



EMS BUILDING BLOCKS

Helping you build an
Environmental Management System



natural
scotland
SCOTTISH GOVERNMENT

An EMS is a structured, organised method of controlling and reducing the environmental impact of your operations, whatever they may be.

Introduction

Adopting an Environmental Management System (EMS) can help your organisation meet its legal obligations, improve its environmental performance, increase resource efficiency and provide cost savings.

EMS Building Blocks guides you through each stage of the EMS process, from identifying significant environmental aspects – the factors your company needs to monitor and control – right through to the management review stage.

Implementing a robust EMS, as described here in EMS Building Blocks, will help you to:

- comply with legislation and avoid the risk of costly fines and damage to your business reputation;
- control your processes so that impact on the environment is minimised;
- improve resource efficiency and reduce unnecessary expenditure;
- set achievable improvement targets; and
- communicate your company's EMS to employees, customers, suppliers and shareholders.

EMS Building Blocks provides you with the necessary templates to structure your EMS. Examples of how to complete these are given throughout the workbook. Further help can be obtained by visiting www.zerowastescotland.org.uk

EMS BUILDING BLOCKS - GETTING STARTED

An EMS is a structured, organised method of controlling and reducing the environmental impact of your operations, whatever they may be.

As environmental impacts vary widely in different sectors, the structure provided here is designed to be applied in any business context.

The aim of this workbook is therefore to provide an initial structure with templates for you to populate using your own site information. Over time, you will be able to further develop this into a more detailed EMS tailored to the specific needs of your business operations.

COMPLETED THIS WORKBOOK? NEXT STEPS...

Although your organisation is likely to benefit from the cost savings achieved through implementing a simple EMS such as the one proposed in this workbook, many organisations wish to achieve the highest ratings on tenders and procurement audits by having an externally certified EMS.

Standards you may consider include:

- ISO 14001, the international EMS standard (<http://www.iso.org/iso/home.htm>).
- The European Commission Eco-Management and Audit Scheme (EMAS) (http://ec.europa.eu/environment/emas/index_en.htm).
- British Standard 8555, a guide to the phased implementation of an EMS designed specifically for small and medium-sized businesses. This includes a staged approach to external certification (http://www.iema.net/ems/acorn_scheme/bs8555).

There are arguments for and against gaining certification with these standards. Assessments on the suitability of each should be based on your own organisation's circumstances, reasons for implementing an EMS, resource and budget availability.

Having an EMS is usually a voluntary activity; it is not typically demanded by law, although an operating EMS is strongly encouraged by regulatory authorities under some environmental permits. For example, a certified EMS is usually expected to be implemented within three years of a Pollution Prevention and Control permit being granted. It can, however, be advantageous to have the EMS in place during the application process. Increasingly, an EMS is required by an organisation's stakeholders or supply chain.

Use of this workbook alone does not guarantee you will achieve an externally certified EMS, but it will provide you with advice on laying solid foundations that you can build upon as you progress.

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Stage 1: Identifying significant environmental aspects

ENVIRONMENTAL ASPECTS

Environmental aspects are the elements of an organisation's activities, products and services that can interact with the environment. An EMS requires you to identify your organisation's environmental aspects and then prioritise these in terms of significance.

Examples of environmental aspects are:

- energy use;
- production of waste (including hazardous substances);
- fuel use in transport;
- water use;
- effluent disposal;
- use of natural resources; and
- oil storage and disposal.

To get started, some companies conduct an environmental review to identify the inputs and outputs of each area within the organisation (e.g. facilities, offices, stores, production, etc). This will help identify key compliance issues such as environmental permits and licences which may be in place or may be required.

An initial review of site information and baseline data (e.g. annual costs and quantities of energy use, water use, waste and raw materials) will help you to prepare a list of environmental aspects for your company.

NORMAL AND ABNORMAL ENVIRONMENTAL ASPECTS

The EMS requires you to assess both normal and abnormal operations to come up with your list of environmental aspects. These are as follows:

- **Normal** environmental aspects are those which would be encountered as part of day to day operations, including planned maintenance activities.
- **Abnormal** environmental aspects are those which would be encountered in emergency or plant/equipment failure conditions (e.g. spills, power failure, extreme weather events, etc). For ideas in this area, speak to long serving employees about what has happened in the past, and review incident and near miss reports.

ENVIRONMENTAL IMPACT

Environmental impacts are the changes to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects. Each environmental aspect may have more than one environmental impact.

Examples of environmental impacts include:

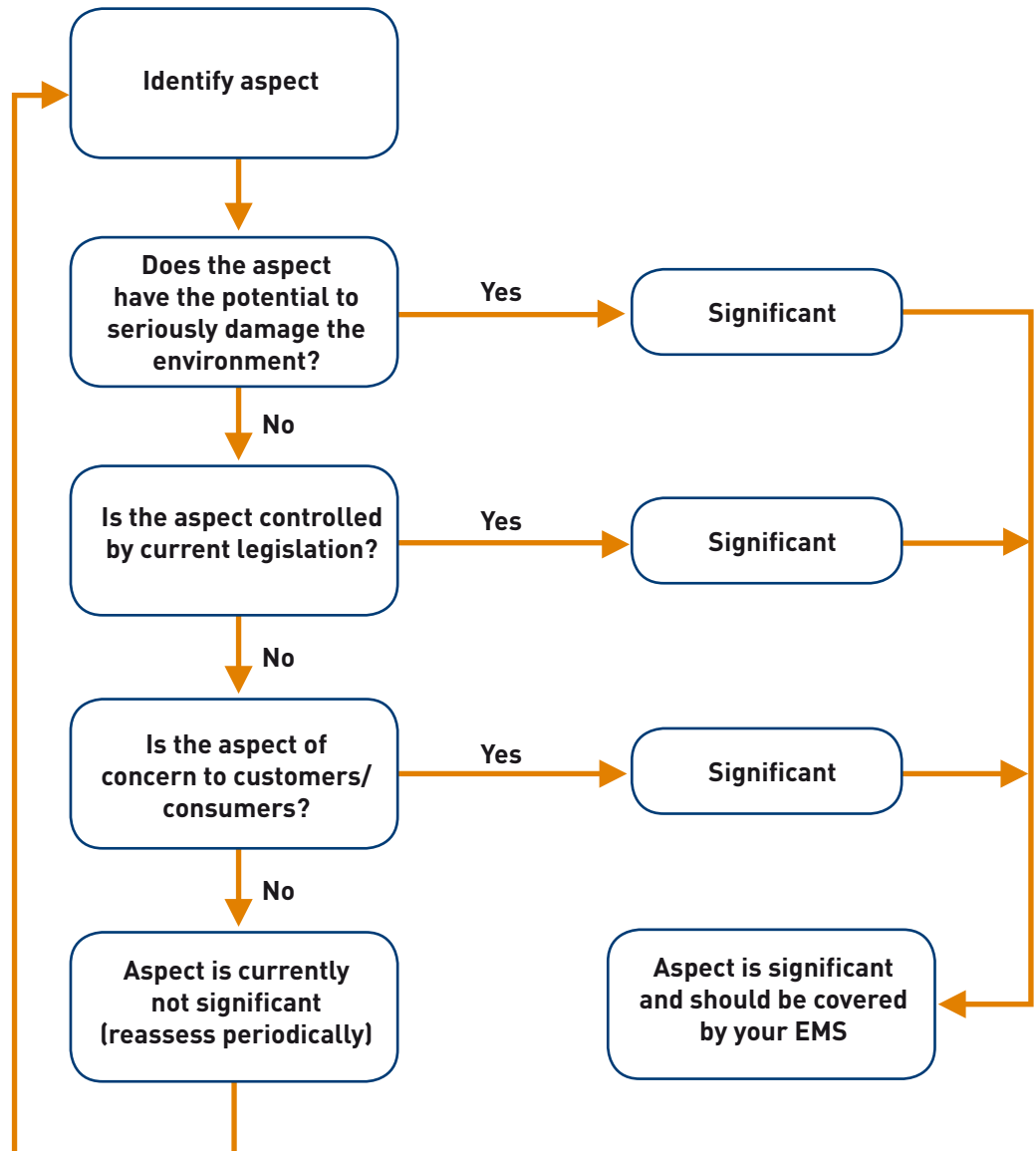
- pollution or contamination of land, air, water;
- nuisance (lighting, noise and odour);
- natural resource consumption;
- emission of greenhouse gases contributing to climate change;
- waste sent to landfill; and
- increase/decrease in biodiversity.

