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How Safety Audits are Superficially Trapped: An Assessment via the Hierarchy of Controls and Rasmussen's Risk Management Framework

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A B S T R A C T

Background: Safety audits are commonly used as assurance and learning mechanisms, yet little is known about what their documented corrective actions actually improve. If audit actions mainly produce local paperwork improvements, then audits may verify compliance without substantially testing the controls or organizational conditions that shape risk.
Methods: This exploratory study assessed 448 corrective actions from 65 health-and-safety audit reports sourced from two large engineering and construction companies, encompassing internal audits alongside reports from 16 independent external auditing firms. Actions were coded against two complementary dimensions: the strength of the risk control implied by the hierarchy of controls, and the organizational-level targeted, using Rasmussen's risk management framework.
Results: Corrective actions were concentrated in administrative controls and at project management, staff, and work levels. No actions were coded to company management, client, regulator, or government levels. Few actions required verification of field risk control effectiveness.
Conclusion: While these findings do not, by themselves, establish that audits fail as assurance mechanisms, they do suggest that documented corrective actions were concentrated at lower levels, privileging local paperwork and visible conditions over higher-order controls and upstream organizational influences.

1. Introduction

Safety audits are a standard mechanism for demonstrating adherence to requirements set by companies, clients, regulators, and certification bodies. Safety audits are structured processes for obtaining and evaluating evidence against criteria [1]. They are expected to check "the adequacy of an organization's procedures and performance in relation to safety" [2, p. 71], including how formal systems translate into operational controls, worker practices, and engineering controls [2,3].

This raises a question: when audits identify deficiencies, what kinds of improvement do their corrective actions actually require? Corrective actions are not the whole audit process, but they are the formal point where deficiencies are converted into organizational obligations [1,4], providing a practical window into audit priorities.

Existing audit research has criticized audits for focusing on documentation, formalized systems, and visible compliance over risk control quality [5–13]. One study of audit corrective actions found a mismatch between audit goals and audit outputs, but used a bespoke coding scheme [8]. The present study extends that work by examining whether audit corrective actions concentrate in weak control types and lower organizational levels, using two widely recognized and complementary safety frameworks.

The hierarchy of controls assesses the strength of the intervention (how the action addresses the hazard), whereas Rasmussen's risk management framework distinguishes the organizational level targeted. Together, they provide a structured test of audit output focus, distinguishing local and procedural actions from those that are stronger or more upstream, rather than a complete systems analysis.

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If audits assess the effectiveness of risk systems, we might expect a distribution of corrective actions across the higher levels of the hierarchy of controls. Mapping corrective actions against the hierarchy of controls provides a "yardstick" of action focus that is interpretable by most safety practitioners. Based on prior research [8,14,15], it is hypothesized that audit corrective actions will dominate the lower hierarchy tiers, like personal protective equipment (PPE) and administrative controls. As such, the first research question is:

RQ1: To what extent do audit corrective actions concentrate on the lower tiers of the hierarchy of controls?

Sociotechnical perspectives have been widely adopted across industries [16–18]. While accident investigation findings have been mapped using organizational-level frameworks such as Rasmussen's risk management framework [14], safety audit corrective actions have not undergone similar scrutiny. How audit corrective actions are distributed across organizational levels reveals where audit improvements are directed, since some research has questioned whether audits are structured for assessing complex systems [12,13]. It is also hypothesized that audit corrective actions will primarily focus on the company safety management system level and below. The second research question is:

RQ2: To what extent do audit corrective actions concentrate at project, staff, and work levels, rather than the higher hierarchical levels, when mapped against Rasmussen's risk management framework?

1.1. Hierarchy of controls analysis

The widely adopted hierarchy of controls method organizes risk control categories across levels, with the highest level aimed at eliminating or minimizing hazard exposure ("hard controls") and the lowest levels aimed at changing behavior or using protective equipment ("soft controls") [19].

The most to least effective levels are [20]:

- Elimination: Removing the hazard and associated risk.
- Substitution: Substituting the hazard with something less risky.
- Isolation: Physically separating the source of harm from people by distance or barriers.
- Engineering controls: Control measures that are physical in nature, like mechanical or physical devices, and barriers.
- Administrative controls: Work control measures or procedures that are designed to minimize hazard exposures via information, training, awareness, or instruction.
- PPE: Protective devices or items used or worn by workers to minimize contact with particular hazards.

