

Environmental Management Performance - The Advantage of Software to Audit and Track Improvement

by

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EXECUTIVE SUMMARY

With the onset of Environmental Management Systems (EMS) and the concept of Due Diligence being written in to legislation through-out Australia, the ability to determine where you are with your environmental management program and more importantly the provision of a clear road-map providing direction of “*where you’ve got to go*” has never been more important.

For Public and Private corporations alike, there is a need to delineate the status of the organisation, either as a whole or within individual Departments, with regard to the completeness of the their EMS, the level of Environmental Compliance and effectiveness of Risk Management strategies.

To meet this need a system to monitor environmental performance is essential for all organisations with environmental risk. Most organisations fulfil this function by conducting *environmental audits* to measure where you are and provide directions to improve performance.

Experience suggests that unless a rigorous environmental auditing format complete with a scoring function is followed, it is difficult to track and compare whether system components and risk management practices are continually improving (an essential factor of most environmental Policies).

A need was therefore identified for a tool to assist organisations audit and track their performance, particularly improvements? This need led to the development of the **AuditMASTER™** computerised auditing software package.

AuditMASTER was designed and developed over a three (3) year period by certified Senior Environmental Auditors. As such it was designed to be consistent, comprehensive and reproducible even between different auditors. The package has since been used successfully across a range of organisations.

It is designed to enable organisations to:

1. conduct a review against the standard ISO 14001: Environmental Management Systems;
2. benchmark the status of environmental management across and within an organisation and to track improvements; both graphically and numerically;
3. assess and report on the level of legislative compliance;
4. review, rate and rank environmental risk exposures based on the AS 4360 model; and
5. systematically capture information that can be recalled at a later date to justify

Auditing fulfils a vital component of an environmental management system. Conducting audits with efficiency, effectiveness and ease is the goal of all auditors. A computerised system such as provided within the **AuditMASTER™** package is designed to facilitate this auditing process and is therefore of considerable value to environmental and EMS managers.

At the completion of auditing, the auditor need only click on an icon to automatically have all the input data processed into a report or database format ready for immediate distribution.

Software is beginning to take a much greater role to improve the efficiency of audits, save valuable time for environmental specialists and facilitate the continuous improvement process.

This has been proven by the valuable role systematic auditing has played in facilitating the improvements of a number of organisations, some of which are now certified to ISO 14001: Environmental Management Systems.

This paper illustrates, by way of actual case studies, how the AuditMASTER software audit package has resulted in improved environmental performance across a number of organisations and assisted some to achieve certification.

KEY WORDS

Environmental Auditing Software, Audit Protocol, Improved Performance.

INTRODUCTION

The challenge was set in the late 1990's.

A senior manager was searching for a tool to assist his management team fulfil their environmental due diligence obligations. Over a sandwich, he articulated his requirements:

“ We operate a multinational with a diversified industry base. Our Board of Directors want us to establish an environmental program that demonstrates effective risk management and enables tracking of improvements.”

He explained that the current reporting format to the Board was not based on a consistent approach. Several of the business units were reporting their environmental performance based on different measures. This led to disjointed information being presented in a complicated manner. There was no means to benchmark one site against another, let alone enable the Board to compare the environmental performance of the different business units.

He went on to say:

“What we need is a systematic platform to measure our environmental performance so that reporting is streamlined, easy to understand and able to demonstrate continuous improvement.”

He wanted a tool to assess and manage performance. His requirements were to:

- comprehensively evaluate the level of Environmental Management Systems at each site;
- identify the level of compliance each site maintained with environmental legislation;
- identify and prioritise environmental risks in terms of their significance;
- be systematic enough to enable one site's performance to be compared with another; both within like business units and across the different businesses;
- report numerically and graphically the current status of environmental performance and enable improvements to be demonstrated over time;
- provide consistency of approach that enabled different auditors to provide a comparable report with a scorecard; and
- be readily transformed by site management into an environmental improvement plan via a prioritised list of recommendations.”

AUDIT PROTOCOL

Development

The challenge was accepted and later that same year a paper based environmental auditing protocol was developed.

The protocol was designed to provide a consistent approach to auditing no matter who conducted the audit so long as the person had reasonable environmental expertise and auditing skills. It also applied no matter where (region, state, country) the site was located.

Essentially, the protocol contained the following components:

1. It was based on three (3) foundation Modules:
 - Management Systems;
 - Legislative Compliance; and
 - Risk Assessment.
2. It had a consistent rating structure whereby each question was scored, thereby enabling statistical reporting.
3. Each question included: -
 - an expectation' which outlined the best practice conditions;
 - up to five measures to assess performance against the expectation;
 - a guide to inspections and proof (e.g. confirmation of processes, documentation, information requirements, interviews etc.).

