including sharps, plasters and dressings, sanitary products or other biohazards from body fluid clean up	offsite ground contamination and contribution to climate change	N	D	2	1	1	2	8	YES	EP-18	
35	Waste and resource use	3.07	Disposal of Waste	Disposal of Biologically contaminated waste including sharps, plasters and dressings, sanitary products or other biohazards from body fluid clean up	offsite ground contamination and contribution to climate change	N	I	2	1	1	1	4	YES	EP-18	

Environmental policy

- A clear statement of intent, commitment to continuous improvement in environmental performance, and regulatory compliance
- The purpose is to achieve a broad statement of organisational environmental intentions
- All staff and service partners must be aware of the policy
- Public document

Environmental policy: Heathrow Airport



Environment Policy

Heathrow Airport Limited

Our activities at Heathrow can impact on the environment in three main ways:

- Impacts upon the local environment – air and ground noise, water, land and air quality, and changes to biodiversity on our land
- Use of energy, water and materials and the generation of waste
- Contribution to global climate change – through the emission of carbon dioxide and other greenhouse gases.

We will seek to prevent, reduce or offset Heathrow's significant adverse effects on the environment, and enhance positive effects, by following these principles:

- We will monitor the use of resources, managing their consumption efficiently and effectively
- We will seek to prevent, limit or reduce adverse effects on climate, air quality, air and ground noise and water and land quality
- We will work with others to ensure that the airport plays its role in respecting environmental limits, and adapting to the effects of a changing climate
- We will manage waste in accordance with the waste hierarchy of; prevention, reuse, recycle and recovery
- In the context of infrastructure development, we will seek to make best use of our existing facilities and design, construct and operate new facilities in support of our sustainability goals
- Where there are trade-offs between different environmental and / or community impacts, we will seek to strike a fair balance in identifying and delivering an appropriate and sustainable solution
- We will manage our landholdings to protect and enhance biodiversity whilst maintaining aircraft safety as a priority.

How we will do this:

- As a minimum standard for performance, we will maintain compliance with all applicable legal and other relevant requirements, which relate to our environmental impacts
- Through on-going internal engagement we will inform our employees to ensure that environmental considerations are taken into account in our decision making
- Where we do not directly control Heathrow's impacts we will work in partnership with other stakeholders to improve performance
- We will regularly review our environmental impacts, monitor and independently verify our performance, set targets to continuously improve, and report externally on our progress
- We will engage in open dialogue with local communities and others affected by the environmental performance of our business
- We will work constructively to influence the development of appropriate government policies and work proactively with our regulators to ensure regulation effectively drives improvement
- It is everyone's responsibility to deliver this policy through their day-to-day work.

This policy is communicated to all who work for and on behalf of Heathrow Airport Limited. This includes contractors, subcontractors and temporary staff. This policy applies to the management and operation of Heathrow Airport Limited, and is aligned with the Sustainability Policy for Heathrow Airport Limited. This policy will be reviewed annually and updated as necessary.

Colin Matthews
Chief Executive Officer, Heathrow
October 2012

Heathrow
Making every journey better

http://www.heathrowairport.com/about-us/community-and-environment/sustainability/environment

Goals, objectives and targets

- These should be:
  - Aligned to Corporate strategic policies and goals
  - Show commitment to continual improvement
  - Go beyond basic legal and regulatory compliance
  - Publicly available
  - SMART – specific, measurable, attainable, relevant and time-bound

Are these SMART targets?

