

A Guide to the
CONSTRUCTION SAFETY AUDIT
SCORING SYSTEM (ConSASS)
(updated Sep 2013)

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CONTENTS

1	Introduction	1
2	Objectives	2
3	Scope.....	2
4	Basic Features of the ConSASS	2
5	Instructions on the Use of ConSASS	4
6	Sampling Strategies	8
7	A Note on Corporate Audit	10

APPENDICES

Appendix 1	The ConSASS Checklist
Appendix 1a	Further Clarifications to selected Questions in ConSASS Checklist
Appendix 2	The ConSASS Score Card
Appendix 3	The ConSASS Interview Sheet

1. Introduction

1.1 Since 1994, every construction worksite with a contract sum S\$10 million or more is required by the law to implement a safety and health management system (SHMS). The Singapore Standard CP 79 provides guidance on the safety and health management system for construction worksites. A worksite with a contract sum of S\$30 million or more is required to appoint an approved independent external auditing organization to audit the SHMS of the worksite at least once every 6 months.

1.2 Although approved safety auditing organizations are required to adhere to an established audit protocol, the checklist used in the conduct of a safety audit differs from one audit organization to another. Furthermore, approved auditing organizations use their own scoring system to grade the performance of the implementation of SHMS at the worksites. The use of different checklists and a lack of a standardised scoring system pose challenges when differentiating worksites in term of their effectiveness and implementation of SHMS.

1.3 The Construction Safety Audit Scoring System (ConSASS) intends to overcome these challenges by providing a standardised checklist and scoring system. With the unified system, ConSASS provides an easy cross comparison between worksites in term of their effectiveness in managing safety and health risks at work. This will motivate the contractors to strive for improvement in managing safety and health risks at their worksites.

1.4 Besides standardisation, ConSASS is able to profile the maturity levels of each element of the SHMS in a worksite. With availability of the maturity profile of each element, the management of the worksite could focus its attention to elevate the weaker elements in order to improve the overall maturity of their SHMS to manage safety and health risk. It also allow Developers/ Clients to assess and compare the capabilities of the contractors in managing WSH risks before awarding the contracts.

1.5 Since Aug 2011, all construction worksites with contract sum of S\$30 million or more are required to have their mandatory SHMS audits conducted based on the ConSASS audit checklist. Upon completion of the ConSASS Audit, the audit scores and the supporting audit documents will be required to be submitted through the WSH eServices located in the MOM website.

2. Objectives

2.1. The objectives of the **Construction Safety Audit Scoring System (ConSASS)** are to provide:

- (a) a unified assessment method in term of standardisation of audit checklist and adoption of a common audit scoring system. This would enhance the consistency in the auditing process and allow cross comparison of worksites in terms of the capabilities in managing safety and health risk.
- (b) a mechanism to profile the maturity level for each element of the SHMS in a worksite. With availability of the maturity profile, the management of the worksite could systematically focus its attention to improve the weaker elements in order to elevate the overall maturity of their SHMS to manage safety and health risk. .

3. Scope

3.1. ConSASS was developed primarily for auditing of the safety and health management system of worksites. Due to its versatility, ConSASS can also be used for auditing safety & health management system at the corporate level.

4. Basic Features of the ConSASS

4.1 Central to the ConSASS is the audit checklist and score card that are used for evaluation of the effectiveness and maturity level of the company's OSHMS.