Environmental aspects are the elements of an organisation's activities, products and services that can interact with the environment.

SIGNIFICANT ENVIRONMENTAL ASPECTS

Once you have your list of environmental aspects, you can make decisions based on the significance of the environmental impact of the aspect. This is essentially an environmental risk assessment process.

There is no set approach for evaluating significance. However, the following process can be used as a starting point.



Your methodology should be repeatable and should be checked once completed to ensure the results reflect the actual activities of your organisation.

Aspects deemed significant for your organisation are the ones your EMS will seek to control.

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The **Environmental Aspects Register** should contain:

- a list of all potential environmental aspects (normal and abnormal);
- the environmental impacts of the environmental aspects; and
- an assessment of their significance.

Table 1 shows an example of an environmental aspects register.

Over time, your environmental aspects and their significance may change. The Environmental Aspects Register should be reviewed on a regular basis.

TABLE 1: ENVIRONMENTAL ASPECTS REGISTER

LIST OF ALL AREAS YOU ARE CONSIDERING IN THE ORGANISATION	Inputs (raw material use) Inputs (utilities) Inputs (transport) Outputs (emissions) Outputs (nuisance: odour/visual/noise) Outputs (waste) Outputs (activities/products/services) Abnormal events		
Area	General aspect type	Specific environmental aspect	
<i>e.g. All</i>	Inputs (raw material use)	Energy use (gas and electric)	
<i>Yard</i>	Outputs (waste)	Dry mixed recyclables (card, paper, plastics, metal, wood, etc) sent for recycling	
<i>Yard</i>	Outputs (waste)	General waste disposed to landfill	
<i>Office</i>	Inputs (transport)	Transport & travel (commuting and business travel)	
<i>Facilities</i>	Inputs (raw material use)	Oils & lubricants	
<i>Facilities</i>	Outputs (waste)	Special waste (includes WEEE, oils and lubricants, fluorescent tubes, batteries)	
<i>Facilities</i>	Abnormal (oil spill)	Oil spill	

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	Potential environmental impacts							Relevant legislation (if applicable, insert reference to your Legal Register)	Interested parties (external)	Add in any other criteria you require	Significant? Yes/No
	Resource use	Waste management	Emissions to atmosphere	Water pollution	Land contamination	Noise/vibration/nuisance	Biodiversity/flora/fauna				
	X		X			X					
		X				X		X			
		X	X		X	X		X			
	X		X								
	X										
		X									
	X	X		X	X		X	X			

Stage 2: Identifying legislation and evaluating compliance

WHAT IS ENVIRONMENTAL LEGISLATION?

Legislation describes what we must do according to the law - it is not negotiable and if we fail to comply with the law, there is a risk of fines, clean-up costs or even imprisonment. The associated damage to your business reputation may also be considerable.

WHAT ARE 'OTHER REQUIREMENTS'?

In an EMS we refer to environmental legislation which would have a direct impact on the environment. However, other legislation, including Health and Safety, must also be complied with. Additionally, in your own organisation there may be other requirements dictating your activities such as specific customer contracts.

Legislation may seem complex, however, there are free tools available online to help you get started. A free website called NetRegs provides a guide to key environmental legislation that may apply to your business. NetRegs is run by UK environmental regulators including the Scottish Environment Protection Agency (SEPA).

- **First:** work out what applies to your organisation (legal and other requirements). Create a legal register which details environmental legislation and guidance.
- **Second:** for the applicable legislation and other requirements, ensure you know what you have to do to comply. Populate your legal register with information on the regulations which may apply to your organisation. Investigate these and then highlight which are applicable and which are not.
- **Third:** Ensure you have proof of compliance with the applicable legislation and other requirements. Populate your legal register with information on compliance, assess this compliance through your internal audit and record the results.

The NetRegs website is reviewed periodically, but it does not include every piece of legislation that may affect your business. As there may be additional legislation that applies to your particular activities and circumstances, you should check with your environmental regulator, legal advisor or environmental consultant to find out if there are any further legal requirements which apply to you.

The following headings are recommended environmental subject areas to include in your legal register. These are highlighted on the Legal Register Template in Table 2.

- energy use;
- climate change
- production of waste (including hazardous substances);
- fuel use in transport;
- water use;
- effluent disposal;
- use of natural resources; and
- oil storage and disposal.

Information on these may be found at www.netregs.gov.uk.

HOW DOES ENVIRONMENTAL LEGISLATION APPLY TO MY ORGANISATION?

On NetRegs, regulations are described in an easy to understand, non-technical manner. The requirements highlighted within NetRegs can be carried over into your legal register.

To help gain full site information, consider organising a meeting of different departments in the business (e.g. management, facilities, office support/finance, operations) to highlight specific areas of knowledge on site activities.

WHAT ABOUT OTHER STANDARDS AND CODES OF PRACTICE WE HAVE TO COMPLY WITH?

Within an EMS, other standards and codes of practice may also need to be complied with. If you have major contracts, your customers may have standards to be complied with. Refer to these on your legal register, and include any special requirements that may be in place.

WHERE CAN I GET UP TO DATE INFORMATION?

