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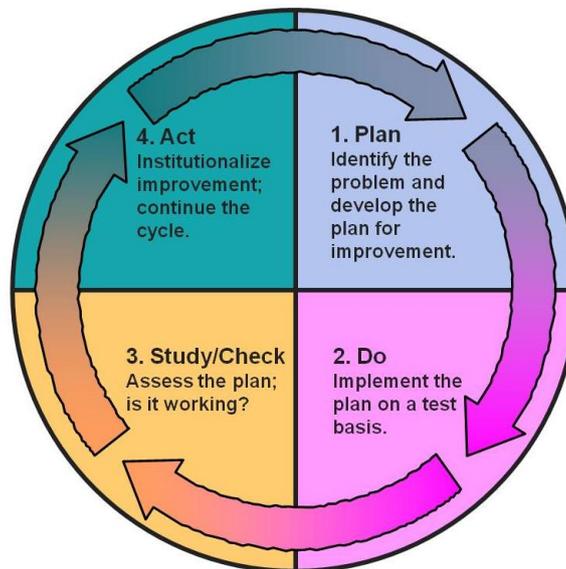
## Environmental Management System: Guidance Notes

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### 1. What is Environmental Management?

- 1.1 An Environmental Management System (EMS) can be described as 'a set of tools for managing, reducing or preventing environmental impact'. In other words it is a planned approach to minimising an organisation's impact on the environment.
- 1.2 It includes the organisational structure, planning and resources for developing, implementing and maintaining the policy for environmental protection.
- 1.3 An EMS follows a plan-do-check-act cycle or PDCA.

#### The PDCA Cycle



It shows the process of first developing an environmental policy, planning the EMS and then implementing it. The process incorporates checking the system and then acting on it. This model is continuous because an EMS is a process of continuous improvement in which an organisation is constantly reviewing and revising the system.

- 1.4 The key points of an EMS are:
  - 1.4.1 **Policy Statement:** a statement of the organisation's commitment to the environment.
  - 1.4.2 **Identification of significant environmental impacts:** the environmental properties or attributes of the products, activities or services your company provides and their effects on the environment.

- 1.4.3 **Development of objectives and targets:** the environmental goals you have, where you want your company to be and how you want it to be seen.
- 1.4.4 **Implementation:** your plans to meet the objectives you have set out.
- 1.4.5 **Training:** what instruction or courses your employees need to go on to make sure they are able to fulfil their environmental responsibilities.
- 1.4.6 **Management review:** Ensuring that the process is continually monitored and reviewed by the senior management.

**The Likely Costs And Benefits From Having An EMS.**

<b>Potential Costs</b>	<b>Potential Benefits</b>
<p><b>Internal</b></p> <ul style="list-style-type: none"> <li>• Staff (manager) time</li> <li>• Other employee time</li> </ul> <p>(Note: Internal labour costs represent the bulk of the EMS resources expended by most organisations)</p> <p><b>External</b></p> <ul style="list-style-type: none"> <li>• Potential consulting assistance</li> <li>• Outside training of personnel</li> </ul>	<ul style="list-style-type: none"> <li>• Improved environmental performance</li> <li>• Enhanced compliance</li> <li>• Pollution prevention</li> <li>• Resource conservation</li> <li>• New customers/markets</li> <li>• Increased efficiency/reduced costs</li> <li>• Enhanced employee morale</li> <li>• Enhanced image with public, regulators, lenders, investors</li> <li>• Employee awareness of environmental issues and responsibilities</li> </ul>