Such details were specified to assist the auditor and auditee and maintain consistency between auditors assessing different facilities.

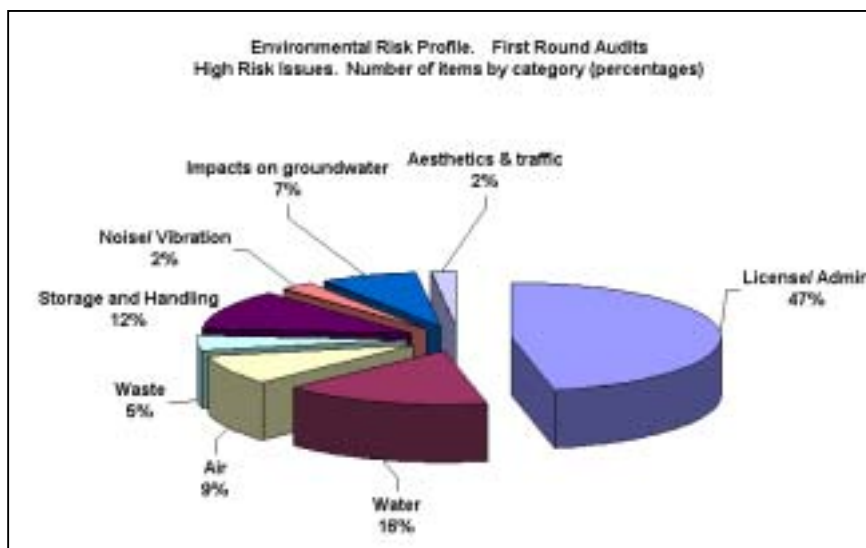
4. It provided a *risk matrix* which enabled capturing and highlighting of high risk situations. The risk matrix being a simple yet effective qualitative format based on AS/NZS 4360:1999 Risk management¹ and HB 203:2000 Environmental Risk Management².
5. It prioritised recommendations into a readily usable format for site management to transform into an Environmental Improvement Plan (EIP).
6. It provided a graphical representation of results and a score (max. 100%) so that comparisons of sites could be made and improvements could be demonstrated over time.

Auditing Trials

The protocol worked well in the field, providing a valuable educational risk management tool for site management as they worked with the auditor through the structured questions. It was used in the timber, building, food, construction, pharmaceutical, waste management, automotive and sugar industries.

Outcomes were graphically illustrated as the example below demonstrates:

Figure 1: Risk Profile



Enter AuditMASTER™

It became obvious that the paper based audit protocol was ideally suited to a computerised, automated system.

By combining the logical and consistent steps in the protocol with the processing and report writing abilities that software permits, a vast increase in auditing efficiency and consistency could be won. AuditMASTER™ is the result.

The auditor is provided with a series of questions that can be scored against. Each Section enables comments to be recorded and recommendations to be made. Recommendations can be captured if required to streamline responses for future audits. This is particularly useful if the auditor has several like sites to audit.

AuditMASTER's™ automation makes light work of the often laborious process of report writing. At the completion of the audit it **automatically prepares**:

- ✓ a Table of Recommendations, structured in priority order. These can readily be transformed into an Environmental Management/ Improvement Plan with the insertion of a responsible person to action the recommendation and a due date for completion;
- ✓ a graphical representation of the site's status and a site score;
- ✓ a pictorial summary of risk situations identified on the day(s) of the audit; and
- ✓ full details of each question and comments made by the auditor during the audit.

The auditor need only to prepare an Executive Summary of the main issues to complete the report. An illustration of a question screen is provided below:

Figure 2: Example of Question Screen

The screenshot shows the AuditMASTER software interface. The window title is 'AuditMASTER - Emeraldisk - [2.3 Neighbouring Impact on Your Site]'. The menu bar includes 'File', 'Edit', 'Questions', 'Custom', 'Report', and 'About'. The interface is divided into several sections:

- Applicability:** Three radio buttons: 'Applicable' (selected), 'Not Applicable', and 'Not in Audit Scope'.
- Expectations:** A text box containing 'Neighbouring operations hold a low risk of influencing the environmental conditions on your site.' Below it are buttons for 'Table - Neighbours', 'View Inspection Details', and 'Custom Recommendation'.
- Score a Maximum of 1 point for each of the following:** A list of five questions with dropdown menus for scoring:
 - Question 1: 'There are no current waste discharges from neighbouring premises on to your site.' Score: 0.
 - Question 2: 'All chemicals stored on adjacent sites have the property boundaries well securely fenced to protect from spillage onto your site.' Score: 0.5.
 - Question 3: 'Security on your site is adequate to minimise risk of unauthorised access which may cause a significant environmental incident.' Score: 0.5.
 - Question 4: 'There is limited potential for neighbouring operations to contaminate your site.' Score: 0.
 - Question 5: 'Neighbour storage/waste storage does not flow through your property.' Score: 1 (dropdown menu is open showing options: 1, 0.5, 0, 0.5, 1, N/A).
- Comment(s):** A text box containing: 'Neighbouring drum storage abuts boundary. Surface of contamination evident. Evidence of waste dumping to rear of site, potentially originating from neighbouring car wrecking yard.'
- Recommendation(s):** A text box containing: 'Contact neighbours with regard to storage and waste disposal improvements so as to not cause site contamination. Implement routine boundary inspections to identify and resolve any risks of contamination from neighbouring activities.'
- Buttons:** 'Add a Custom Recommendation'.
- Outcome:** 'Score: 1' and 'Inspection Rank: A-HIGH'.
- Navigation:** '<' and '>' buttons at the bottom.