The NetRegs site is reviewed periodically and is a free resource. If you have budget available, organisations can purchase legislation updates from private companies in booklet or electronic format, but you will still have to interpret this for your own organisation. Sometimes it might be worth considering using the services of a private environmental consultant.

You should review your legal register on a regular basis, typically twice a year, to ensure that any significant updates are brought in quickly.

HOW DO I ASSESS COMPLIANCE?

Use an internal audit to assess when you have completed your legal register. Record any non-conformances and set up actions to address these. Make sure the person responsible for addressing these is aware of the actions they have to take and that a timescale for achieving compliance is agreed and met. Use the template in Table 3 as a basis for your audit records.

Take each of the applicable pieces of legislation and check them against the requirements. Ask yourself if you have records to back up your compliance status. Take note of where these records are stored, the references of what you have reviewed and necessary dates. If there is a threshold, ensure you show proof of whether you are above or below this.

You should review your legal register on a regular basis, typically twice a year, to ensure that any significant updates are brought in quickly.

TABLE 2: LEGAL REGISTER

Legislation Register and Evaluation of Compliance - Scotland			
Name/Location of Site:			
REF	ENVIRONMENTAL SUBJECT AREA	RELEVANT LEGISLATION	GUIDANCE
	<i>Identify the subject area to help group your legislation register into easier 'chunks'.</i>	<i>Identify the legislation which you have found which may be applicable.</i>	<i>Insert guidance on what the legislation is about, and what the organisation has to do to demonstrate compliance (e.g. records to be maintained, permits to be applied for etc).</i>
	PRODUCTION OF WASTE	Environment Protection Act 1990 Part II, Section 62. Special Waste Regs 1996 (as amended). Control of Substances Hazardous to Health Regulations 2002. Special Waste Amendment (Scotland) Regulations 2004 (as amended).	*
	HAZARDOUS SUBSTANCES	Water Environment and Water Services (Scotland) Act 2003. Water Environment (Oil Storage) (Scotland) Regulations 2006 [SSI 2006/133].	**
	ATMOSPHERIC & AIR QUALITY		
	EFFLUENT DISPOSAL		
	BIODIVERSITY & CONSERVATION		
	NOISE & NUISANCE		
	USE OF NATURAL RESOURCES		
	FUEL USE IN TRANSPORT		
	WATER		
	OIL STORAGE AND DISPOSAL		
	<i>Add in any extra rows as required for specific issues. There may be more than one entry for each of the subject areas.</i>		
	PENDING LEGISLATION		
<i>Use this section to log any pending legislation changes as these may apply to your business.</i>			
<i>Reviewing the current and pending legislation at Management Review helps the business to be prepared for upcoming changes.</i>			

*If you are a producer or handler of special waste, these regulations will apply to you. SEPA tracks the movement of special waste through a consignment note system. This ensures that waste is responsibly managed from its point of origin until it reaches an authorised recovery or disposal facility. You must pre-notify SEPA, at the office local to the destination of the waste, at least three working days, and not more than one month, before special waste is moved in Scotland, or imported into Scotland from England or Wales. For waste produced in Scotland, a consignment note must be used that contains a unique Scottish code. The codes and consignment notes can be obtained from SEPA.

The consignment note must include:

- details of your premises including address and postcode
- the unique waste code
- details of everyone involved with the movement of the waste
- an accurate description of the waste.

You must identify all hazards and hazardous properties associated with the special waste on the consignment note. You must keep consignment notes for three years. Special wastes should be transported using licensed waste carriers and disposed of using properly licensed waste disposal sites. Guidance for the European Waste Catalogue known as WM2 for Scotland can be found on the SEPA website.

TABLE 3: COMPLIANCE EVALUATION – INTERNAL AUDIT

Audit details

Audit title	Legal and other requirements - compliance check	Audit date	
Audit scope		Auditor(s)	
Department(s) covered		Auditee(s)	
Reference documentation			

Audit checklist

REF (link with the legal register reference number)	Question (Align the audit questions in this template with your Legal and Other Requirements Register)	Auditee response/ reference documentation or situation viewed	Auditor Comment (make this section specific as to what needs to be changed in order to conform or improve)	OK	OBS/IMP	NC
WASTE-001	Example: Are all Waste Carriers on behalf of the organization registered, and in date, with the appropriate regulator (EA, SEPA etc).	Checked list of Waste carriers used at the moment. 3 companies are used, <ul style="list-style-type: none"> • Company X, Reference No.X, Expiry Date May 2012 • Company Y, Reference No. X, Expiry Date August 2012 • Company Z, Reference No. X, Expiry Date April 2011 	Waste Carrier Licences are in date and available.	X		
HAZARDOUS SUBSTANCES	Are all oil drums/ stores over 200 litres appropriately banded (secondary containment)?	Oil is kept in two areas in the organisation. Both were checked. Bulk storage has secondary containment and checks on levels and leaks in place. The small store has 205 litre drums of oil standing on hardcore, but not banded.	Action to band the small store of 205 litre oil drums individually, or move this store to a banded area. Potential improvement to have a mobile bund for transporting and storing oils around the plant.			X

Key:

OK – Conforms	OBS/IMP – Observation or Improvement	NC – Non-conformance
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Note on Internal Auditor Qualifications: Internal EMS Auditors should be competent. See the Institute of Environmental Management and Assessment (IEMA) website for more information on training (www.iema.net).

Stage 3: Environmental policy

WRITING YOUR ENVIRONMENTAL POLICY

Now that you have identified your significant environmental aspects, you are in a position to write or update your environmental policy.

Your policy should be a brief statement, typically a maximum of one page, which is understandable to all employees. It should be jargon-free.

Use the environmental policy template checklist provided in Table 4 below to ensure you have addressed the key themes.

Remember this is the only part of your EMS that must be available to the public and this is the document which your stakeholders and customers – existing and potential – will be able to see.

COMMUNICATING YOUR ENVIRONMENTAL POLICY

Many organisations place their environmental policy on their website to allow interested parties to read it. Reception areas, notice boards, employee induction packs and contractor or visitor orientation packs can also be used to communicate your environmental policy.

TABLE 4: ENVIRONMENTAL POLICY CHECKLIST

	Check box
Does it briefly describe your organisation’s activities?	
Is it appropriate to your organisation’s significant environmental impacts?	
Does it include a commitment to:	
• Legal and other compliance?	
• Continual improvement?	
• Pollution prevention?	
Does it provide a framework for setting and reviewing environmental objectives and targets?	
Is it documented, implemented and maintained?	
Is it communicated to all employees and stakeholders?	
Is it available to the public, e.g. on website?	
Is it signed and dated by senior management?	
Is it a controlled copy (has a revision number or other method of control)?	

Targets should be 'SMART' – specific, measurable, achievable, realistic and time-based.