**2. Getting Management Commitment**

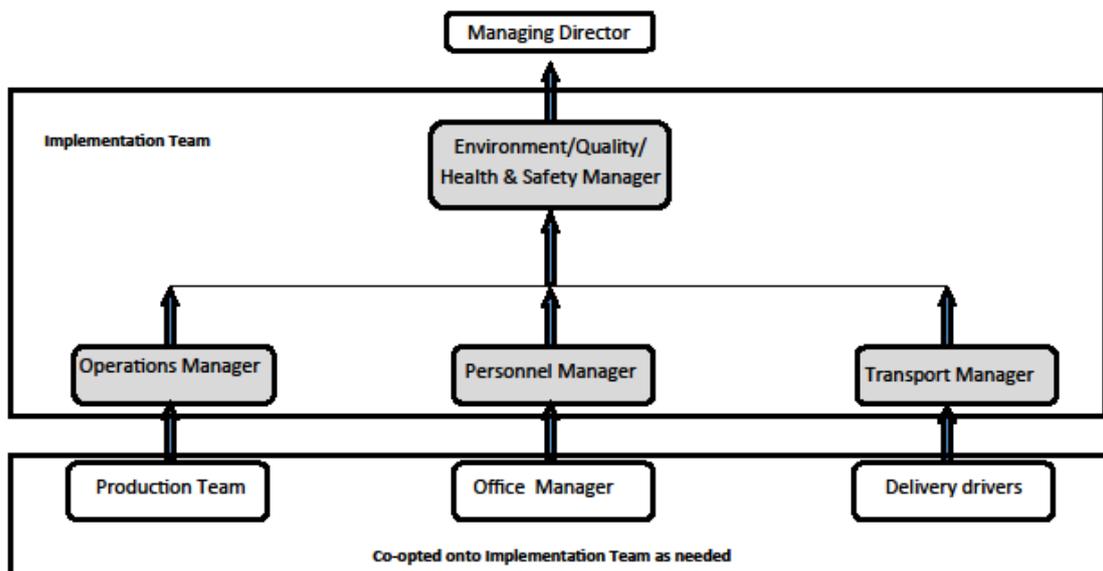
- 2.1 Getting and maintaining management commitment, even if you are a very small company, is essential for the successful implementation of any management system. As nothing ever runs smoothly, commitment will be needed to put the EMS status on a par with other business decisions within the organisation, so that changes are made and resources allocated even when things get difficult. Even in a two-person partnership, everyone needs a consistent approach to the EMS, hence 'commitment'.
- 2.2 Don't just think about managers - devolved responsibilities will help to maximise the benefits of the EMS, by involving people at all levels of



the business in understanding and identifying opportunities to drive the EMS forward.

- 2.3 A common approach is to create an implementation team, which requires time and effort from key members of staff - this will be impossible to achieve without everyone's commitment.
- 2.4 The organogram below shows how your EMS team may look. The important thing is to include people from different parts of the business. You want everyone to 'buy in' to the idea.

### Example Organogram For Environmental Management System



### 3. Environmental Goals

- 3.1 Now you have your team in place, you need to consider what your goals are and what you hope to achieve by improving your 'green credentials'.
- 3.2 You might want to consider these:
  - 3.2.1 Cost savings – by focusing on reducing your consumption of resources and the amount of waste you generate, you can often make good savings. *Having an EMS in place will help you focus on the potential savings, plan improvement programmes, establish controls and ongoing monitoring, and work to the objectives and targets you have set yourself.*
  - 3.2.2 Risk management – with increasing environmental legislation backed by increasingly heavier penalties, it is certainly not wise

to ignore your legal responsibilities. In addition to the direct costs of non-compliance (fines), and the indirect costs (legal fees, management time), you also need to weigh up the potential damage to your organisation's reputation. *Having someone monitoring your EMS will help you to identify the relevant legislation.*

- 3.3 Marketing opportunities – awareness of environmental issues amongst clients - whether they are B2B or B2C – is increasing and many companies are actively looking at the green credentials of their supply chain. This means that genuine opportunities exist for new and existing business by promoting the environmental attributes of your products/services. *An EMS can help you to identify customer requirements and establish eco-design projects or supplier programmes.*
- 3.4 Interested Parties – both internal and external. From employees to the local community, investors to activists, everyone may have an interest in your activities from an environmental perspective. These interested parties will probably all have different views of what is important in relation to the environment and, as such, accommodating these views will be a part of creating and then maintaining good relationships. *An EMS will provide a framework for measuring and monitoring your environmental performance and communicating information to all those interested parties.*

#### **4. Environmental Management System – Baseline Assessment**

- 4.1 When you commit yourself to any type of improvements you need to have a starting point – a baseline from which you can measure your progress and performance. Once you have your baseline you then can develop your improvement programme and the priorities within it. Setting the baseline for your EMS will determine what areas of your organisation you want to start improving, what your organisation already does and how it does it, what the current plans and policies are, who is responsible and who needs to be kept informed about any changes or who needs to be brought into the programme.
- 4.2 Making assumptions about where you start from can easily make the rest of the process far harder than it need be, as your starting data may be skewed. For that reason it's worth carrying out a thorough baseline assessment of your existing management practice and environmental performance.
- 4.3 Many companies are pleasantly surprised to find that they already have quite a bit in place (even though it may not be thought of as being 'green or environmentally friendly') while others find they have much more to do than they had originally anticipated.