The Audit Checklist

- 4.2 The audit checklist of ConSASS is derived from audit questionnaires from
- SS506: Singapore Standards for Occupational Safety and Health Management System. (The equivalence of OHSAS 18001.)
 - CP 79: Code of practice for safety management systems for construction worksites
 - The Universal Assessment Instrument (UAI) published by the American Industrial Hygiene Association (AIHA)

4.3 The consolidation provides auditors the convenience of using this one checklist to fulfill its primary function of assessing the company's OSHMS, *for SS506: Part 1* certification or *worksite* regulatory compliance-

4.4 The Deming's Plan-Do-Check-Act (PDCA) cycle has been used as a model for management system implementation in ISO's quality and environmental *systems, and safety* and health management system in OHSAS 18001/SS 506. The questions in the checklist are therefore structured along PDCA cycle as follows:

- OSH Policy (Plan)
- Planning (Plan)
- Implementation and operation (Do)
- Checking and corrective action (Check)
- Management review (Act)

4.5 The questions in the checklist are also grouped into bands, from Band I to IV, with each increasing Roman numeral reflecting the increasing level of maturity of the elements being audited. In general, the individual bands evaluates the following:

- Band 1: Whether the OSHMS has a particular provision;
- Band 2: Whether the content of the particular provision is sufficiently comprehensive;
- Band 3: Whether the particular provision is well-implemented on site; and
- Band 4: Best practices

Where there are similar questions in Band II and III, note that the respective audit protocols would be different.

The Score Card

4.6 The score card is a 'final report card' which will tabulate the results obtained from the different OSHMS elements audited. Its purpose is to allow for quick and easy visualization of the maturity of the different elements in the OSHMS and thus, provides company management or responsible personnel an idea of resource allocation in order to strengthen weak areas or elements in the system.

5. Instructions on the Use of ConSASS

The Audit Checklist

- 5.1. There are altogether approximately 350 questions in the checklist. The checklist is organised in a table format containing the following:
- Question Serial Number
 - Guidance notes and Standard Specifications
 - The audit question with audit instructions
 - DR/IP/PI - Audit methods that the auditor may adopt in verifying the question (DR - Document Review, IP - Interview of personnel, PI - Physical Inspection)
 - "Yes", "No" or "N/A" Checkbox for entering the audit outcome.
 - Auditor's Remarks - Auditors may use this column to take down notes or input further comments they might have
- 5.2. Appendix 1a provides further clarifications to selected questions in the Audit Checklist.

A Banding System

5.3. The questions for each element of the OSHMS are banded I to IV to reflect the increasing level of maturity of the element. In order to pass a certain band, the contractor's OSHMS element being audited needs to satisfy at least 70%¹ of the questions within that band. The purpose of using a banding system to reflect the audit results rather than a quantitative score is to keep the 'calculation' simple. The banding approach will also not give the misimpression that the assessment is an exact science. Another advantage to simple step levels is that they allow the contractors to see the maturity levels of the different OSHMS elements audited and their improvement areas.

5.4. Auditors are required to audit each element of the OSHMS up till and including the Band III questions. Thereafter, Auditors may stop auditing the element should it fail to satisfy at least 70% of the questions within any of the first three bands. Please refer to Example 1.

¹Based on ANSI/ASQ Z1.4 Sampling Procedures and Tables for Inspection by Attributes

Example 1:

An auditor was auditing the element '3.2 – Training, Awareness and Competence' of the OSHMS established by construction company ABC.

He starts by asking questions in band I and verified that the OSHMS was able to satisfy 3 questions in the band. (There are altogether 4 questions in the band). The percentage attained would be:

$$\frac{\text{No. of questions satisfied}}{\text{No. of questions in the band}} \times 100\% = \frac{3}{4} \times 100\% = 75\%$$

He proceeds to check the questions in Band II. This time, the OSHMS was able to satisfy 6 questions in Band II. (There are altogether 10 questions in Band II). The percentage attained would be:

$$\frac{\text{No. of questions satisfied}}{\text{No. of questions in the band}} \times 100\% = \frac{6}{10} \times 100\% = 60\%$$

He proceeds to check the questions in Band III. This time, the OSHMS was able to satisfy 5 questions in Band III. (There are altogether 7 questions in Band III). The percentage attained would be:

$$\frac{\text{No. of questions satisfied}}{\text{No. of questions in the band}} \times 100\% = \frac{5}{7} \times 100\% = 71\%$$

At this point he stops auditing the element since it did not score at least 70% within each of the first three bands (Band II scored 60%). The grade for this element is Band I, this being the highest band before the band which did not attain at least 70%.