Stage 4: Setting and tracking objectives and targets

SETTING OBJECTIVES FOR SIGNIFICANT ASPECTS OF YOUR BUSINESS

As part of the EMS, objectives are established to monitor, control or reduce significant environmental aspects. Always make sure your objectives align with your significant environmental aspects. When you started your EMS, aspects were grouped into 'themes' such as waste, water and energy.

TARGETS

Setting targets for each aspect will help towards achieving these objectives. Targets should be 'SMART' – specific, measurable, achievable, realistic and time-based. Use your targets to work towards your overall objective. Remember that these can be revised if necessary.

Keep interest in the EMS by prioritising objectives and targets with cost savings on a shorter timescale to help the EMS gain momentum and maintain buy-in at all levels in the organisation.

MANAGEMENT PROGRAMMES

Each target may have a series of tasks associated with it to enable the target to be reached. These may be delegated to different people, so it is useful to have a more detailed plan on who is responsible, what the task is, and when it has to be done by.

TRACKING PROGRESS ON OBJECTIVES AND TARGETS

Keep track of your progress. Use a master document like the template provided in Table 5 to check when activities are completed. If you are struggling for resources, timelines can be changed with the agreement of all parties. Remember that it is your EMS and it should work for you within the resources available.

OBJECTIVES ON A LOW BUDGET

Remember that if your organisation has a limited budget to make large environmental changes (which may need capital expenditure budget), then there are options for low-cost and no-cost actions to be part of your EMS.

Monitoring is a key part of any EMS, and often requires little more than responsible individuals to take meter readings on a sheet and report these to the person in charge of gathering the EMS monitoring and measurement data.

A template for recording objectives, targets and management programmes is provided in Table 5.



TABLE 5: EMS OBJECTIVES, TARGETS AND MANAGEMENT PROGRAMMES

EMS objectives and targets				
Objective 1. Insert your objective				
No.	Target	No.	Management programme	
1.1	Identify the target to help meet the objective above	1.1.1	Insert the series of tasks needed to meet the target identified.	
		1.1.2	Insert new lines as you need to.	
1.2	Identify any further target(s) to help meet the objective above. Insert new lines as you need to.	1.2.1	As above.	

Objective 2. Insert your objective				
No.	Target	No.	Management programme	
2.1		2.1.1		
		2.1.2		
2.2		2.2.1		

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Objective 1. Insert your objective					
Responsibility	Person to complete programme	Due for completion	Progress/issues	Complete (Y/N/in progress)	
Identify who is responsible for the task.	Identify who is to do the task (if this is delegated)	Insert due date	It can be useful to insert a brief dated update on progress.		
As above	As above	As above	As above		

Objective 2. Insert your objective					
Responsibility	Person to complete programme	Due for completion	Progress/issues	Complete (Y/N/in progress)	

Communicate results to maintain interest in the EMS. Keeping information 'bite sized' helps to engage people in the topic.

Stage 5: Monitoring and measurement

MONITORING AND MEASUREMENT FOR RESULTS

Using monitoring and measurement data can illustrate the progress being achieved by the actions in your management programmes, targets and objectives.

Monitoring can be as simple as taking meter readings regularly, or tracking purchasing information from invoices. Doing this can show:

- water use reductions following a campaign to report leaks;
- Energy reductions following a 'switch-off' campaign;
- a reduction in spillages following an action to replace a faulty fill point on an oil tank; and
- reduced spending on packaging.

BENCHMARKING

Many organisations benchmark themselves against the previous years' data. If you don't have this data, then you could:

- go through invoices and sales information to gather data appropriate for a 'baseline' year; **or**
- Use the current year to monitor, measure and generate a baseline year of data over the coming 12 months.

Comparing previous years' data allows performance and efficiency to be assessed.

KEY PERFORMANCE INDICATORS

Remember that raw data alone will not provide the full picture. Comparisons to production, sales or number of employees can help to illustrate efficiency in a more meaningful way.

Consider the following scenario:

- Over a year, your production increases by 100% and your waste increases by 50%.
- Your waste totals have increased, so at first glance this appears to be poor environmental performance.
- However, when we compare the waste to the production levels, you have still increased your efficiency as waste has only increased by 50% and not 100%.

Table 6 highlights possible key performance indicators (KPIs) for your company.

Communicate results to maintain interest in the EMS. Keeping information 'bite sized' helps to engage people in the topic.

TRACKING MONITORING AND MEASUREMENT DATA

Spreadsheets are a useful tool to log, save and manipulate data. For the purposes of gathering regular information, you may choose to use paper based log sheets, e.g. for designated persons in production to take electricity and gas meter readings. You might then have a further designated person responsible for entering this data into the spreadsheet on a regular basis. There are many different methods to track and analyse data. Use the examples in Table 7 and Figure 1 to get started and adapt these as you need to for your own organisation.

TABLE 6: KEY PERFORMANCE INDICATORS

Key performance indicators														
Responsible person	Water consumption per number of employees per month													
	Measure	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
<i>Insert responsible person's name</i>	Number of employees per month	Number	140	140	140	140	140	140	140	140	140	140	140	140
Responsible person	Energy use per £1,000 sales per month													
	Measure	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
<i>Insert responsible person's name</i>	Sales per month	£												
Responsible person	Waste arisings per 1,000 units of production per month													
	Measure	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
<i>Insert responsible person's name</i>	Product shipped per month (1000 units)	1,000 units												

Note: Select the most appropriate KPI to use based on your sector, operational performance and accessible data.

Note: The figure of 140 employees has been inserted for example purposes only.

TABLE 7: EMS MONITORING AND MEASURING DATA TRACKER

EMS monitoring and measuring data tracker (example)						
Date	Production output	Electricity Meter Reading	Weekly Electricity Usage	Gas Meter Reading	Weekly Gas Usage	
	Product shipped (units)	kWh	kWh	m ³	m ³	
01/01/2010	2462	1230000		611010		
08/01/2010	2231	1310000	80000	611397	387	
15/01/2010	2859	1390000	80000	611676	279	
22/01/2010	2558	1470000	80000	612123	447	
29/01/2010	2415	1550000	80000	613010	887	
05/02/2010	1976	1630000	80000	613651	641	
12/02/2010	2306	1720000	90000	614231	580	
19/02/2010	2691	1810000	90000	615060	829	
26/02/2010	3589	1900000	90000	615896	836	
05/03/2010	3215	1980000	80000	616665	769	
12/03/2010	3116	2070000	90000	617420	755	
19/03/2010	2674	2160000	90000	617952	532	
26/03/2010	2783	2250000	90000	618478	526	
02/04/2010	2867	2340000	90000	619243	765	
09/04/2010	2983	2420000	80000	619980	737	
16/04/2010	2519	2510000	90000	620806	826	
23/04/2010	3446	2590000	80000	621689	883	
30/04/2010	2767	2670000	80000	622604	915	

Choose appropriate figure to correspond to production, e.g. tonnes of product shipped, £1,000 sales, etc.