- 4.4 If your business activities are not easily marked on a site map, try to establish your baseline by using a series of simple process flow diagrams. Identify the flow of business activities and then mark on the same diagram their associated environmentally related inputs and outputs. An example Process Flow Diagram can be seen on page 8 of these guidance notes.
- 4.5 Establish the scope of your baseline assessment. This will include both the actual physical boundaries of your premises and a description of the business activities.
- 4.6 Try mapping out the boundaries of your proposed EMS - include environmental considerations such as a drainage plan (both surface and foul drains), chemical/oil storage points, location of waste skips, chimney stacks from boilers or process lines, car parks, wind direction, local neighbours, areas of frequent pollution/spills etc, previous uses of the site and potential contaminated land. This list is not exhaustive, just an indication of what could be included.
- 4.7 Consider the main activities, products or services over which your organisation has control, or over which you can expect to have some influence. These might include electricity/gas/water usage, business travel and contractors' or customers' behaviour.
- 4.8 These might not always be immediately apparent, so this can best be done in a number of ways, including group brainstorming, process mapping and input/output charts.
- 4.9 Using the outputs from the exercise in clause 5 below, identify any changes to the environment that your organisation causes (in other words- **Impacts**) and the activities that cause them (**Aspects**) using a Process Analysis Matrix (an example of which is at page 7 of these guidance notes) in accordance with clause 6 below.
- 4.10 Try to use a common sense approach – brainstorming is an effective method of tackling this section. But don't forget to use the outputs from either the mapping approach or process flow model.
- 4.11 If you know of any relevant environmental requirements, make a note of them in a 'draft legal register'. Such obligations may include licences, discharge consents etc.
- 4.12 Finally, your baseline assessment should include a review of your existing management practices. For example, you may already have a system for identifying and recording your training under Investors in People, or use risk assessment techniques within your QMS or H&S system. If you find these techniques are effective, build them into your EMS.

## 5. Process Flow Chart - Guidelines for Completion

The first step is to complete a process analysis exercise and visit each relevant activity. A Walk-round Checklist has been designed for use at this stage and an example is available to download separately elsewhere in this folder. If necessary speak to operators or maintenance staff to gain a better understanding of the process. It is important to walk through your operation as well if using this approach, as a desktop survey may miss important issues on the ground – often there are sources of environmental impact not directly related to any main activity, product or service.

### 5.1 Activity/Product/Service

5.1.1 Identify the activity, product or service and enter it into the box. Do not forget to evaluate past activities carried out on-site, planned future activities or site wide issues such as energy or resource consumption.

5.1.2 Examples are:

- a) Activity – Handling of hazardous materials
- b) Product – Product refinement
- c) Service – Vehicle maintenance

### 5.2 Inputs

List the generic inputs and identify any use of resources such as water, electricity etc.

### 5.3 Outputs

List the generic outputs and make an assessment of any noise, vibration or odour.

### 5.4 Outputs – Air

Assess if there are any emissions to air, visible plumes or dust (this could be done from the boundary of the site).

### 5.5 Outputs – Land

List the waste streams arising from the process and if they are contained correctly.

### 5.6 Outputs – Water

Identify if any effluent is generated and where the effluent is discharged (foul or surface drain or direct to controlled waters/ground). It is advisable to obtain a drainage plan for the site.

## 6. Process Analysis Matrix

Following completion of the process analysis, a simple matrix can now be used to identify the environmental aspects and associated environmental impacts. The following example is similar to that of the international standard, ISO 14004.

### Process Analysis Matrix

Activity/Product/Service	Aspect	Impact
Activity – Handling of hazardous chemicals	Potential for accidental spillage	Contamination of soil or water
Product – Product refinement	Reformulation of the product to reduce volume	Conservation of natural resources
Service – Vehicle maintenance	Exhaust emissions	Reduction of air emissions

6.1 The information gathered during the process analysis exercise (whether you used a site map or flow chart) can be used to complete the aspects and impacts columns.