All comments made during the audit are captured electronically for future reference, if required. This is important as site management, or indeed future auditors, may need to

evaluate the rationale behind a recommendation. Alternatively, the full audit can be printed out for those without ready access to computer systems.

AuditMASTER™ structure is designed directly against the International Standard on Environmental Management Systems ISO 14001³ making it appealing not only through-out Australia but internationally as well. AuditMASTER™ uses Microsoft® Visual Basic® as the program language. As such, additional questions can be added with ease to make the protocol site and/or industry specific if required.

As well, report print outs are made in Microsoft Word (Version 97 and above) and Access (for scheduling and due date flagging applications), thereby providing a range of formatting options and database functions for the auditor to optimise final report presentation.

Competency Pre-Requisites

To perform any audit competently, a level of professional qualifications or expertise (preferably both) is required. This is true for applying AuditMASTER™. The AuditMASTER™ package is a valuable tool for both the novice and experienced auditor. It is likely to turn a novice into a good auditor and a person with reasonable auditing expertise into a very efficient auditor. It should be stressed however, that it will not immediately make a good auditor out of someone with no expertise.

Figure 3: Graphical Summary *Company X Pty Ltd*

Matrix	1	2	3	4	5	Score
ENVIRONMENTAL POLICY and COMMITMENT						
1. Environmental Policy						
1.1 Environmental Policy	■	■	■	■		4
PLANNING						
2. Environmental Aspects						
2.1 Process Flow Charts and Environmental Aspects	■					0.5
3. Legal Requirements and Other Requirements						
3.1 Legislation and Standards	■					1
3.2 Licences and Permits	■					1
3.3 Works Approvals and Planning Conditions	■	■	■	■	■	5
3.4 General Policy, Guidelines and Industry Codes						0
⚡ ⚡						
16. Controlling NOISE and OTHER impacts						
16.1 Noise and Vibration	■	■	■	■	■	5
16.2 Aesthetics	■	■	■			3
16.3 Traffic	■	■	■	■		3.5
17. Site Restoration						
17.1 Rehabilitation / Remediation	■	■	■	■	■	N/A
EMERGENCY PREPAREDNESS and RESPONSE						
18. Emergency Preparedness and Response						
18.1 Emergency Preparedness	■	■				2
18.2 Emergency Equipment & personnel	■	■	■	■		3.5
CHECKING AND CORRECTIVE ACTION						
19. Checking and Corrective Action						
19.1 Monitoring and Measurement	■	■	■	■		3.5
19.2 Corrective and Preventive Action	■	■	■			3
19.3 Environmental Records	■					1
19.4 Environmental Audits	■	■	■	■		4
MANAGEMENT REVIEW						
20. Management Review						
20.1 Management Reviews						0
Total (Out of a Maximum of 275 less 5x N/A questions)						158.5
Score Percentage %						64%

ADVANTAGES OVER TRADITIONAL AUDITING TECHNIQUES

The use of a standardised protocol with automated processing of information has the following advantages over conventional auditing techniques:

- ✓ It minimises the variation between auditors.
Auditors with different backgrounds of expertise and experience can report the same item differently. A standard protocol with set questions reduces this issue to a minimum.
- ✓ It avoids variation created by different protocols.
As there is no standardised auditing protocol, auditors have had to develop their own checklist. This process generally means a different set of questions or emphasis whereby one audit protocol is different from the next. If the same protocol (or auditor) is not used for future audits, measuring improvements may be difficult and inconsistent.
- ✓ It provides an educational tool for site management.
The questions are put in context. e.g. what is expected; what should be inspected; what was found. This context provides an excellent educational tool for site personnel and makes the audit process a useful training exercise.
- ✓ A consistent means to assess and report on risk.
A standardised risk assessment matrix is provided. Most environmental practitioners with a reasonable amount of field expertise have had no difficulty applying the risk assessment approach. A good level of agreement is found between auditors assessing risk situations.
- ✓ Consistency when prioritising recommendations
Prioritising outcomes assists management with their risk management program.