Be aware of the units you are using. Electricity meters tend to measure in units of kWh, but gas meters measure in units of m³.

	Water Meter Reading	Weekly Water Usage	Waste to Landfill	Recycling	Re-use of Packaging
	m ³	m ³	tonnes	tonnes	kg
	53011		0	0	20
	53430	419	0	0	35
	53914	484	0	0	40
	54428	514	2	1.5	38
	54945	517	0	0	37
	55416	471	0	0	25
	55887	471	0	0	34
	56440	553	2	1.5	46
	57011	571	0	0	170
	57612	601	0	0	150
	58148	536	0	0	160
	58698	550	2	1	180
	59271	573	0	0	180
	59815	544	0	0	182
	60341	526	0	0	170
	60871	530	0	0	0
	61388	517	2	0.5	0
	61851	463	0	0	180

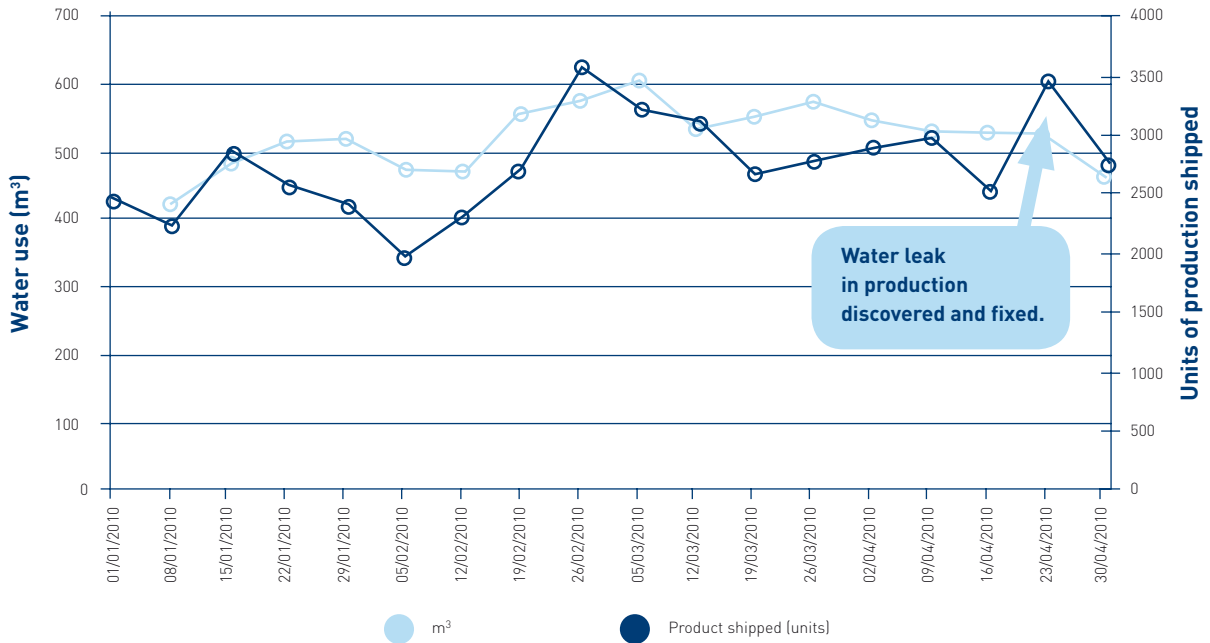
If figures start to look repetitive, this raises a question as to whether the amount is actually weighed and needs checking with the contractor.

After an agreement with a customer, re-used packaging is now used for shipments. This saves cardboard boxes being purchased, and also reduces [recycled] waste.

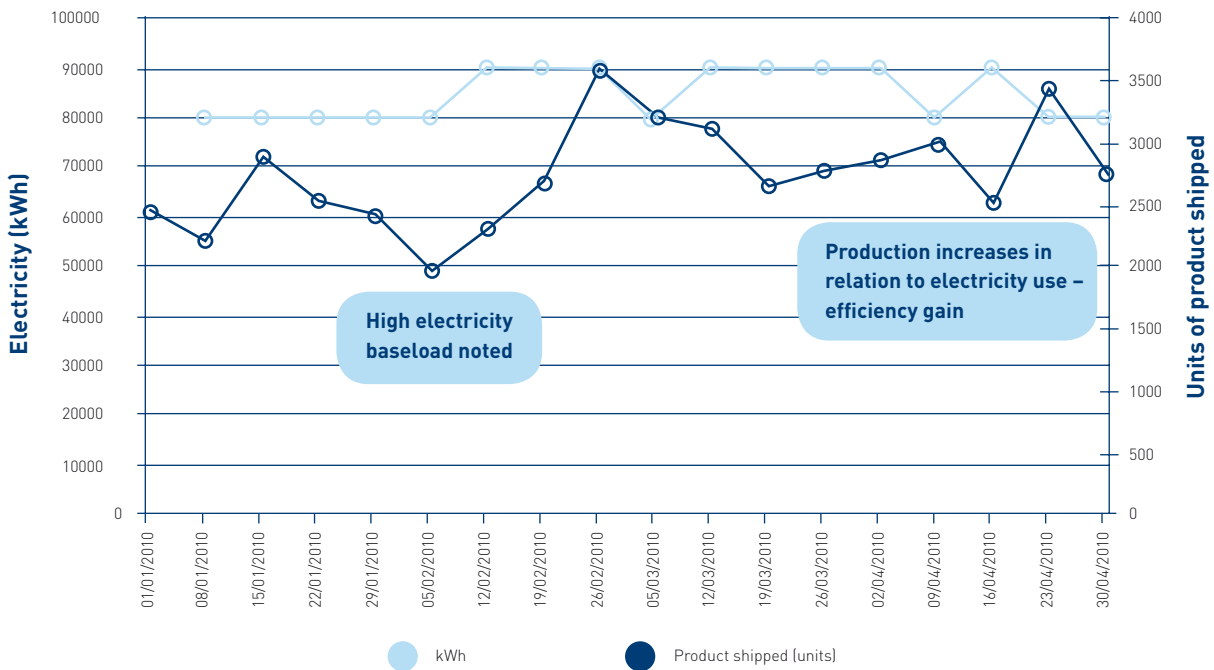
The warehouse manager in charge of box re-use is off sick for 2 weeks. Replacement staff are not sure what to use, so they revert to new cardboard boxes and do not re-use.

FIGURE 1: EXAMPLE OF DATA ANALYSIS

Water Use Vs Production (Jan-Apr 2010)



Electricity Vs Production (Jan-Apr 2010)



Stage 6: Control of operations and emergency preparedness and response

OPERATIONAL CONTROL

For any EMS you need to show that you control your operations under both normal and 'abnormal' circumstances, as related to your significant environmental aspects.

HOW DO YOU CONTROL NORMAL OPERATIONS?