6.2 The organisation's Aspects and Impacts are defined as follows:

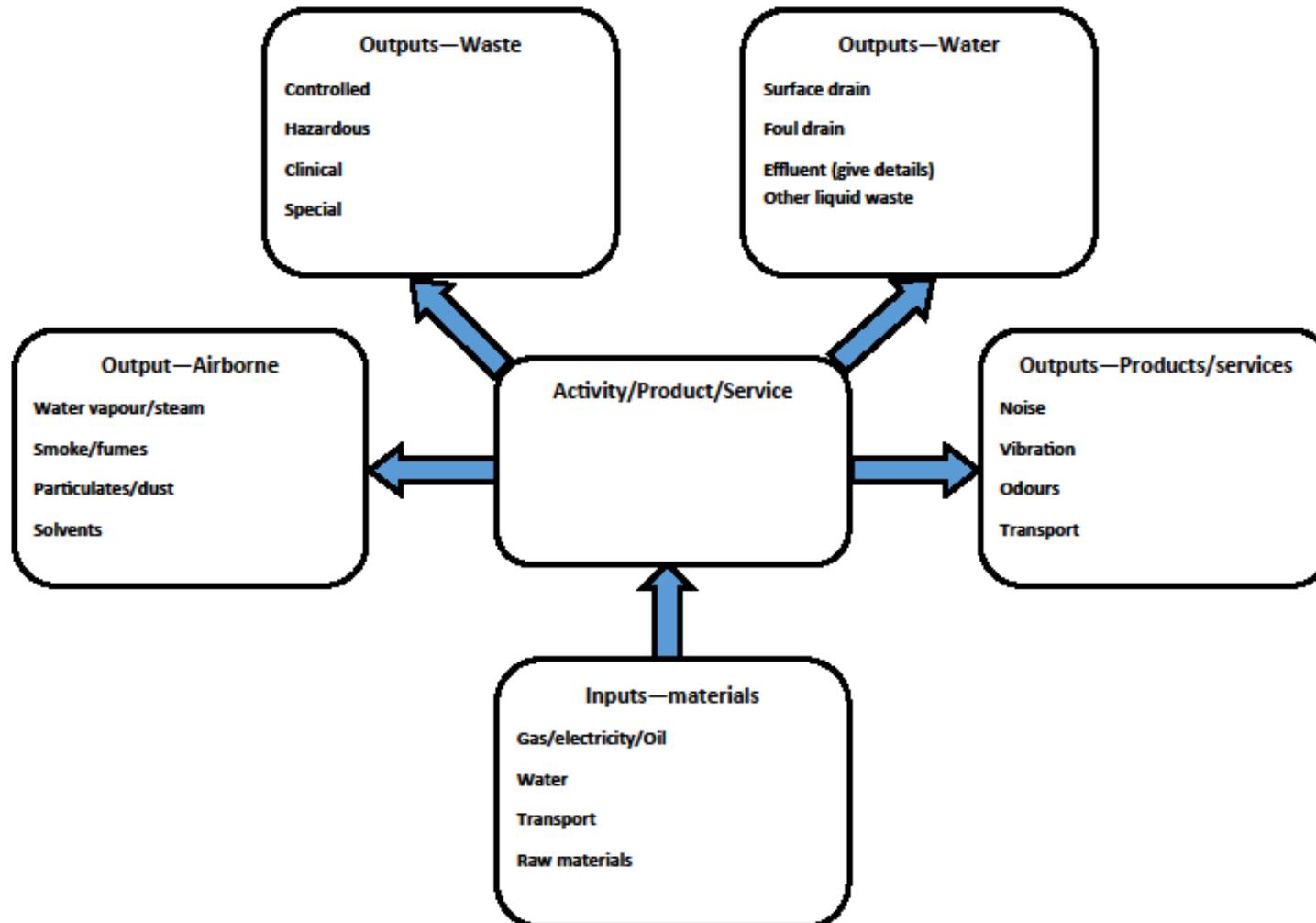
#### 6.2.1 Definitions

Aspect = cause. Elements of an organisation's activities products or services that can interact with the environment. For example, using energy means the burning of fossil fuels...

which will cause :-

Impact = the effect. Any change to the environment whether beneficial or adverse that results from the organisation's activities, products or services. The Impact of burning fossil fuels will be resource depletion, effects on local air quality and a contributory factor in climate change.