AuditMASTER™'s simple A,B,C priority rating format ensures all auditors will be prioritising on the same basis. Default priorities are provided within AuditMASTER™ to maximise consistency between auditors (note: these can be over-ridden where necessary).



- ✓ Reduces the time required to prepare reports
A sizeable hurdle to conducting regular audits is the time (and expense) required to write up a report sufficiently detailed to explain the auditor's assessment and conclusions. Without such details however, the audit findings may be misinterpreted or not actioned due to lack of clarity and/or explanation for the recommendation.

Figure 4:
AuditMASTER™ being used on site to enter the audit findings. A draft report can immediately be left with site management.

- ✓ A detailed, thorough protocol. Missed items are unlikely.
Considerable time and expertise has gone into the production of the audit questions. Questions have been developed by Senior Environmental Auditors who have conducted in excess of 100 environmental audits throughout Australia, New Zealand

and Asia.

Care has been taken to structure the audit to capture the vast majority of risk issues likely to be encountered. All elements of ISO 14001 are also catered for in the protocol.

In the unlikely event that an additional item needs to be included to cater for site/industry specific situation, the software can be readily customised to suit.

THE SOFTWARE IN USE: 3 CASE EXAMPLES

Automotive Industry

An ISO 14001 baseline audit was conducted of a leading automotive parts manufacturer using the AuditMASTER™ software. The company was already certified to ISO 9000 and believed, prior to the environmental audit, that the integration of ISO 14001 into their existing system was simply a formality.

The scoring system provided in the software demonstrated to senior management that the environmental system was in its infancy. A score of **36%** was obtained. The graphical summary clearly revealed the company had difficulties in demonstrating compliance with its legal obligations.

The Systems Co-ordinator used both the score and graphical summary to illustrate the breadth and complexity of ISO14001 and was able to argue for greater resources during its implementation.

The company then used the Environmental Improvement Plan (EIP) automatically generated from AuditMASTER to base their Environmental Management Programme.

A pre-certification audit re-evaluated the environmental performance of the company. This audit derived a score of **94%** against the protocol criteria. Only three(3) areas were found to be deficient.

Action against the EIP and final audit determinations resulted in the company achieving certification with no non-conformances against the ISO 14001 standard.

Food Industry

After two(2) previous external environmental audits over the past five(5) years resulting in considerable site improvements, a leading food manufacturer specified a requirement to capture audit observations and track their system was functionality. Furthermore, the site was looking for a protocol to base their future internal audits.

They saw the benefits in a software approach to minimise site personnel's reporting time whilst capturing observations and photographs that could be readily referenced by each Departmental Manager.

The Environmental Manager commented at the completion of the audit that, "the consistency of approach backed up by the software processing resulted in several pleasing aspects including:

- a rapid turnaround of the audits outcome;
- complete transparency of information that assisted with site personnel dealings;
- a useful platform to base future internal audits; and
- a rigorous approach to identify opportunities for continual improvement within the organisation."

Agricultural Industry

A leading Agri-business chose a uniform approach for their environmental due diligence auditing through-out Australia to drive consistency across the group.

Whilst the scoring function was of importance, the company's primary specification was that audits must to be consistent and defensible, with reports produced soon after the site inspection to maximise site relevance.

Software was to play a key role in meeting the risk management requirements specified. Questions within the protocol were consistently applied across the different auditors involved with the program. The software enabled reports to be quickly produced and usually issued electronically soon after the site visit.

Results were processed using the database capabilities of the software. Reports, containing technical summaries and statistics, were readily produced for management reviews.

The software approach was proven during this project to be functional, economic and suitable for comparative purposes. The outcome is a useful tool to facilitate a duly diligent approach to environmental management.

CONCLUSION

The use of software tools to streamline audits is a logical step in the improvement process.

It is not surprising therefore, that a tool such as AuditMASTER™ has been developed.

Case studies now support that software can be a useful ally of the environmental auditor to help save time and effort whilst ensuring environmental audits are completed comprehensively and consistently.

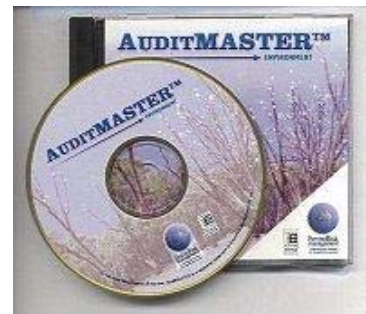


Figure 5:
AuditMASTER™ (Environment)

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2. HB 203:2000 Environmental risk management – Principles and process. Standards Australia/ Standards New Zealand
3. AS/NZS ISO 14001:1996 Environmental management systems – Specification with guidance for use

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