Controlling operations may be done through implementation of procedures, work instructions and training. Keeping a log of these documents in a 'document index' is a useful way to stay organised. This method can also be used to record revision/issue numbers for document control. A template 'document index' is provided in Table 9.

Operational controls may be in place for preventative maintenance activities in all industries. Put a copy of your organisation's preventative maintenance plan behind this tab or communicate where it is located.

HOW DO YOU HAVE CONTROL OVER ABNORMAL ASPECTS?

Potential emergency and abnormal situations should be identified in the environmental aspects register. For significant abnormal aspects such as oil spills or fires, put in place procedures to control these.

Controlling these abnormal aspects means taking steps to reduce the risk of their occurrence. An example would be conducting bund inspections for oil and chemical tanks to check integrity and help avoid leaks as well as undertaking planned, preventive maintenance.

If emergencies and abnormal situations do occur, the EMS should mitigate or reduce the pollution impact which could occur. For example, this could mean having a spill response procedure and an emergency response team trained and ready to respond to oil spills. The team will have conducted a drill and be clear about their roles. Spill kits and drain covers will be at hand. All these factors will help to reduce the impact of an oil spill in the yard.

Use the template checklist provided in Table 8 to check what you have available for emergency preparedness and response.

COMMUNICATION AND TRAINING

Operational control will have a direct influence on achieving your EMS objectives and targets. Communication with those who influence control on your operations from an environmental perspective is critical.

If you put in place procedures, make sure these are communicated and training is provided to the relevant people. Include your environmental policy in induction packs for new employees and contractors and make this part of your purchasing and procurement processes.

Remember that some environmental aspects may be influenced by people and organisations outside your own workforce. For example, packaging sent by your suppliers may become part of your own waste stream. Communicating your environmental policy and requesting returnable packaging be used will help your organisation to reduce the environmental impact of packaging and packaging waste.

If you put in place procedures, make sure these are communicated and training is provided to the relevant people.

TABLE 8: EMERGENCY PREPAREDNESS AND RESPONSE CHECKLIST

	Check box
Site drainage map	
Copies of any environmental permits, licences or consents in place	
Site plan/map showing locations of hazardous materials (e.g. bulk oil store, chemicals store, gases store)	
Spill kit location plan/map	
Spill kit contents lists	
Emergency response team assembled and trained	
Clear procedure on who is responsible as emergency response team leaders, with allowances for shifts and holidays as required	
Spill drill completed and logged	
Evacuation drill completed and logged	
Contact numbers list formalised (fire, police, ambulance, hospital services)	
The above information is available and communicated to others	
<i>Add others as you need to for your organisation. If you do not have risk of spillage of hazardous materials, then these items are not applicable to your organisation.</i>	

TABLE 9: EMS DOCUMENT/RECORD INDEX

EMS document/record index							
Reference number (if applicable)	Procedure name	Level of document	Revision	Date	Owner	Review due	Links to
	Identifying significant environmental aspects	Level 1 Procedure					
	Identifying legal and other requirements	Level 1 Procedure					
	Competence, awareness and training	Level 1 Procedure					
	Communication	Level 1 Procedure					
	Control of documents	Level 1 Procedure					
	Operational control*	Level 1 Procedure					
	Emergency preparedness & response	Level 1 Procedure					
	Monitoring and measurement	Level 1 Procedure					
	Evaluating compliance with legal and other requirements	Level 1 Procedure					
	Non-conforming environmental situations	Level 1 Procedure					
	Corrective action	Level 1 Procedure					
	Preventive action	Level 1 Procedure					
	Control of records	Level 1 Procedure					
	Internal system audit	Level 1 Procedure					

***Note:** There may be multiple procedures for Operational control, for example, Waste management, Energy management, Maintenance procedures etc.

Many organisations gather plenty of data, but do not follow this up with sufficient and regular analysis.

Stage 7: Checking and auditing

CHECKING YOUR SYSTEM IS WORKING

Like any management system, your EMS should be checked to ensure it is functioning correctly, to identify potential and existing failures (non-conformances), and also to look for improvements.

- **Corrective actions** – to correct a non-conforming issue.
- **Preventive actions** – to correct an issue that is a potential non-conformance.

These corrective and preventive actions may be raised during an internal audit, but may also be raised outwith the internal audit at any time, by any employee or even an external body (e.g. SEPA, a contractor or supplier).

REVIEW OF DATA GATHERED FROM MONITORING

Many organisations gather plenty of data, but do not follow this up with sufficient and regular analysis. Help avoid this happening to you by asking these questions:

- What is the monitoring and measurement data telling us?
- Do we understand where trends are coming from?
- Why are there peaks and troughs?
- Are we reviewing and analysing this often enough?
- Are we 'weighting' the data to take account of increases and decreases in production in the organisation?

MAKING DECISIONS BASED ON THE OUTCOMES OF CHECKING

With any continual improvement process, such as an EMS, the regular feedback of information enables organisations to improve environmental performance.

By analysing and checking data we are able to make informed decisions about process changes and resource use (e.g. for employees, materials and utilities). Remember that results of audits should be fed back into the management review, where there is a forum at senior level for the review of data and suggestions for improvements to be made.

INTERNAL AUDIT OF YOUR SYSTEMS

Internal audits should cover all operations within the scope of your EMS. Areas with the most significant environmental impacts should be prioritised. Table 10 shows an audit schedule. Table 11 is a sample audit checklist and report that you can adapt to your own organisation's needs.



TABLE 10: INTERNAL AUDIT SCHEDULE

Internal audit schedule (Year _____)				
Audit title	Auditor	Jan	Feb	
Policy and planning				
EMS scope				
EMS policy				
Environmental aspects				
EMS objectives and targets				
Management programmes				
Legal and other requirements/evaluation of compliance				
Implementation and operation				
Structure and responsibility, training, awareness and competence				
EMS communications				
EMS documentation/document and record control				
Operational control audits (may be multiple audits, e.g. energy, waste, maintenance, water etc - insert a new line for each as needed)				
Operational control (NAME)				
Operational control (NAME)				
Operational control (NAME)				
Emergency preparedness and response				
Checking and corrective action				
Monitoring and measurement and continual improvement				
Non-conformance, corrective and preventive action				
Internal audit and management review				

Key:

SCH - Scheduled	AUD - Audited	CLS - Closed
------------------------	----------------------	---------------------

TABLE 11: AUDIT CHECKLIST AND REPORT

Audit title		Audit date	
Audit scope		Auditor(s)	
Department(s) covered		Auditee(s)	
Reference documentation			

Audit checklist

#	Question	Auditee response/reference documentation or situation viewed.	Auditor comment (make this section specific as to what needs to be changed in order to conform or improve).	OK	OBS/IMP	NC
1	Insert further lines as required.					
2						
3						
4						

Key:

OK – Conforms	OBS/IMP – Observation or Improvement	NC – Non-conformance
----------------------	---	-----------------------------

Note on internal auditor qualifications: Internal EMS Auditors should be competent. See the Institute of Environmental Management and Assessment (IEMA) website for more information on training (www.iema.net).