Lingard et al [21] employed the hierarchy of controls as a leading indicator to assess the influence of preconstruction decision-making on risk control quality. The study found that earlier planning-phase decisions produced higher-order risk controls. Ajslev et al [22] used the hierarchy of controls to assess the types and effectiveness of risk control interventions used by health and safety practitioners. That study concluded that 54% of the risk controls proposed by health and safety coordinators were administrative.

1.2. Rasmussen's risk management framework

Because injuries result from a loss of control over physical processes [23,24], audits must verify whether these controls remain effective. However, analyzing control processes in large, high-risk industries is increasingly challenging due to complex sociotechnical interactions [16,23–25]. Such systems are characterized by a large number and diversity of dynamically interacting elements, nonlinear and emergent behaviors not predicted by the individual components, and an aggressive and competitive environment, among other characteristics [26–28]. Safety is now recognized to emerge from interactions across entire systems [29], making systems perspectives the dominant frameworks for complex failure analysis [28].

Construction projects are considered complex sociotechnical systems. They include diverse supply-chain stakeholders, multiple management structures, interacting communication channels, and competing resource, budget, and goal constraints [25,30]. Forteza et al [31] found that higher project complexity was a predictor of higher site risk. Moreover, a higher degree of interactive complexity (non-linear, unpredictable, or masked interdependencies between the system's components) and tighter coupling (less time to identify issues or act) between processes were linked to significantly higher rates of accidental releases of hazardous chemicals [32].

This study utilizes Rasmussen's risk management framework (Fig. 1) [24] as a structured taxonomy to systematically map the organizational levels targeted by audit corrective actions. It maps different system levels across a spectrum: from the top, where society, government, and regulation impose constraints on the lower levels in the form of rules, laws, and other control mechanisms [14,23,24]. Likewise, organizations impose constraints on projects, crews, individuals, and the operating environment. Importantly, the systems approach recognizes that influences are not purely vertical. Instead, complex systems can be better understood as a web of interacting relationships and behaviors between people, technology, and their environment [26,28,33]. Applying Rasmussen's framework to over 100 Australian construction investigation reports, Woolley et al [14] found that while all corrective actions addressed operational and staff levels, none targeted the government, regulatory, client, or company levels.

In this study, audit corrective actions are parsed using the levels from prior research [14,24]:

- Government: Corrective actions addressing levels where political associations, agencies, and laws are formed.
- Regulatory bodies and associations: Corrective actions addressing levels where regulations, regulatory guidance, and codes of practice are formed and enforced.
- Client and external associations: Corrective actions addressing client and subcontractor relationships, financial or time pressures, or other factors external to the audited company.
- Company management: Corrective actions addressing high-level safety management systems, standards, or certified system frameworks.
- Project management: Corrective actions addressing business units or construction projects that must implement and enforce company-level systems and regulatory standards at the project-level.
- Staff: Corrective actions addressing characteristics of workers and their local work practices, and those who apply safety management system processes.
- Work: Corrective actions addressing the interaction between people and equipment, the influence of work front operating conditions (e.g., weather or contractors), and physical hazards relating to site conditions, plant, equipment, and more.

2. Method

2.1. Sample

Both companies are large construction and engineering contractors operating across hundreds of Australian projects.

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Fig. 1. Rasmussen's risk management framework adapted from Woolley et al [14].

Company A employs tens of thousands across Australia and New Zealand; Company B is an international contractor with several thousand Australian employees. The audit sample was retrieved from both companies' information management systems and included their internal audit reports, as well as reports from 16 independent second- and third-party auditing firms, including safety regulators, that had audited those companies. Because the sample combined internal and external audits, the dataset is treated as an exploratory aggregate rather than as a comparison of audit types.