## Process Flow Chart

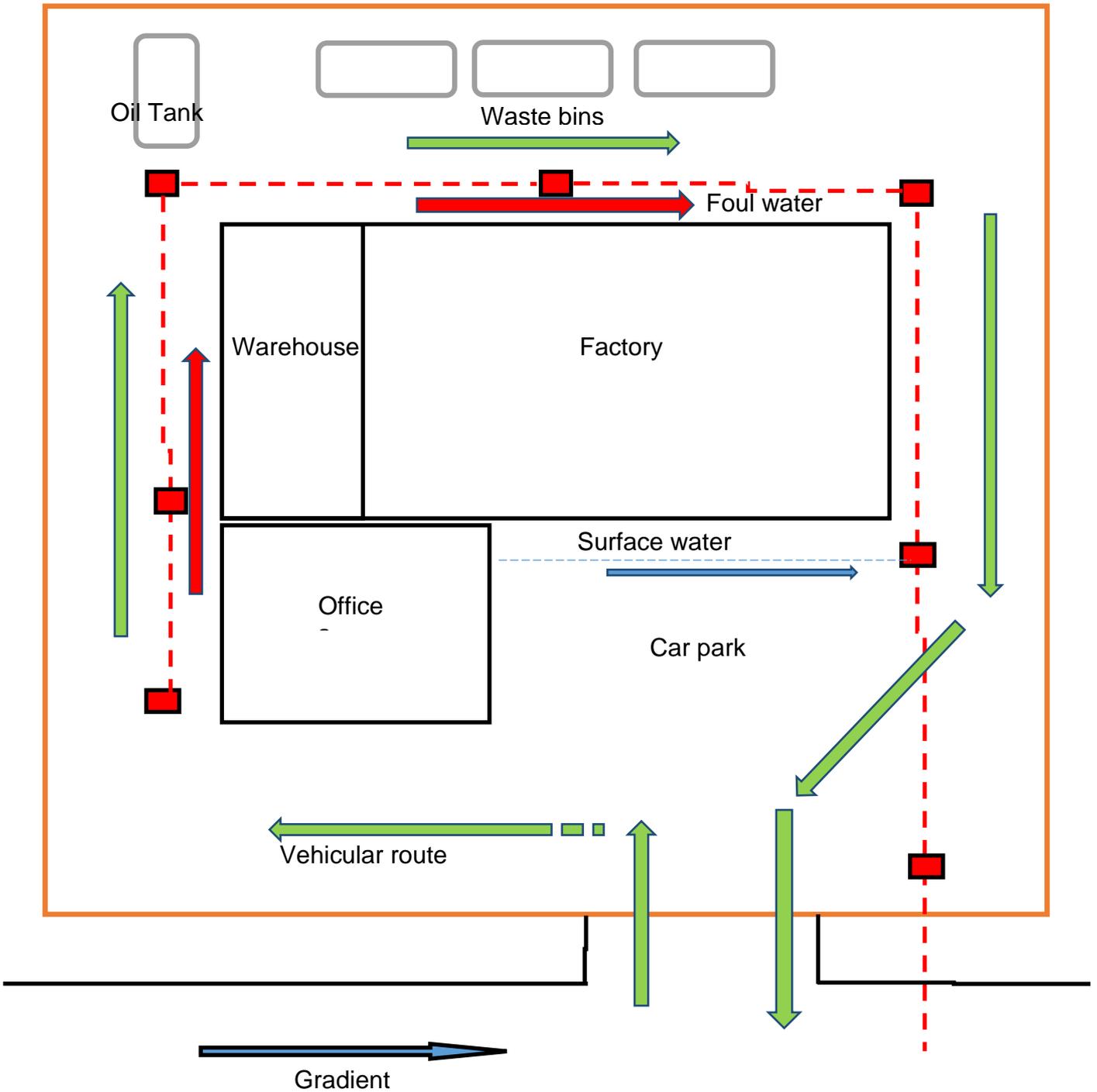


## **7. Site Drainage Plan**

- 7.1 Now that you know what your environmental 'outputs' are, you need to know how your site layout will affect how they impact on the environment. So the next thing to do is to create a site drainage plan.
- 7.2 This should be a clear diagram of your site showing the layout and access details along with a basic schematic of the drainage arrangements. There is an example on the next page.
- 7.3 It should show:
  - 7.3.1 The general layout of the buildings
  - 7.3.2 Site access routes for emergency vehicles
  - 7.3.3 Any on-site treatment facilities for dealing with waste or sewage
  - 7.3.4 Storage areas for materials, products or waste
  - 7.3.5 Oil, water or chemical tanks
  - 7.3.6 Bunding
  - 7.3.7 Any unmade ground – porous
  - 7.3.8 The routes of foul and surface water including any soakaways
  - 7.3.9 Location of mains water supplies and sprinkler control valves
  - 7.3.10 Hydrants or fire boxes, spill kits
- 7.4 Now that you have done all this you have set your baseline.