IMP/PA/CA Reference Number:		EMS Manager to provide reference number	
Date raised:		Raised by:	
Date closed:		Closed by:	
Date verified:		Verified by:	
Improvement, preventative or corrective action? (Select one).			
1. Details of the Issue:			
Signed:		Signed:	
Date:	(EMS Manager)	Date:	(Auditor)
2. Agreed actions: (be specific as possible – address the action to be completed, but also the preventive action to prevent recurrence):			
Signed:		Signed:	
Date:	(EMS Manager)	Date:	(Auditor)
3. Details of the action completed:			
Signed:		Signed:	
Date:	(EMS Manager)	Date:	(Auditor)
4. Preventative action to be put in place: (to prevent recurrence):			
Signed:		Signed:	
Date:	(EMS Manager)	Date:	(Auditor)
Owner:		Agreed close-out date:	

Notes: Action to be agreed between the auditee and the person raising the action. Action owner to provide signed form back to EMS Manager for file.

Motivation improves when people see the results of their efforts and are thanked for them!

Stage 8: Management review

WHY CARRY OUT A MANAGEMENT REVIEW?

The management review helps to keep the EMS on track, to maintain commitment and to raise issues with progress (e.g. resource or budget issues).

Usually the EMS manager will prepare the information prior to the management review meeting. A checklist for the information to be prepared is provided as a template in Table 12. Provide appropriate data to the management review meeting to inform it, but not overwhelm it. Summarise data where the detail is not as important to wider decisions.

You will want to keep the management team on board and motivated too. You might therefore want to consider providing a pack of information to attendees prior to the meeting.

COMMUNICATE RESULTS

The management review may lead to recommended changes to parts of the EMS: objectives may be revised, for example. Make sure you remember to communicate the changes which have been made, but also share the achievements which your organisation has made. Consider using easy to understand and attractive communications e.g. graphs and posters. Motivation improves when people see the results of their efforts and are thanked for them!

TABLE 12: EMS MANAGEMENT REVIEW CHECKLIST

Input to management reviews includes:	Check box
Summary of the significant environmental aspects and legal requirements of the company.	
Results of internal audits and evaluations of compliance with legal requirements and other requirements to which the organisation subscribes.	
Communication(s) from external interested parties, including complaints.	
The environmental performance of the organisation.	
The extent to which objectives have been met.	
Status of corrective and preventive actions.	
Follow-up actions from previous management reviews.	
Changing circumstances, including developments in legal and other requirements related environmental aspects.	
Recommendations for improvement.	

Outputs from management reviews include:	Check box
Any decisions and action related to possible changes to environment policy consistent with the commitment to continual improvement.	
Any decisions and action related to possible changes to objectives, targets and other elements of the environmental management system consistent with the commitment to continual improvement.	
Minutes of the meeting kept (date, time, who attended, the discussions had, data presented).	
Actions assigned and tracked.	



**ANNEX 1: KEY PERFORMANCE INDICATORS –
EXAMPLES AND TEMPLATES**

Paper usage								
A4 Paper		Measure	Jan	Feb	Mar	Apr	May	
Insert unit cost	Paper cost	Cost (£)	£212.75	£203.50	£268.25	£277.50	£203.50	
Insert individual unit volume	Paper use	No. reams	115	110	145	150	110	
Automatic	Paper weight	Weight (tonnes)	0.2875	0.275	0.3625	0.375	0.275	
A3 Paper		Measure	Jan	Feb	Mar	Apr	May	
Insert unit cost	Paper cost	Cost (£)	£37.50	£45.00	£30.00	£41.25	£37.50	
Insert individual unit volume	Paper use	No. reams	10	12	8	11	10	
Automatic	Paper weight	Weight (tonnes)	0.05	0.06	0.04	0.055	0.05	
Paper usage								
A4 Paper		Measure	Jan	Feb	Mar	Apr	May	
Insert unit cost	Paper cost	Cost (£)	£0.00	£0.00	£0.00	£0.00	£0.00	
Insert individual unit volume	Paper use	No. reams	0	0	0	0	0	
Automatic	Paper weight	Weight (tonnes)	0	0	0	0	0	
A3 Paper		Measure	Jan	Feb	Mar	Apr	May	
Insert unit cost	Paper cost	Cost (£)	£0.00	£0.00	£0.00	£0.00	£0.00	
Insert individual unit volume	Paper use	No. reams	0	0	0	0	0	
Automatic	Paper weight	Weight (tonnes)	0	0	0	0	0	

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year end total
	£231.25	£231.25	£236.80	£222.00	£225.70	£227.55	£229.40	£2,769.45
	125	125	128	120	122	123	124	1497
	0.3125	0.3125	0.32	0.3	0.305	0.3075	0.31	3.7425
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year end total
	£30.00	£22.50	£26.25	£22.50	£18.75	£15.00	£11.25	£337.50
	8	6	7	6	5	4	3	90
	0.04	0.03	0.035	0.03	0.025	0.02	0.015	0.45
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year end total
	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year end total
	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0

Electricity and gas consumption				
Responsible Person		Electricity		
		Measure	Jan	
Insert responsible person's name	Electricity use	kWh	185,000	
Automatic	Carbon dioxide emissions	Tonnes	99.345	
Insert responsible person's name	Cost	£	£18,130	
Responsible person		Gas		
		Measure	Jan	
Insert responsible person's name	Gas use	kWh	145,000	
Automatic	Carbon dioxide emissions	Tonnes	26.8105	
Insert responsible person's name	Cost	£	£5,075	
Energy use - KPI (kWh used/m ² of office floor space/month)				
Insert m² of floor area:	35,000	KPI	9.43	
Electricity and gas consumption				
Responsible Person		Electricity		
		Measure	Jan	
Assign responsibility	Electricity use	kWh	0	
Automatic	Carbon dioxide emissions	Tonnes	0	
Assign responsibility	Cost	£	0	
Responsible person		Gas		
		Measure	Jan	
Assign responsibility	Gas use	kWh	0	
Automatic	Carbon dioxide emissions	Tonnes	0	
Assign responsibility	Cost	£	0	
Energy use - KPI (kWh used/m ² of office floor space/month)				
Automatic	Insert Floor Area m ²	KPI	0	