An initial pool of 100 audit reports was retrieved from Company A's information system; similarly, 50 reports were retrieved from Company B. Selection was undertaken using a pseudo-random approach, with reports drawn from the information systems while seeking a distribution across businesses so that units with unusually high audit frequency did not dominate the sample. The sample size was informed by prior research [14] and limited by the availability of sufficient high-quality and complete reports. The inclusion criteria required completed reports that (a) addressed health and safety issues or concerns, (b) listed corrective actions or opportunities for improvement, and (c) had been completed within the last five years to maintain currency. After screening, 44 reports from Company A and 21 from Company B met the inclusion criteria, a total of 65 out of 150 reports in the sample. Most excluded reports were incomplete, had no listed corrective actions, or focused on quality management. Combined, 448 corrective actions were extracted from the 65 audit reports.

The analyzed sample contained 36 external, 18 internal, and 11 regulatory audits. Fifty-five were general audits covering all elements of safety management systems and implementation; four focused on electrical safety, one on excavation and trenching, two on hazardous chemicals, and three on traffic and mobile plant. Most audits stated their scope as both implementation and effectiveness.

2.2. Coding method

Corrective actions were coded by one researcher. Prior to coding, a detailed codebook was developed with representative examples for each category; study codes are provided in the Appendix.

2.2.1. Hierarchy of controls

This study used a standard rendition of the hierarchy of controls method from Safe Work Australia [20]. A detailed codebook was developed using examples from codes of practice and industry guidelines to sort corrective actions into the six hierarchical levels (see Appendix Table A1 for representative examples).

2.2.2. Rasmussen's risk management framework

Corrective actions were also mapped against Rasmussen's risk management framework following Woolley et al [14]. In the first step, a detailed table of representative codes was developed based on Rasmussen's risk management framework and/or AcciMaps [14,34,35] and consulted during coding to ensure consistency (see Appendix Table A2 for representative examples). In the second step, each corrective action was assigned to the overarching level that best represented the focus of the action as per Fig. 1. In the third and fourth steps, each corrective action was also assigned subdescriptors based on its target area.

Accordingly, each corrective action received three Rasmussen-level codes: an overarching level, a subdescriptor, and a target area. Importantly, this framework is not used to reconstruct feedback loops or interactions across system levels, as these data were largely unavailable within the audit reports. Instead, it is used as a classificatory framework to identify the organizational level at which corrective actions were directed. This narrower use limits the depth of systems interpretation, but it is appropriate for the study aim: assessing where the audit reports locate formal improvement action.

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Corrective actions were coded based on their literal wording, rather than inferred intent. The exception was a small number of vague actions that framed the improvement as general hazard statements, like "Boom of [mobile plant] positioned in open lane of roadway." This action was inferred to mean "elimination," by removing the boom from the roadway. Where a corrective action could plausibly fit more than one category, it was allocated to the category that most directly reflected the stated action target. Ambiguities were resolved by consulting codes of practice for the hierarchy of controls and the previously cited studies employing Rasmussen's risk management framework.

While the intrarater reliability was excellent (an average of $\kappa = 0.96$ across the different hierarchical levels based on retesting of the first 100 actions), minor discrepancies occurred in the categorization against Rasmussen's risk management framework in the areas of applied risk management and work procedures and project management and planning. In these cases, the original coding allocation was retained as it better aligned with the representative coding examples.

2.3. Statistical analysis

Data were analyzed using GNU PSPP v2.0.0. To evaluate the distribution of audit corrective actions, two approaches were used. First, the six hierarchy of controls categories were collapsed into two bins: soft controls (administrative and PPE) and hard controls (elimination, substitution, isolation, and engineering) [19]. A chi-square test was used to determine if actions were significantly overrepresented in soft controls ($\alpha = 0.05$).

Second, Rasmussen's risk management framework was applied. Actions were categorized into two functional tiers: project-level (representing operational management and planning) and front-line (representing local actors and work conditions). While Rasmussen's framework accounts for levels above the project level (e.g., regulators and government), no actions were identified at those tiers; consequently, a chi-square test was used to compare the distribution between the project and front-line tiers ($\alpha = 0.05$). This comparison permits analysis of whether actions are skewed toward project or front-line levels.

3. Results

3.1. Hierarchy of controls

Of the 448 actions, soft controls accounted for 384 (85.7%; 95% confidence interval [CI]: 82.5, 89.0), and the remaining 64 were hard controls (14.3%; 95% CI: 11.0, 17.5). The analysis revealed a statistically significant difference, χ^2 (1, $N = 448$) = 228.57, $p < 0.001$, supporting the hypothesis that corrective actions dominated the lower tiers of the hierarchy of controls and rarely required substantive physical changes to working conditions (discussed in section 4.1).