A. Encourage all Airport Company staff to reduce energy use.

B. Recycle 66% of waste from the airport.

C. Reduce carbon emissions by 20% by December 2020.

D. Deliver a 5% increase in solar radiation over the airport site within 10 years.

Exercise: Defining SMART targets

1. For the airport aspect and impacts identified earlier define SMART targets for environmental improvement – these may relate to activities as well as environmental outputs

2. What monitoring/activity data will be required to establish performance against these targets?

Environmental Management programme

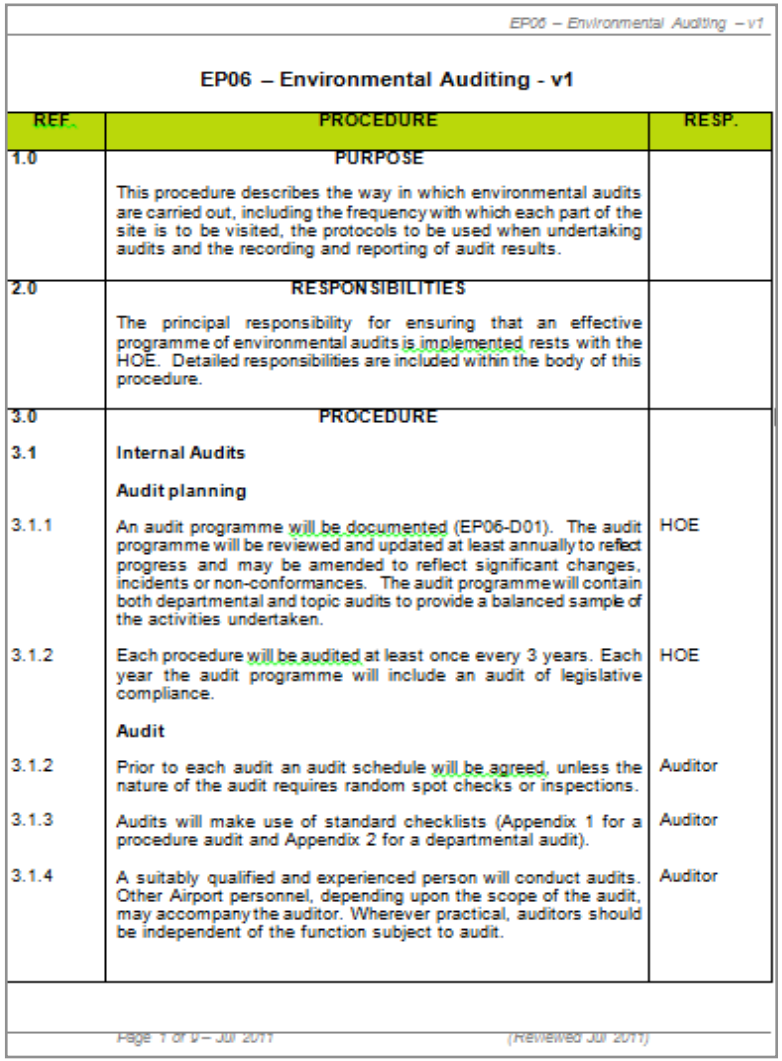
- Work plans relating to:
  - Breaking targets down to local levels
  - Target time-frame
  - How will they be achieved
  - Who is responsible
  - Resources, both human and financial
  - How will progress be monitored and measured
  - Who will initiate corrective action

Awareness and training

- Key to the effective implementation of the environmental management programme
- Competent staff
- Provision of relevant training – training needs analysis
- Individual roles / responsibilities
- Culture change
- General awareness

EM documentation and control

- Policy
- Registers
- Procedures
- Forms
- Records
- All controlled with version, date etc.



EP06 – Environmental Auditing - v1

REF.	PROCEDURE	RESP.
1.0	**PURPOSE** This procedure describes the way in which environmental audits are carried out, including the frequency with which each part of the site is to be visited, the protocols to be used when undertaking audits and the recording and reporting of audit results.	
2.0	**RESPONSIBILITIES** The principal responsibility for ensuring that an effective programme of environmental audits is implemented rests with the HOE. Detailed responsibilities are included within the body of this procedure.	
3.0	**PROCEDURE**	
3.1	**Internal Audits** **Audit planning**	
3.1.1	An audit programme will be documented (EP06-D01). The audit programme will be reviewed and updated at least annually to reflect progress and may be amended to reflect significant changes, incidents or non-conformances. The audit programme will contain both departmental and topic audits to provide a balanced sample of the activities undertaken.	HOE
3.1.2	Each procedure will be audited at least once every 3 years. Each year the audit programme will include an audit of legislative compliance.	HOE
	Audit	
3.1.2	Prior to each audit an audit schedule will be agreed, unless the nature of the audit requires random spot checks or inspections.	Auditor
3.1.3	Audits will make use of standard checklists (Appendix 1 for a procedure audit and Appendix 2 for a departmental audit).	Auditor
3.1.4	A suitably qualified and experienced person will conduct audits. Other Airport personnel, depending upon the scope of the audit, may accompany the auditor. Wherever practical, auditors should be independent of the function subject to audit.	Auditor

