Six Sigma Kaizen

ISO 14001 IMPLEMENTATION HUB

Volume 1 • Guide 1 of 6

Environmental Management System Gap Analysis

A Practitioner's Guide to Assessing Your Current Environmental Performance Against ISO 14001:2015

EMS Implementation Roadmap • ISO 14001:2015

Gap Assessment Methodology • Environmental Aspects and Impacts • Legal and Other Requirements • EMS Maturity Scoring • Gap Prioritisation • Cascade Industrial Coatings Case Study

About the ISO 14001 Implementation Hub

The ISO 14001 Implementation Hub is a 15-guide, three-volume practitioner series covering every element of ISO 14001:2015 Environmental Management System (EMS) implementation for industrial and manufacturing organisations. Structured in parallel with the ISO 9001 Implementation Hub, it follows the same proven format: Volume 1 provides the sequential implementation roadmap, Volume 2 delivers clause-by-clause practitioner interpretation, and Volume 3 supplies the ready-to-use template library.

The series is built around a fictional case study company — Cascade Industrial Coatings, LLC — that threads through all 15 guides, providing realistic, manufacturing-sector examples of every concept, tool, and template. Cascade is an industrial surface finishing company applying liquid coatings, powder coatings, and specialty chemical treatments to metal components for industrial customers. Its environmental profile is representative of many process-intensive manufacturing operations: solvent use, wastewater generation, air emissions, solid and hazardous waste streams, and a complex regulatory compliance picture that makes ISO 14001 both challenging and high-value.

The ISO 14001 Implementation Hub — Series Overview

Guide	Title	Content
1.1	EMS Gap Analysis	Gap assessment methodology, clause-by-clause gap framework, aspects and impacts screening, legal register review, EMS maturity scoring
1.2	EMS Implementation Planning	Phase planning, resource allocation, project structure, stakeholder engagement, implementation timeline
1.3	EMS Documentation Development	Document hierarchy, procedure writing, environmental record design, document control for EMS
1.4	Training, Competence, and Awareness	EMS training design, environmental competence requirements, worker awareness, emergency preparedness training
1.5	Environmental Internal Audit Program	EMS audit program planning, compliance auditing, aspects audit techniques, audit finding management
1.6	EMS Certification Preparation	Stage 1 and 2 audit preparation, registrar selection, initial certification audit management, surveillance cycle planning
2.1	Clauses 4 and 5: Context and Leadership	Organisational context, interested parties, EMS scope, leadership and commitment, environmental policy, roles

Guide	Title	Content
2.2	Clause 6: Planning	Environmental aspects and impacts (6.1.2), legal requirements (6.1.3), risks and opportunities (6.1.1), environmental objectives (6.2)
2.3	Clause 7: Support	Resources, competence, awareness, communication (internal and external), documented information
2.4	Clause 8: Operation	Operational planning and control, emergency preparedness and response, life cycle perspective in operations
2.5	Clause 9: Performance Evaluation	Monitoring and measurement, compliance evaluation, internal audit, management review
2.6	Clause 10: Improvement	Nonconformity and corrective action, continual improvement of the EMS and environmental performance
3.1	Context and Planning Templates	Environmental Policy, Context Worksheet, Aspects and Impacts Register, Legal Register, Objectives Tracker, Risk Register
3.2	Support and Operation Templates	Competence Matrix, Training Record, Communication Plan, Operational Control Procedure framework, Emergency Response Plan
3.3	Evaluation and Improvement Templates	Compliance Evaluation checklist, Monitoring and Measurement Plan, Internal Audit Checklist (EMS), Audit Report, NCR, CAPA Form, Management Review template

Introducing Cascade Industrial Coatings, LLC

Cascade Industrial Coatings, LLC is a 185-person surface finishing operation located in Tacoma, Washington. The company applies liquid solvent-borne and waterborne coatings, powder coatings, and specialty chemical conversion coatings (phosphating, chromate conversion, and anodising) to metal components for original equipment manufacturers in the agricultural equipment, construction equipment, and commercial vehicle sectors.

Cascade's environmental profile is characteristic of the surface finishing industry: multiple air emission sources (spray booths, ovens, and chemical process tanks), complex wastewater streams requiring pre-treatment before discharge to the municipal sewer system, significant quantities of hazardous waste (spent solvents, wastewater treatment sludge, and contaminated rags and filters), and an extensive regulatory compliance picture spanning the Clean Air Act, Clean Water Act, Resource Conservation and Recovery Act (RCRA), and Washington State Department of Ecology regulations.

Cascade operates under an Air Quality Permit from the Puget Sound Clean Air Agency (PSCAA), a State Waste Discharge Permit for wastewater pre-treatment, and is registered as a Large Quantity Generator of hazardous waste under RCRA. The company has an established but informal environmental management approach — a full-time Environmental Health and Safety (EHS) Manager (Marcus Webb), compliance tracking systems, and documented emergency response procedures — but has never pursued ISO 14001 certification and has no formal Environmental Management System structure.