Fig. 2 illustrates this concentration. The administrative category clearly dominates the distribution ($n = 364$, 81.3%), with all other categories accounting for less than one-fifth of actions. Administrative actions are primarily related to incomplete documentation, like site plans or safe work method statements missing signatures, and noncompliant document templates.

Engineering controls were the second most common category ($n = 31$, 6.9%), addressing issues such as traffic hazards, road windrows, and conveyor belt guarding. The remaining actions were distributed across PPE ($n = 20$, 4.5%), elimination ($n = 18$, 4.0%), and isolation ($n = 15$, 3.3%). No substitution actions were identified.

3.2. Rasmussen's risk management framework

A significant difference in the distribution of actions between the project and front-line tiers was found, χ^2 (1, $N = 448$) = 6.51, $p = 0.011$. Of the 448 total actions, most were situated at the project level (56.0%; 95% CI 51.4, 60.6), while the remaining were at the front-line level (44.0%; 95% CI: 39.4, 48.6). These results indicate that corrective actions are significantly overrepresented at the operational management and planning level rather than being directed at local actors or immediate work conditions. Fig. 3 shows the distribution of actions across hierarchical levels, with two analytically important features: first, the concentration of corrective actions within project management administrative activity; second, the complete absence of coded actions across the

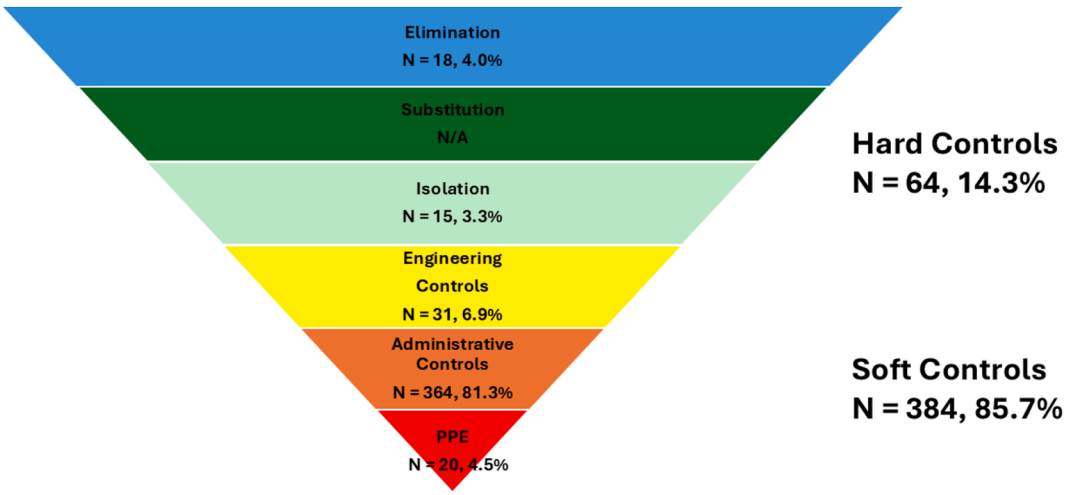

Fig. 2. Distribution of corrective actions across the hierarchy of controls.