Corrective actions

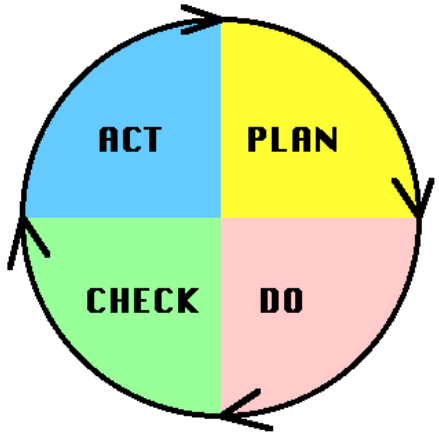
- A procedure that must:
  - Provide for the identification of non-compliance (e.g. targets unlikely to be met, incidents)
  - Lead to actions (or plans) to remedy any problems
  - Initiate controls to prevent reoccurrence

EM audits

- The airport will need to set up an audit program to determine that:
  - All relevant legal and regulatory requirements are identified and being met (annually)
  - EMS procedures are being followed
  - Tenants and concessionaires – risks are known, complying with legal requirements, and aware of airport's EMS policy and key targets
- This comes at the end of one cycle of operating an EMS (at least every 3 years) and feeds into planning for the next cycle of improvement and implementation.
- The audit is undertaken by independent auditors who have been accredited to the appropriate standard.

Management review

- Suitably senior level management.
- To ensure EMS remains both suitable and effective.
- The review should be documented to provide a record of evaluation and recommended changes to the EMS.
- Should cover the whole organisation its activities, products and services.
- Provides an opportunity for weaknesses to be addressed and improvements made.
- May lead to changes in any part of the EMS.



Review - Implementing an EMS at an airport

- Five key phases:
  1. **Setting up** – obtain commitment of the airport operator (and other key stakeholders). Conduct an initial environmental review
  2. **Planning** – identification of environmental 'aspects' and impacts. Development of environmental policy and EMS plan
  3. **Doing** – execution of the EMS plan
  4. **Checking** – audit of the EMS and an evaluation of the programme's success in delivering its overall goals, objectives and targets
  5. **Acting** – incorporation of the audit findings into planning phase for the next EMS cycle.

Exercise: The benefits of effective Environment Management

Environmental benefits	Commercial benefits	Significance to airport operator and why?

External certification

There are two major EMS accreditation standards in the world today:

- International Standards Organisation ISO 14001 established in 1996, major revision published September 2015
- European Union's Eco-Management and Audit Scheme (EMAS) established in 1995

These two standards are similar in their approach to an EMS and provide organisations with a customised set of procedures that can be followed to implement an EMS.

Advantages of formal EMS

- Provide a standard set of procedures to implement an EMS and work towards formal accreditation.
- Accreditation can be used in quality assurance, enhancing public image and competitive advantage.
- EMS accreditation may also improve a company's standing with environmental regulators.
- Provides evidence that an organisation is committed to environmental management and reducing its environmental liabilities.
- Can result in more favourable consideration for loans and insurance.
- Identify gaps and weaknesses, including legal non-compliance.

Conclusions

- Environmental management systems provide a comprehensive and systemic means of minimising environmental risks and realising environmental opportunities
- Monitoring and record keeping allows effective evaluation of system performance
- Renewed cycles of improvement are informed by previous performance and changes to the wider operating environment of the airport.
- Enables the delivery and demonstration of environmental improvement and responsibility

Any questions?