# Site Plan

Site boundary



Gradient

Front elevation

10

## 8. EMS Risk Assessment

- 8.1 Once the EMS baseline assessment has established what is going on in your organisation, the next question is what are the issues to be addressed and what are you going to manage and how?
- 8.2 The organisation's Aspects and Impacts have now been determined using the Process Analysis Matrix. The Aspects and Impacts were defined as follows:  
Definitions  
Aspect = cause.  
Elements of an organisation's activities products or services that can interact with the environment. For example, using energy means the burning of fossil fuels...  
which will cause :-  
Impact = the effect.  
Any change to the environment whether beneficial or adverse that results from the organisation's activities, products or services. The Impact of burning fossil fuels will be resource depletion, effects on local air quality and a contributory factor in climate change.
- 8.3 The next step is to complete your EMS Risk Assessment for each task or location, as follows:
- 8.3.1 Column 1 – Identify the aspect,
  - 8.3.2 Column 2 – List the source,
  - 8.3.3 Column 3 – List the frequency of the activity,
  - 8.3.4 Column 4 - Potential environmental impact – how will this affect the environment?
  - 8.3.5 Column 5 - Responsible Person – who is responsible for the aspect i.e. the cleaner.
  - 8.3.6 Many example Risk Assessments for common tasks and locations are available in this folder.
- 8.4 For each environmental aspect work out the Level of Risk:
- 8.4.1 S - The severity of the Impact. We have used the same scale as other risk assessments 5= Very severe: 1 = Minimal  
P – Likelihood/Probability – the chance of anything happening.  
R – The Risk Factor/Score
  - 8.4.2 These scores should be done as you are now. If you do not have any controls to mitigate the severity as yet you should not score as you would like it to be but as is.
  - 8.4.3 Assess Severity by asking: What would happen if something went wrong? Answering 'yes' to any of the following will increase the score;

- 8.4.3.1 Will the impact cause substantial damage or nuisance?
- 8.4.3.2 Is there a large quantity or volume?
- 8.4.3.3 It is toxic/hazardous?
- 8.4.3.4 Might the impacts be perceived in a very negative way by the public or press?
- 8.4.3.5 Are there legal ramifications from the impact with possible prosecution and fines?
- 8.4.3.6 Will it cost much to fix the issue?

8.4.4 When considering likelihood you need to ask the following questions, which will affect the score.

- 8.4.4.1 Is the activity continuous or very frequent ie daily? – 5
- 8.4.4.2 Is the activity regular *and* frequent ie weekly/monthly – 4
- 8.4.4.3 Is the activity regular but infrequent ie bi-annual/annual – 3
- 8.4.4.4 Might it occur occasionally? - 2
- 8.4.4.5 Will it occur rarely if ever? – 1

8.4.5 Severity x Likelihood = the Significance Score. In other words the higher the score the more significant the impact will be – therefore the greater the need for you to control these activities.

8.4.6 In the example below we have fuel storage tanks used to refill trucks onsite. The source of contamination would be leaks from the tanks or spills from refilling. The trucks are refuelled weekly. You would need to add probable fines and a lot of adverse publicity to the environmental damage should there be an incident.

EMS Baseline Assessment Form						RA Ref No:		
Assessor		Job Title		Assessment Date		Review Dates / Initials		
Assessment task or location:								
H Z N o.	Environmental Aspect	Source	Frequency	Environmental Impact	Level of Risk			Responsible Person
					S	P	R	
1	Storage of fuel for trucks	Leaks or spills during weekly filling	Weekly	Potential to enter water table/ groundwater. Toxic to wildlife	5	4	20	A Bloggs – Workshop supervisor
2								
3								
4								

So we have a very high severity (5) combined with a high likelihood (4) giving a significance score of 20.