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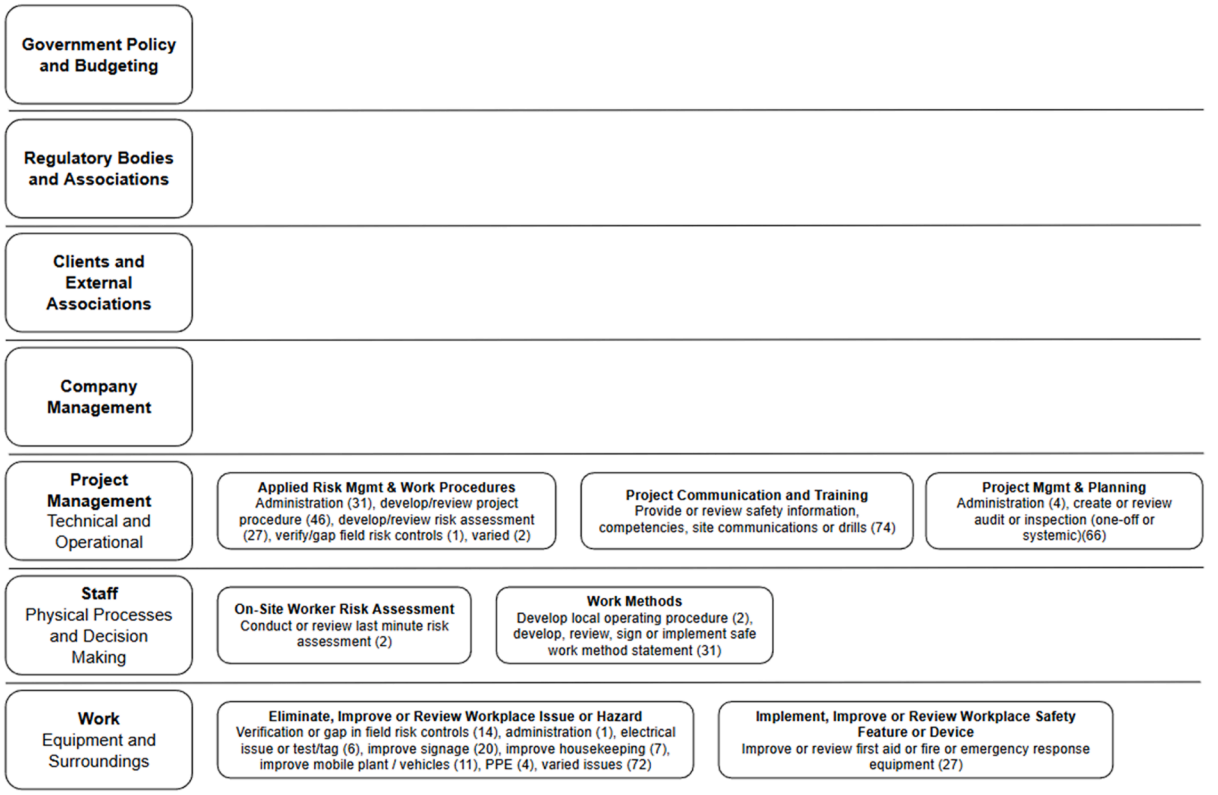

Fig. 3. Audit corrective actions mapped against Rasmussen's risk management framework.

upper organizational tiers above the project level. This finding is discussed further in section 4.2.

At the project management level (n = 251, 56.0%), actions predominantly targeted applied risk management and work procedures (e.g., reviewing risk assessments, updating templates, or signing project procedures), project management and planning activities (e.g., creating inspection schedules or reviewing meeting processes), and project communication (e.g., delivering toolbox talks or circulating safety information).

At the work level (n = 162, 36.2%), most actions resolved site issues or hazards (n = 135, 30.1%), with higher clustering around site signage (n = 20, 4.5%), verification of field controls (n = 14, 3.1%), and mobile plant issues (n = 11, 2.5%). The field risk control sub-category represents audit actions addressing in-field control effectiveness, albeit infrequently. Staff-level actions (n = 35, 7.8%) almost exclusively involved implementing or signing safe work method statements.

4. Discussion

This study mapped 448 safety audit corrective actions from 65 audit reports against the hierarchy of controls method and Rasmussen's risk management framework. The results show that corrective actions were overwhelmingly concentrated in lower-order administrative improvements (RQ1) and at localized project levels, with no actions at company, client, regulatory, or government levels (RQ2).

4.1. Corrective actions dominate the lower levels of the hierarchy of controls

The concentration of corrective actions in lower-order administrative controls may appear unsurprising, given audits are structured around documented criteria [1] and auditors have limited time to examine transient site conditions [7]. However, the significance lies in their overwhelming frequency and the absence of movement towards either higher-order controls or higher organizational levels [20]. This pattern reflects fewer efforts directed at removing, substituting, isolating, or engineering out hazards or challenging the effectiveness of critical systems [2,7,8]. Hopkins [2] argued that audits should assess the adequacy of an organization's safety system, not merely confirm the existence of documentation. The corrective action profile in this sample suggests audit outputs are weighted towards the latter, raising a conceptual problem: the audit may identify deficiencies in system implementation while translating them into actions trapped within the same local administrative layer.