Audit Instructions

5.5. Each audit question is accompanied with an instruction. The instructions are in red print below every question in the checklist. Auditors are to adhere to the instructions to minimize discrepancies in their audit methods.

5.6. In line with industry practice, the audit protocol comprises three key components: document review, personnel interview and physical inspection.

5.7. Where an audit question requires evidence gathering, a minimum sampling size of three is recommended. This is to keep the sampling size small yet credible. The passing criterion is at least two out of the three sampled are able to meet the intent of the question. Refer to Example 2 for illustration.

Example 2:

In auditing the element '2.1 - Hazard identification, risk assessment and risk control' of the OSHMS, question 2.1.20 in band III asked Verify that the risk assessment for the 3 critical/high risk activities are site specific and relevant to the works.

The audit instructions given were - Check 3 risk assessments and site for evidence.

In adhering to the instructions, the auditor identified 3 critical/high risk activities: Excavation, Piling and Formwork.

He then checks if risk assessment for the 3 critical/high risk activities are site specific and relevant to the works.

In his checks, the auditor found that the Excavation site do not address a risk identified in the risk assessment. Hence, 2 out of the 3 samples passed. Because 2 out of 3 is the majority, the system is considered to have satisfied this particular question.

5.8. If auditors opined that certain questions require a larger sampling size, he or she may proceed to do so. The general passing criterion is then 70% of the sample population.

5.9. There may also be cases or circumstances where the sample size does not exceed two. In such circumstances, the auditor is required to conduct a 100% sample check and all the samples must meet the passing criteria in order to be considered satisfying the question.

5.10. Where evidence required is not applicable at the time of the audit. Auditors are to indicate "N/A" in the audit outcome checkbox, and state the reasons in the Auditor's Remarks column.

The Score Card

5.11. The score card is a 'final report card' which will tabulate the results obtained from the different OSHMS elements audited. It provides a profile of the maturity level of the OSHMS elements in a company.

5.12. Auditors are required to shade on the card the highest band attained (the first highest passing band) for every element and fill in the necessary particulars; including the company being audited, dates of audit, the name of the lead auditor in the audit team and his/her signature.

5.13. Auditors are required to input the percentage scores on the card for the Bands which were audited. The last two rows are for the auditors to input the overall score of the audit. The results provide the company management or responsible personnel an indication of 'how

much more' is required to improve the element in the failed band. To view an example of a completely filled score card, please see Example 3.

Example 3:

S/No.	System Elements	BAND			
		I	II	III	IV
1	OSH Policy	100%	100%	100%	100%
2.1	Planning for hazard identification, risk assessment and risk control	100%	75%	60%	-
2.2	Legal and other requirements	100%	100%	100%	100%
2.3	Objectives	100%	100%	50%	-
2.4	OSH Management Programme(s)	100%	100%	80%	50%
3.1	Structure and responsibility	100%	100%	100%	100%
3.2	Training, Awareness & Competence	75%	60%	71%	-
3.3	Consultation and communication	100%	62%	73%	
3.4	Documentation	100%	100%	100%	100%
3.5	Document and data control	100%	100%	100%	100%
3.6	Operational control	100%	76%	88%	33%
3.7	Emergency preparedness and response	100%	70%	88%	100%
4.1	Performance measurement and monitoring	100%	89%	100%	60%
4.2	Accidents, incidents, non-conformances and corrective and preventive action	100%	83%	67%	
4.3	Records and records management	100%	100%	100%	100%
4.4	Audit	100%	75%	83%	67%
4.5	Management review	100%	83%	80%	50%
No of Total element score 70% and above		17 / 17	15 / 17	12 / 17	7 / 17
% of Total element score 70% and above:		100%	88%	71%	41%
<p>Taking the scenario from Example 1, the auditor indicates on the score card that Element 3.2 - 'Training, Awareness & Competence' attained Band I by shading and scored 60% in Band II (the score in the failed band). The auditor continues to audit up til Band III. Company management can then see that there's another 10% to satisfy, before it can pass Band II. Preparations can then be made to improve the areas that failed.</p>					

6. Sampling Strategies

6.1 Appropriate audit sampling is critical and yet, can be a tricky issue. Wrong conclusions are drawn if the samples are inaccurate or do not reflect the true state of the situations.