The certification driver for Cascade: two major OEM customers have announced that by the end of next calendar year, ISO 14001 certification will be a condition of preferred supplier status for supply chain sustainability reporting purposes. Marcus Webb has been tasked with leading the certification initiative with a target of achieving registration within 14 months.

What Is an EMS Gap Analysis and Why Does It Matter?

A gap analysis is the systematic comparison of an organisation's current environmental management practices against the requirements of ISO 14001:2015. It answers the question: what does ISO 14001 require that we do not currently do — and how significant is that gap? The answer shapes every subsequent implementation decision: what needs to be built from scratch, what needs to be formalised, what needs to be connected, and where existing practices already satisfy the standard without requiring new work.

The gap analysis matters for four practical reasons:

- Resource planning: Without knowing the scope and depth of gaps, implementation resource estimates are guesses. The gap analysis converts uncertainty into a specific list of work items that can be scoped, sequenced, and resourced.
- Prioritisation: Not all gaps are equally urgent. A gap in legal compliance evaluation (Clause 9.1.2) is more immediately consequential than a gap in management review format (Clause 9.3). The gap analysis enables prioritisation by risk, regulatory significance, and effort.
- Scope protection: The gap analysis reveals whether the organisation's intended EMS scope is appropriate — whether it captures all significant environmental aspects or artificially excludes high-impact operations.
- Baseline documentation: The gap analysis is the historical record of where the EMS began. It provides the before-state against which the Stage 1 audit assessment and future management review performance trends are measured.

ISO 14001:2015 vs. ISO 9001:2015 — The Key Differences for the Gap Analysis

Organisations implementing ISO 14001 alongside or after ISO 9001 frequently underestimate how different the two standards are in their analytical demands. The gap analysis approach must reflect these differences:

Dimension	ISO 9001:2015	ISO 14001:2015
Primary orientation	Customer satisfaction and product conformance — the QMS is designed to reliably produce products meeting customer requirements	Environmental performance and legal compliance — the EMS is designed to manage and improve the organisation's environmental impact and ensure it meets all applicable legal obligations
Gap analysis starting point	Customer requirements and product quality performance — what do customers need and are we meeting it?	Environmental aspects and legal requirements — what environmental impacts do our operations create and what laws apply to them?
Most complex new requirement	Context analysis (Clause 4.1) and risk-based thinking (Clause 6.1) — new in 2015	Environmental aspects and impacts (Clause 6.1.2) and legal compliance evaluation (Clause 9.1.2) — technically demanding and unique to EMS

Dimension	ISO 9001:2015	ISO 14001:2015
Regulatory dimension	Statutory and regulatory requirements are one category among many; most manufacturers have limited direct product-level regulation	Legal compliance is a core EMS obligation; most industrial manufacturers operate under multiple environmental permits and statutory obligations that the EMS must systematically track and evaluate
Life cycle perspective	Present in the standard but limited in practice; primarily applies to design and development	Explicit and significant requirement (Clause 8.1 Note 1); must consider upstream supply chain and downstream product use and disposal in operational planning
Continual improvement target	Suitability, adequacy, and effectiveness of the QMS	Environmental performance improvement — the EMS must demonstrably improve actual environmental outcomes, not only improve the management system itself

Gap Analysis Methodology

The EMS gap analysis follows a four-phase approach that ensures the assessment covers both the formal requirements of the standard and the practical environmental management capabilities that determine whether the EMS will function effectively once certified.

Phase 1 — Environmental Profile Screening

Before assessing the EMS management system requirements of the standard, the gap analysis must understand what the organisation's EMS will need to manage. Phase 1 establishes the environmental baseline by documenting:

- All process inputs (raw materials, energy, water) and outputs (products, air emissions, wastewater, solid waste, hazardous waste) across all operations within the proposed EMS scope
- All applicable legal and regulatory requirements — permits, licences, regulations, and voluntary commitments — that apply to the organisation's environmental aspects
- All significant environmental incidents, permit exceedances, regulatory notices, and inspection findings from the past three years
- Any existing environmental objectives, targets, or performance commitments the organisation has made to regulators, customers, or the public

Phase 1 output: an Environmental Profile document that describes what the EMS must manage, providing the context for evaluating every subsequent EMS requirement gap.

Phase 2 — Clause-by-Clause Requirements Assessment

Phase 2 evaluates the organisation's current practices against each clause of ISO 14001:2015, using a structured scoring system to quantify gap severity. Each clause area is scored on a three-level scale:

Score	Level	Definition
0	Not Addressed	No current practice, document, or activity that addresses this requirement. Building from scratch required.
1	Partially Addressed	Some relevant practice exists but it is incomplete, informal, undocumented, inconsistently applied, or does not fully meet the standard's requirement. Significant development work required.
2	Substantially Addressed	A practice exists that addresses most of the requirement, but gaps remain in documentation, coverage, verification, or integration with the broader EMS. Moderate development work required.
3	Fully Addressed	The requirement is fully met. Existing practice, documentation, and evidence would satisfy an ISO 14001:2015 auditor with no significant additional development required.