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	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year end total
	185,000	170,000	165,000	160,000	140,000	130,000	120,000	125,000	145,000	150,000	175,000	1,850,000
	99.345	91.29	88.605	85.92	75.18	69.81	64.44	67.125	77.865	80.55	93.975	993.45
	£18,130	£16,660	£16,170	£15,680	£13,720	£12,740	£11,760	£12,250	£14,210	£14,700	£17,150	181,300
	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year end total
	140,000	130,000	120,000	100,000	90,000	90,000	80,000	90,000	100,000	110,000	135,000	1,330,000
	25.886	24.037	22.188	18.49	16.641	16.641	14.792	16.641	18.49	20.339	24.9615	245.917
	£4,900	£4,550	£4,200	£3,500	£3,150	£3,150	£2,800	£3,150	£3,500	£3,850	£4,725	46,550
	9.29	8.57	8.14	7.43	6.57	6.29	5.71	6.14	7.00	7.43	8.86	90.86
	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year end total
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year end total
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

General waste				
Responsible Person		General waste disposed of to landfill		
		Measure	Jan	
Insert responsible person's name	Number of general waste (skip) uplifts per month.	No.	0	
Automatic	Volume of general waste collected	Weight (tonnes)	0	
Automatic after insertion of data	Please insert average weight x1 general waste uplift skip- insert kg per month	Weight (kg)		
Insert responsible person's name	General waste uplift cost	Cost (£)	0	
Special waste				
Responsible person		Gas		
		Measure	Jan	
Insert responsible person's name	Number of hazardous waste (skip) uplifts per month.	No.	0	
Automatic	Volume of hazardous waste collected	Weight (tonnes)	0	
Automatic after insertion of data	Please insert average weight x1 hazardous waste uplift skip- insert kg per month	Weight (kg)		
Insert responsible person's name	Hazardous waste uplift cost	Cost (£)	0	
Paper and cardboard waste recycled/reused				
Responsible Person		Recycled/reused waste (paper/card)		
		Measure	Jan	
Insert responsible person's name	Number of recycling bins for paper/card waste - collected/ month.	No.	0	
Automatic	Volume of paper/card recycled/reused/ month.	Weight (tonnes)	0	
Automatic after insertion of data	Please insert average weight x1 recycling card/paper waste bin - insert kg per month	Weight (kg)		
Insert responsible person's name	Recycled/reused waste uplift cost	Cost (£)	0	
Waste – key performance indicators				
	Waste generated (all waste) - KPI (tonne of waste generated/per 1000 unit production/per month)			
Automatic	Production units (1,000s) per month	No.	Jan	
Automatic	Total waste generated KPI	KPI	20	
	Waste recycled/reused - KPI (tonne of waste recycled & reused/per 1000 unit production/per month)			
Automatic	Production units (1,000s) per month	No.	20	
Automatic	Recycled/reused KPI	KPI	0	

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	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year end total
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	16	16	11	12	24	25	27	35	40	45	44	
	16	16	11	12	24	25	27	35	40	45	44	
	0	0	0	0	0	0	0	0	0	0	0	

Domestic water use and waste water disposal				
Responsible person for collecting data		Domestic water use and waste water disposal		
		Measure	Jan	
Insert responsible person's name	Volume water used per month	Volume (m ³)	0	
Insert responsible person's name	Volume of waste water disposed per month	Volume (m ³)	0	
Insert responsible person's name	Cost water used and disposed (do not include drainage/fixed charges) per month	Cost (£)	£0.00	
Water - key performance indicators				
Water use and waste water disposal - KPI (volume of water and waste water use/ No. employees/month)				
		Measure	Jan	
Automatic	No. employees per month	No.	0	
Automatic	Water use and waste water disposal - KPI	KPI	0.00	

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year end total
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	0	0	0	0	0	0	0	0	0	0	0	
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

ANNEX 2: EMS MONITORING AND MEASURING DATA TRACKER

EMS monitoring and measuring data tracker (your site)				
Date	Production output	Electricity meter reading	Weekly electricity usage	Gas meter reading
		kWh	kWh	m ³
			0	
			0	
			0	
			0	
			0	
			0	
			0	
			0	
			0	
			0	
			0	
			0	
			0	
			0	
			0	
			0	
			0	
			0	
			0	
			0	
			0	

Choose appropriate figure to correspond to production, e.g. tonnes of product shipped, £1,000 sales, etc.

Be aware of the units you are using. Electricity meters tend to be in kWh, but gas meters are in m³.

Use this template to set up a spreadsheet to track data for monitoring and measurement.

Add columns as required, to track relevant significant aspect information for your organisation (e.g. materials, packaging used etc).

Add in columns to calculate costs as required, or use a new worksheet tab to do so.

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ANNEX 3: DOCUMENT/RECORD/ MANUAL INDEX TEMPLATE

Reference number (if applicable)	Document/record/manual name	Level of document	Revision	Date	Owner	Review due	Links to
	Environmental management manual	Manual					
	Environmental policy	Record					
	Register of significant environmental aspects	Record					
	Legislation register	Record					
	Site objectives and targets	Record					
	Environmental programmes - task list	Record					
	Roles, responsibilities and authority	Record					
	Training/competence matrix for personnel and contractors	Record					
	Communication records register	Record					
	Document index	Record					
	Environmental non-conformance report	Form					
	Waste register (Listing types of wastes and storage methods)	Record					
	Log of approved contractors, waste management and transfer licences	Record					
	Controlled waste transfer notes (folder)	Record					
	Special waste duty of care notes	Record					
	Effluent log book and electronic records	Record					
	Control of contractors (permit to work) system	Record					
	Permit to work records (folder)	Record					
	Approved supplier form	Form					
	Returned supplier questionnaires (folder)	Record					
	Emergency preparation and response manual	Record					
	Emergency drill records	Record					
	Record of near miss, incident or accident	Record					
	Non conformance log	Record					

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Reference number (if applicable)	Document/record/manual name	Level of document	Revision	Date	Owner	Review due	Links to
	Corrective and preventive action log	Record					
	Corrective and preventive action form	Record					
	Internal audit schedule	Record					
	Internal audit reports (folder)	Record					
	Internal audit template	Record					
	Internal auditor list	Record					
	Management review agenda	Record					
	Management review results (meeting minutes) (folder)	Record					
	EMS team meeting agendas and minutes (folder)	Record					
	Planned preventive maintenance	Work instruction					
	Work instruction for near miss, incident or accident reporting and review	Work instruction					
	Emergency evacuation procedure	Work instruction					
	Waste segregation and disposal	Work instruction					
	Storage and handling of hazardous materials	Work instruction					
	Monitoring and measurement records - list of locations	Record					

Others as required to be inserted – according to your site.

FURTHER ASSISTANCE

If you need further advice or have any questions about building your EMS, visit the **Zero Waste Scotland website** at www.zerowastescotland.org.uk

The **Zero Waste Scotland helpline** on **0808 100 2040** can put you in touch with relevant technical experts.

These resources can also:

- provide free, up to date advice on environmental issues;
- arrange other appropriate face-to-face support – workshops, training events, online tools and site visits;
- tell you about relevant environmental and other legislation that could affect your business;
- download or request FREE copies of relevant Zero Waste Scotland publications;
- suggest other sources of information.



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