Interview Sampling

6.2 In selecting staff for interviews, auditors should cover a wide range of representation from different levels of the organizational hierarchy: company management, line management, workers, OSH personnel and even subcontractors and suppliers.

6.3 To make the interview process more efficient, an interview sheet has been developed (Appendix 3) to assist auditors in the interview. The questions in the interview sheet are drawn from the main checklist. The interview sheet has taken into consideration that in certain circumstances that the interview questions are only applicable to a specific group of staff (e.g. Management staff). In this case, the entry box for other groups in the form will be blanked off. For illustration, please refer to the Example 4 below.

Example 4

	Training, awareness and competence	Emergency Preparedness and Response
S/No.	3.2.16	3.7.19
Band	III	III
Specification	(SS506 : 2009 Requirements - 4.4.2)	UAI - EMERG05
Audit Question	For person(s) performing tasks impacting WSH, was there assessment on the competence in terms of education, training or experience? <i>Check with the project manager what he considered when assigning the 3 site personnel (as stated above) the work that they are assigned.</i>	Are personnel aware of and understand emergency response procedures and their responsibilities in the event of emergencies? <i>Interview minimum 3 relevant personnel</i>
Audit Methods	IP	IP
Management (Manager, Department /Section Heads, etc)	<i>Chong Jung Chan (General Manager) says the appointed WSHD will need to have at least 3 years of working experience and to be certified by WSH Council as a WSHD.</i>	<i>Dylan Sim (Manager) is aware of his duties accordingly to SOP in the case of fire evacuation.</i>
OSH Persons and WSH Committee member		<i>N.A</i>
Line Management (Supervisors, Engineers, Team Leaders etc)		<i>Yong Bak Kim (Supervisor) can recite his duties accordingly to SOP in the case of fire evacuation.</i>
Employees (Workers)		<i>Lee Bek Chuan (crane operator) not sure of the evacuation procedures and where to go.</i>
Others (Contractors, Supplier, Visitors, etc)		
<p>Under Element 3.6 - Operational Control, question 3.2.16 requires an interview of a management staff. Hence, the other staff groups are blanked out as they do not apply. The boxes provided allow auditors to input information and conclusions they've drawn from the interview.</p> <p>Under Element 3.7 - Emergency Preparedness and Response, question 3.7.19 requires an interview of minimum 3 employees about their awareness in the emergency response procedures and their responsibilities in the event of emergencies. The auditor chose representations from 3 different groups - a supervisor, crane operator and manager.</p>		

7. A Note on Corporate Audit

7.1. If ConSASS is used for corporate audit, the following points should be noted when selecting worksites for verification of OSHMS implementation.

7.2. Auditors have to be cautious in selecting sites that truly reflect the effective translation of the corporate system onto the site. A means of selecting appropriate sites to audit would be to review past records. Checking the various sites' accident or near-miss records may reveal how well the system is implemented.

7.3. Another point to consider in the selection criteria would be the activity level in the sites. An audit that is conducted during the high activity period has greater possibilities of detecting non-conformances or inconsistencies in work practices compared to one that is conducted during low activity periods.

7.4. Different phases of construction introduce different hazards into the site. Hence, auditors may also choose to sample sites operating at different phases of construction (E.g. worksite A building foundation and worksite B constructing the superstructure.) in order to audit the implementation of OSHMS in managing OSH risks arising from works carried out in the various phases.