Phase 3 — Gap Prioritisation

Not all gaps are equal. Phase 3 applies a risk-weighted prioritisation to the scored gaps, producing a prioritised implementation work list. The prioritisation considers three factors:

- Legal compliance risk: Gaps in legal compliance tracking (Clause 6.1.3), compliance evaluation (Clause 9.1.2), and operational controls for permitted emission and discharge sources (Clause 8.1) are Priority 1 regardless of gap score — because a legal compliance failure can occur immediately and independently of certification status.
- Certification risk: Gaps that would prevent a Stage 2 certification audit from succeeding are Priority 2. Major nonconformances in required documented information (environmental policy, aspects register, objectives) or missing mandatory processes (aspects and impacts assessment, internal audit, management review) will stop certification regardless of how well other elements are implemented.
- Implementation effort relative to impact: Some high-impact gaps require relatively little effort to close (formalising an existing informal practice); some low-impact gaps require significant effort. Effort-weighted prioritisation ensures quick wins are captured early while resource-intensive gaps receive adequate lead time.

Phase 4 — Gap Report and Implementation Input

Phase 4 produces the Gap Report — the formal output of the assessment that serves as the primary input to the implementation planning process (Guide 1.2). The gap report contains: the environmental profile summary, the clause-by-clause scoring table with evidence notes, the prioritised gap list with recommended actions, the proposed EMS scope statement, and the preliminary implementation resource estimate. The gap report is a controlled document that is reviewed and updated at the end of the implementation project to provide the before-and-after comparison for the management review.

Phase 1: Environmental Aspects and Impacts — The Foundation of the EMS

The environmental aspects and impacts assessment (Clause 6.1.2) is the most technically distinctive element of ISO 14001:2015 — it has no direct equivalent in ISO 9001. It is also the element that most fundamentally determines whether the EMS addresses the organisation's real environmental impacts or becomes a generic management system that happens to use environmental language.

Standard Requirement

ISO 14001:2015, Clause 6.1.2 (Environmental Aspects): "The organization shall determine the environmental aspects of its activities, products and services that it can control and those that it can influence, and their associated environmental impacts, considering a life cycle perspective. When determining its significant environmental aspects, the organization shall consider its normal operating conditions, abnormal operating conditions and reasonably foreseeable emergency situations."

Understanding the Terminology

Term	Definition and Cascade Example
Environmental Aspect	An element of an organisation's activities, products or services that interacts or can interact with the environment. It is the cause or source — what the organisation does that has an environmental connection. At Cascade: solvent use in liquid coating operations; spray booth exhaust emissions; wastewater discharge from chemical process tanks; hazardous waste generation from spent solvents and treatment sludge.
Environmental Impact	Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an environmental aspect. It is the effect in the environment — what actually happens as a result of the aspect. For Cascade's solvent use: VOC (volatile organic compound) emissions to atmosphere; potential for soil and groundwater contamination if spilled; contribution to regional air quality and smog formation.
Significant Environmental Aspect	An environmental aspect that has or can have a significant environmental impact. Significance is determined by the organisation using defined criteria — typically a combination of the magnitude, severity, and reversibility of the impact; the frequency or duration of exposure; and the regulatory significance and stakeholder concern associated with the aspect. Significant aspects drive the EMS: they determine which operational controls are required, where environmental objectives should be set, and what monitoring and measurement is needed.
Life Cycle Perspective	The requirement to consider environmental aspects not only from the organisation's own operations but from the upstream supply chain (materials and components the organisation purchases) and downstream (what happens to products after delivery — use, end-of-life, disposal). Cascade must consider: the environmental profile of raw material suppliers (VOC content of purchased coatings and

Term	Definition and Cascade Example
	solvents); the environmental impacts of product use (coating durability affecting recoating frequency); and end-of-life disposal of coated components.
Normal / Abnormal / Emergency Conditions	ISO 14001:2015 explicitly requires that aspects be identified under all three operating condition types. Normal: planned production coating operations. Abnormal: equipment maintenance, start-up and shutdown procedures, periodic chemical bath change-outs. Emergency: spill events, fire in coating booth, wastewater treatment system failure, HVAC failure causing solvent vapour accumulation.

Aspects and Impacts Screening Methodology

During the gap analysis, a preliminary aspects and impacts screening is conducted to identify the major aspect categories that the full EMS aspects register will need to address. This screening is not the complete Clause 6.1.2 assessment — that is a Phase 2 implementation deliverable — but it provides the environmental context needed to evaluate every other EMS gap. Specifically, it identifies whether the organisation has conducted any equivalent assessment before and whether existing controls address the most significant aspects.

Step 1: Process-Based Aspects Identification

Walk each major process area and systematically identify inputs (energy, water, raw materials, chemicals) and outputs (products, air emissions, wastewater, solid waste, hazardous waste, noise). This process walkthrough approach ensures systematic coverage rather than relying on what management believes are the important environmental interactions.

Step 2: Operating Condition Overlay

For each identified aspect, overlay the three operating conditions: is this aspect present during normal operations, during abnormal conditions (maintenance, start-up, shutdown), and during foreseeable emergency scenarios? Aspects identified only in abnormal or emergency conditions frequently receive inadequate attention because they are not part of the routine operational picture but may represent the highest-consequence environmental risks.

Step 3: Significance Criteria Application

Apply a consistent significance determination methodology to each identified aspect. The most widely used approach in manufacturing environments evaluates each aspect on three criteria, each scored 1 to 5:

- Environmental Severity: How significant is the actual or potential environmental impact? (1 = negligible, 5 = catastrophic or irreversible)
- Scale/Frequency: How often does the aspect occur and over what area? (1 = rare, small-scale; 5 = continuous, widespread)
- Regulatory Significance: Is the aspect specifically regulated, permit-controlled, or subject to stakeholder concern? (1 = no regulatory connection; 5 = directly regulated with permit limits)

Aspects with a combined score above a defined threshold (commonly 9 or above in a 1-15 range) are designated as significant. Significance designations drive the EMS: significant aspects require operational controls, monitoring, and potential environmental objectives.

Cascade Case Study

Cascade Phase 1 Preliminary Aspects Screening: Marcus Webb conducted a two-day process walkthrough at the Tacoma facility during the gap analysis. Fourteen major aspect categories were identified across five process areas. The preliminary significance assessment identified seven significant aspects: (1) VOC emissions from solvent-borne coating operations (Normal/Abnormal — regulated under PSCAA Air Quality Permit; direct permit compliance obligation); (2) Wastewater discharge from chemical pre-treatment processes (Normal/Emergency — regulated under State Waste Discharge Permit; pH and metal concentration limits); (3) Hazardous waste generation — spent solvents (Normal — RCRA Large Quantity Generator; minimum handling and disposal standards apply); (4) Hazardous waste generation — wastewater treatment sludge (Normal — RCRA; characterisation required for disposal); (5) Spill risk from chemical storage and transfer (Emergency — soil and groundwater contamination potential; SPCC Plan required); (6) Energy consumption — natural gas in curing ovens (Normal — no direct regulation but customer sustainability reporting requirement); (7) Stormwater contamination risk from outdoor storage areas (Emergency/Abnormal — NPDES General Permit; stormwater pollution prevention plan required). These seven significant aspects became the primary focus areas for the gap analysis and the subsequent EMS design.

Phase 1 Continued: Legal and Other Requirements Assessment

The legal requirements assessment is the second critical foundation element of the gap analysis. ISO 14001:2015 Clause 6.1.3 requires the organisation to determine the legal and other requirements that apply to its environmental aspects, and Clause 9.1.2 requires periodic evaluation of compliance with those requirements. Before evaluating either clause in the gap assessment, the gap analysis team must understand the breadth of the organisation's legal compliance picture.

Standard Requirement

ISO 14001:2015, Clause 6.1.3 (Compliance Obligations): "The organization shall: a) determine and have access to the compliance obligations (legal requirements and other requirements) related to its environmental aspects; b) determine how these compliance obligations apply to the organization; c) take these compliance obligations into account when establishing, implementing, maintaining and continually improving its environmental management system. The organization shall maintain documented information of its compliance obligations."

Categories of Compliance Obligations

ISO 14001:2015 uses the term "compliance obligations" to encompass both mandatory legal requirements and voluntary commitments. Both categories must be determined and tracked:

Obligation Category	What to Identify During the Gap Analysis
Federal environmental regulations	Clean Air Act requirements (including applicable NESHAP and NSPS standards, Title V major source thresholds, minor source permit requirements); Clean Water Act requirements (NPDES permit conditions, pre-treatment standards, SPCC Plan requirements); RCRA requirements (generator category, management standards, manifest requirements, disposal facility requirements); EPCRA/TRI reporting thresholds for listed chemicals; TSCA requirements for chemical management
State and local environmental regulations	State air quality permit conditions and emission limits; state water quality standards and discharge permit conditions; state hazardous waste regulations (may be more stringent than federal RCRA); state spill reporting requirements; local air district requirements and applicability determinations; local stormwater permit requirements
Permits, licences, and operating approvals	All current environmental permits by permit number, issuing authority, expiration date, and key conditions; approved compliance schedules; consent orders or compliance agreements; operating licences with environmental conditions; variance or exemption approvals
Voluntary commitments	Industry association environmental codes of practice (e.g., National Association for Surface Finishing environmental stewardship commitments); customer environmental requirements and supplier codes of conduct; community environmental agreements; voluntary reporting frameworks (CDP, GRI) if

Obligation Category	What to Identify During the Gap Analysis
	committed to by leadership; EPA voluntary partnership programmes enrolled in
Obligations from judicial or regulatory agreements	Settlement agreements from past enforcement actions; administrative orders; penalty orders with ongoing compliance conditions; corrective action requirements from past spill or contamination events

Legal Register Gap Assessment

During the gap analysis, the EMS assessor evaluates whether the organisation has a system for identifying and tracking all applicable legal requirements. The assessment asks five questions:

1. Does the organisation have a current, documented inventory of all applicable legal and regulatory requirements?
2. Is the inventory actively maintained — updated when regulations change, when new permits are issued, or when operations change in ways that alter applicability?
3. Are specific compliance obligations (permit conditions, reporting deadlines, emission limits) documented in a form that operational staff can use for day-to-day compliance management?
4. Does the organisation have a process for periodically evaluating whether each tracked compliance obligation is being met — not just assumed to be met?
5. Are compliance evaluation results documented and reported to management as a basis for identifying any compliance failures that require corrective action?

Many organisations have the first element (a list of applicable regulations and permits) but are weak on the third (specific obligation documentation accessible to operational staff), fourth (periodic evaluation of actual compliance), and fifth (management reporting). The gap analysis frequently identifies strong permit knowledge in the EHS function combined with limited operational awareness of specific compliance requirements at the point of work.

Cascade Case Study

Cascade Legal Requirements Assessment Findings: Marcus Webb has maintained a compliance tracking system for three years — a SharePoint-based permit management tool that tracks permit numbers, expiration dates, key emission and discharge limits, and annual reporting deadlines. The gap analysis found: STRENGTHS — The permit register is current and includes all three major permits (PSCAA Air Quality Permit, State Waste Discharge Permit, RCRA Large Quantity Generator status). Key permit limits are documented. Annual reporting deadlines are tracked and have been met consistently. A compliance calendar is maintained. GAPS — (1) The compliance tracking system identifies permit limits but does not document the specific monitoring, recordkeeping, and operational requirements within each permit — the requirements that operational supervisors need for day-to-day compliance, not just the limits. Score: Partially Addressed (1). (2) No formal periodic compliance evaluation process exists. Compliance is assumed based on ongoing monitoring data but no documented evaluation against each tracked requirement has been conducted. This is a Clause 9.1.2 gap that represents a certification risk. Score: Not Addressed (0). (3) Voluntary customer commitments (two customers require annual GHG emissions reporting) are not in the compliance tracking system — they are tracked informally by Marcus but not in a form that would survive a change of personnel. Score: Partially Addressed (1).

Phase 2: Clause-by-Clause Gap Assessment

The following table presents the structured clause-by-clause gap assessment for Cascade Industrial Coatings. Each clause is scored 0 to 3 using the methodology described above. The assessment was conducted through document review, management interviews, facility walkthrough, and operational observation over two days. The gap scores and evidence notes represent the starting point for the EMS implementation planning in Guide 1.2.

Scoring key: 0 = Not Addressed | 1 = Partially Addressed | 2 = Substantially Addressed | 3 = Fully Addressed

Clause	Requirement Summary	Score	Evidence and Gap Notes
4.1	Understanding the organisation and its context — external/internal issues relevant to EMS purpose	**1**	Marcus has strong informal understanding of the regulatory and market context. No documented context analysis. External factors (regulatory trend toward stricter VOC limits, customer sustainability requirements) are known but not formally assessed or linked to EMS design.
4.2	Understanding needs and expectations of interested parties	**0**	No documented interested party analysis. Key parties (regulators, community neighbours, customers with sustainability requirements, employees) are known to Marcus but not systematically identified, nor are their requirements documented as EMS inputs.
4.3	Determining the scope of the EMS	**0**	No formal EMS scope has been defined. The facility is single-site, which simplifies scope, but the process of formally documenting and justifying scope has not occurred.
4.4	Environmental management system — establishing, implementing, maintaining, improving	**1**	Elements of an EMS exist in isolation: compliance tracking, emergency response, some environmental procedures. No integrated EMS designed around the ISO 14001 process framework. The elements do not constitute a managed system.
5.1	Leadership and commitment — top management responsibilities for the EMS	**1**	CEO Jennifer Ramos supports environmental compliance and signed the existing safety/environmental policy. No evidence of active EMS governance, management participation in environmental performance review, or resource allocation decisions that demonstrate Clause 5.1 commitment beyond compliance.

Clause	Requirement Summary	Score	Evidence and Gap Notes
5.2	Environmental Policy — specific requirements for content, communication, and availability	**1**	A combined Safety, Health and Environmental Policy exists — CEO-signed, posted in facility. Does not contain the four ISO 14001:2015 mandatory elements (protecting the environment, fulfilling compliance obligations, continual improvement of EMS, and providing a framework for environmental objectives). Requires significant revision.
5.3	Organisational roles, responsibilities and authorities for the EMS	**2**	EHS Manager role is well-defined and documented. Job description covers compliance responsibilities. Some department manager environmental responsibilities are identified in emergency response procedures. Gap: no comprehensive EMS roles matrix covering all operational functions for routine environmental responsibilities.
6.1.1	Risks and opportunities associated with environmental aspects, compliance obligations, and other issues	**0**	No formal risk and opportunity analysis exists. Environmental risks are known informally (Marcus can describe them) but are not documented, scored, or connected to planned actions. No opportunity register. Built from scratch required.
6.1.2	Environmental aspects and impacts — identification and significance determination	**1**	No documented aspects and impacts register. Marcus has an informal understanding of major environmental aspects derived from permit applications and compliance activities. Significance has never been formally assessed. Life cycle perspective entirely absent. The preliminary screening in Phase 1 of this analysis is the first systematic aspects identification ever conducted at Cascade.
6.1.3	Compliance obligations — determining and accessing applicable legal and other requirements	**2**	Strongest existing EMS element. Compliance tracking system covers permits, key limits, and reporting deadlines. Gaps: no documentation of specific operational requirements within permits; voluntary customer commitments not included; no formal evaluation process (Clause 9.1.2 gap).
6.2	Environmental objectives — establishment, planning, and achievement	**0**	No formal environmental objectives exist. No documented targets for emissions reduction, waste reduction, energy consumption, or other environmental performance dimensions. Some informal goals exist in Marcus's permit

Clause	Requirement Summary	Score	Evidence and Gap Notes
			compliance activities but none structured to Clause 6.2 requirements.
7.1	Resources — determination and provision for the EMS	**1**	EHS Manager position funded and supported. No formal EMS resource determination process; resource allocation for environmental improvements is ad hoc rather than systematically planned.
7.2	Competence — persons doing EMS-related work affecting environmental performance	**1**	EHS Manager has relevant qualifications (CSP, CHMM). Some training records exist for hazardous materials handling and emergency response. No competence matrix identifying requirements for production supervisors and operators who affect environmental performance through their work.
7.3	Awareness — persons working under the organisation's control	**1**	Environmental awareness training is included in new employee orientation (a 30-minute module covering spill response and waste segregation). No awareness of significant environmental aspects, the environmental policy content, or employee contribution to EMS effectiveness.
7.4	Communication — internal and external environmental communication	**1**	Marcus communicates with regulators as required (permit applications, annual reports, incident notifications). No formal internal environmental communication plan. No documented approach to external communication on environmental performance beyond regulatory requirements. No decision about whether to communicate externally about environmental performance.
7.5	Documented information — maintaining and retaining EMS documents and records	**2**	Strong existing records for regulatory compliance: permit monitoring data (3 years retained), inspection records, training records, chemical inventory. Gaps: no document control system for EMS procedures; environmental records stored across multiple systems with no master record register; no retention schedule for EMS records beyond regulatory minimum requirements.
8.1	Operational planning and control — including life cycle perspective and change management	**2**	Strongest operational area. Spray booth operating procedures exist and reference permit conditions (VOC content limits, application rate controls). Chemical pre-treatment bath management procedures

Clause	Requirement Summary	Score	Evidence and Gap Notes
			documented. Gaps: procedures not linked to significant aspects register (which does not yet exist); no life cycle perspective in operational controls; no environmental change management process for new chemicals or process changes.
8.2	Emergency preparedness and response	**2**	SPCC Plan in place and current. Facility emergency response plan covers spill response, fire, and chemical release. Drills conducted annually. Gaps: not all foreseeable emergency scenarios documented; no environmental impact assessment component in emergency planning; no testing of off-site notification and coordination procedures.
9.1.1	Monitoring, measurement, analysis and evaluation of environmental performance	**2**	Permit-required monitoring is conducted consistently (stack testing, continuous emission monitors, wastewater sampling, stormwater monitoring). Data recorded and reported. Gaps: monitoring beyond what permits require is absent; no analysis of environmental performance trends; monitoring data not connected to environmental objectives (which do not yet exist).
9.1.2	Compliance evaluation — periodic evaluation of compliance with legal and other requirements	**0**	CRITICAL GAP. No documented compliance evaluation process. While Cascade has generally maintained compliance, there is no systematic, documented evaluation of each permit condition and regulatory requirement. This gap creates both certification risk (major nonconformance) and legal risk (undetected compliance issues).
9.2	Internal audit — programme covering EMS conformance and environmental performance effectiveness	**0**	No environmental internal audit programme. Safety audits are conducted but do not cover EMS conformance or environmental performance effectiveness. Must be built from scratch.
9.3	Management review — periodic top management review of EMS performance	**0**	No environmental management review process. CEO receives periodic informal updates from Marcus but no structured management review with defined inputs, analysis, and documented outputs. Must be built from scratch.
10.1	Continual improvement — of EMS suitability, adequacy and	**0**	No structured continual improvement programme for environmental performance. Some reactive

Clause	Requirement Summary	Score	Evidence and Gap Notes
	effectiveness, and environmental performance		improvement occurs following regulatory inspections or incidents but no proactive improvement system.
10.2	Nonconformity and corrective action — for EMS and environmental performance failures	**1**	Regulatory incidents are documented and investigated (three minor permit exceedances in the past three years, all reported and corrected). No formal CAPA system for internal environmental nonconformances. Corrective actions are taken but root cause analysis is minimal and effectiveness verification is absent.

Gap Analysis Results: Cascade Industrial Coatings Summary

Clause Area	Score	Gap Priority and Rationale
4.1 — Organisational Context	1	Medium — Required for EMS design; informal knowledge must be formalised. No certification risk but needed before scope and objectives are set.
4.2 — Interested Parties	0	Medium — Build from scratch; connects to legal requirements and external communication decisions.
4.3 — EMS Scope	0	HIGH — Required for Stage 1 audit; must be completed before any other element can be formally assessed against a defined system boundary.
4.4 — EMS Framework	1	HIGH — The overall EMS architecture must be designed before individual clause elements can be connected into a system.
5.1 — Leadership and Commitment	1	HIGH — Leadership engagement is a prerequisite for resource allocation and management review. CEO Jennifer Ramos's personal commitment must be developed and evidenced.
5.2 — Environmental Policy	1	HIGH — Must be revised to include all four mandatory elements and be approved by top management before other elements can be built from it.
5.3 — Roles and Responsibilities	2	Low — Existing EHS structure is solid; needs a comprehensive EMS roles matrix to close the gap.
6.1.1 — Risks and Opportunities	0	Medium — Build from scratch; less urgent than aspects register and compliance obligations.
6.1.2 — Environmental Aspects and Impacts	1	CRITICAL — Foundation of the EMS. Significant aspects drive operational controls, monitoring, and objectives. Must be completed before operational planning and monitoring systems can be designed.
6.1.3 — Compliance Obligations	2	HIGH — Existing system is strong but gaps in operational requirements documentation and voluntary commitment tracking must be closed before compliance evaluation is meaningful.
6.2 — Environmental Objectives	0	HIGH — Certification requires documented objectives consistent with significant aspects and environmental policy. Build from scratch after aspects register and policy are complete.
7.1 — Resources	1	Medium — Formalise the resource determination process; connect to EMS planning and management review.
7.2 — Competence	1	HIGH — Build comprehensive competence matrix for all EMS-affecting roles. Priority for production

Clause Area	Score	Gap Priority and Rationale
		supervisors and operators managing significant aspects.
7.3 — Awareness	1	HIGH — Revise new employee orientation and develop role-specific EMS awareness content. Must reach all workers including contractors.
7.4 — Communication	1	Medium — Develop internal communication plan; decide on external communication approach and document the decision.
7.5 — Documented Information	2	Medium — Document control system needed for EMS documents; master record register needed.
8.1 — Operational Planning and Control	2	HIGH — Strong foundation; must be connected to significant aspects register and updated with life cycle perspective requirements.
8.2 — Emergency Preparedness	2	Medium — Good foundation; close specific gaps in scenario coverage and external coordination testing.
9.1.1 — Monitoring and Measurement	2	Medium — Expand beyond permit-required monitoring; connect to environmental objectives.
9.1.2 — Compliance Evaluation	0	CRITICAL — Zero score. Represents both a certification major nonconformance risk and a genuine legal compliance risk. Build immediately and in parallel with other high-priority elements.
9.2 — Internal Audit	0	HIGH — Must be built and at least one complete audit cycle run before Stage 2 certification audit.
9.3 — Management Review	0	HIGH — Must be designed and at least one management review conducted before Stage 2.
10.1 — Continual Improvement	0	Medium — Will emerge naturally from functional objectives, audits, and management review; less urgent as a standalone build item.
10.2 — Nonconformity and Corrective Action	1	High — Formalise the existing reactive approach; build root cause analysis and effectiveness verification disciplines.

Cascade Gap Analysis Summary Score

Category	Detail
Total clauses assessed	24 requirement areas
Score 0 (Not Addressed) — Build from scratch	8 areas (33%): Clauses 4.2, 4.3, 6.1.1, 6.2, 9.1.2, 9.2, 9.3, 10.1
Score 1 (Partially Addressed) — Significant development required	10 areas (42%): Clauses 4.1, 4.4, 5.1, 5.2, 6.1.2, 7.1, 7.2, 7.3, 7.4, 10.2

Category	Detail
Score 2 (Substantially Addressed) — Moderate development required	6 areas (25%): Clauses 5.3, 6.1.3, 7.5, 8.1, 8.2, 9.1.1
Score 3 (Fully Addressed) — No significant development required	0 areas (0%): No clause is fully addressed without further development
Overall EMS maturity score	29 out of 72 possible points (40%) — Substantial implementation work required; 14-month timeline is achievable but demands consistent executive engagement and dedicated EHS Manager capacity
Critical path items (must precede all others)	EMS Scope (4.3) + Environmental Policy (5.2) + Aspects and Impacts Register (6.1.2) + Compliance Obligations Register update (6.1.3) + Compliance Evaluation process (9.1.2)

Unique EMS Gap Analysis Considerations

Several aspects of the ISO 14001:2015 gap analysis require approaches that have no equivalent in ISO 9001 gap assessment. Practitioners with strong ISO 9001 experience need to consciously address these EMS-specific analytical challenges.

The Life Cycle Perspective Requirement

ISO 14001:2015's life cycle perspective (Clause 8.1) requires the organisation to consider environmental aspects and controls not only for its own direct operations but for the upstream supply chain it buys from and the downstream fate of its products. This is not a vague aspiration — the standard requires documented consideration of life cycle environmental impacts in operational planning.

For Cascade, the life cycle perspective adds three dimensions to the gap analysis that a production-only assessment would miss:

- Upstream: The VOC content and hazardous substance profile of purchased coatings and solvents directly determines what air emissions Cascade generates. Supplier environmental profile is an EMS concern, not only a product quality concern. The gap analysis must assess whether Cascade has a process for considering environmental factors in supplier selection and product formulation choices.
- In-use: The durability and performance of Cascade's coatings determines how often customers must recoat components — a more durable coating means fewer coatings applied over the product's lifetime, a directly positive environmental outcome. This connection between product performance and environmental impact must be captured in the EMS.
- End-of-life: Coated metal components eventually enter the waste stream. Some coating types create hazardous waste characterisation concerns for recyclers. Cascade's coating formulation decisions today affect end-of-life environmental impacts years in the future.

The Compliance Evaluation Gap — The Most Consequential Finding

In the ISO 9001 gap analysis, the most consequential common finding is the absent or superficial risk register. In the ISO 14001 gap analysis, the most consequential common finding is the absent compliance evaluation process (Clause 9.1.2). The two gaps are analogous in structure — both involve a required systematic analysis that many organisations perform informally but have not formalised — but the compliance evaluation gap carries a dimension that the risk register gap does not: legal exposure.

An organisation without a formal compliance evaluation process may be in compliance with all its environmental obligations but cannot demonstrate it. More critically, it may have undetected compliance failures that are accumulating regulatory exposure without management knowledge. The Cascade gap analysis finding of a 0 score for Clause 9.1.2 is therefore the highest-urgency gap in the analysis — not because it is difficult to fix, but because every month it remains unaddressed is a month in which compliance failures could be occurring undetected.

EMS Integration Note

For organisations that already hold ISO 9001 certification, the EMS gap analysis offers a specific integration opportunity that the gap analysis team should actively explore. Where ISO 9001 processes already address a related management system requirement — context analysis, interested party review, document control, internal audit, management review, corrective action — the question is not "do we need to build this for the EMS?" but "can the existing ISO 9001 process be extended to cover the EMS requirement?" Integrated

> management systems that share a common document control system, a combined internal audit programme, and a single management review covering both QMS and EMS performance are significantly more efficient to maintain and more effective in governance than parallel standalone systems. The gap analysis should explicitly note where integration opportunities exist and flag them for the implementation planning phase.

Quick Reference: EMS Gap Analysis Outputs and Next Steps

Gap Analysis Deliverables Checklist

	Gap Analysis Deliverable
☐	Environmental Profile document — preliminary aspects screening by process area; operating condition overlay; preliminary significance assessment
☐	Legal and Compliance Obligations inventory — all applicable regulations, permits, licences, and voluntary commitments identified with current status
☐	Clause-by-clause gap assessment table with scores (0-3) and evidence notes for each requirement area
☐	Gap prioritisation — CRITICAL, HIGH, MEDIUM, LOW classifications with rationale for each clause area
☐	Proposed EMS scope statement (draft) — for review and approval in implementation planning
☐	Gap analysis summary score — overall EMS maturity percentage and breakdown by score level
☐	Preliminary implementation resource estimate — time, personnel, external support, and documentation tool requirements
☐	Integration opportunity assessment — where existing ISO 9001 or other management system processes can be extended to cover EMS requirements
☐	Gap Report document (controlled) — formal output of the gap analysis for review by senior leadership and EMS sponsor

Most Common EMS Gap Analysis Findings by Clause

Finding Area	Clause	Typical Gap Description
No aspects register	6.1.2	Organisation has never systematically identified and documented its environmental aspects and impacts. Environmental management has been entirely compliance-driven without a systematic understanding of which operations have the most significant environmental interactions.
Aspects without life cycle consideration	6.1.2 / 8.1	Aspects register addresses direct operational aspects but has never considered upstream supplier environmental profile or downstream product use and disposal environmental impacts.
No compliance evaluation process	9.1.2	Organisation tracks permit conditions and reporting deadlines but has never conducted a systematic, documented evaluation of whether each tracked obligation is being met. Compliance is assumed, not demonstrated.

Finding Area	Clause	Typical Gap Description
Policy missing mandatory elements	5.2	Existing environmental policy does not include one or more of the four required commitments (protecting the environment, fulfilling compliance obligations, continual improvement of EMS, framework for objectives). Common specific gap: "continual improvement" stated but not specifically of the EMS.
No management review process	9.3	CEO receives informal environmental updates but no structured management review with defined inputs, analysis, and documented outputs covering all required topics (including aspects, objectives, compliance status, and opportunities for improvement).
No environmental objectives	6.2	No documented environmental objectives connected to significant aspects or environmental policy commitments. Environmental performance improvement is reactive and ad hoc rather than planned against measurable targets.
Operational procedures not linked to significant aspects	8.1	Operating procedures exist for regulated processes but are not explicitly connected to the significant aspects they control. Procedures address permit compliance but not the broader environmental impact management that ISO 14001 requires.
Limited contractor awareness	7.3	Employee environmental awareness training exists but does not extend to contractors and temporary workers who perform environmental-affecting work on the premises (maintenance contractors, cleaning contractors, waste disposal contractors).

Next in Volume 1: Guide 1.2 — EMS Implementation Planning. Translating the gap analysis into a phased implementation project: sequencing the work, allocating resources, establishing the project governance structure, managing stakeholder engagement, and building the implementation timeline that will take Cascade from gap analysis to Stage 2 certification audit in 14 months.