These findings support prior research where audits largely frame operational work via a documented process rather than directly addressing major physical hazards [8]. This concentration likely reflects the reporting genre of audit corrective actions, which privileges documents and similar artifacts as readily visible forms of evidence [6–8], consistent with critiques that audits overemphasize paperwork disconnected from substantive operational risks [6,7].

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Further, Hutchinson et al [8] investigated how directly audit corrective actions addressed physical hazards and site issues, using 327 actions from 16 independent audit companies operating within a large Australian-based construction and engineering company. They found just 16% of the corrective actions directly addressed the sources of harm, whereas the remaining actions either addressed the hazard indirectly (via a process or procedure), or had no discernible connection at all (e.g., updating a roles and responsibilities table in a vehicle management plan in order to address a vehicle-related site hazard). Likewise, audits in the current sample largely targeted indirect sources of harm, via administrative improvements.

Audit limitations appear similar to those of investigations. Liberati et al [15] mapped 42 healthcare investigation risk-control improvements against the hierarchy of controls. Eighty-three percent of the designated risk controls were administrative (comparable to the 81.3% of administrative actions in the current study), whereas 14% were engineering controls. Likewise, Ajslev et al [22] found administrative actions were the dominant type implemented from a sample of 280 measures, collected from 12 safety professionals. Collectively, these studies and the current findings support Liberati et al's [15, p. 39] contention that risk control measures "may cluster toward the apparently weaker end of an established hierarchy of controls".

4.2. Corrective actions target lower levels of the organizational hierarchy

Corrective actions were concentrated entirely at the project level and below, with none at the upper organizational tiers. These findings were comparable to Woolley et al's [14] study of construction safety investigation corrective actions. In their study, most actions targeted the project management level, staff and work methods, and the physical environment. A notable difference is that the current findings identified no actions directly addressing the company safety management system. This finding is unexpected, as it was hypothesized that company safety management system processes would be a key focus of audits.

The absence of corrective actions above the project level can be interpreted in several ways. First, it may reflect audit scope: auditors may have been engaged to examine project implementation rather than company-level system design. Second, it may reflect evidence availability: project documents, registers, work fronts, and worker practices are more readily observable during an audit than are client constraints, resourcing decisions, or corporate design choices. Third, it may reflect authority gradients: auditors may be more comfortable assigning actions to project teams than to senior management or clients. Other research has found that auditors perceive power imbalances within their work [36] and even employ defensive strategies as a form of protection from criticism [37]. Finally, it may reflect reporting conventions: audit templates may translate observed deficiencies into localized improvements even when similar issues indicate broad organizational weakness.

While these explanations differ, they point to the same practical concern. If a project audit repeatedly identifies deficiencies in risk registers, permits, or mobile plant controls, then the issue may not be limited to local noncompliance. It may also indicate weaknesses in how the organization designs, supports, verifies, or learns from its safety management system. An absence of upward corrective actions suggests audit processes, at least in this sample, closed issues where they were observed rather than testing whether those issues revealed broader system conditions. Accident investigation authorities have criticized superficial audit scopes preceding major accidents [9]. For example, audits conducted before the DPC Enterprises chlorine release prioritized document availability over system functioning [38].

This study provides new data on the downward concentration of corrective actions via two common frameworks. This pattern suggests that audits tend to prioritize what is readily visible and documentable in the immediate work context over interventions that more directly modify hazardous energy or reshape upstream constraints. In further support, Bjelle and Sydnes [6] found that Norwegian industrial audits had a focus on formal documentation over safety system implementation and effectiveness. While safety risks in their sample were managed operationally, audits focused on strategic documentation, a disconnect mirrored in this study. These findings help explain how audits can appear system-focused while producing improvement actions that are operationally narrow.

These findings do not suggest that all audits are inherently superficial. Instead, a narrower interpretation is warranted: the documented corrective actions in this sample were superficially trapped. They tended to remain with what could be locally documented, assigned, and closed out, even where the observed issues may have had wider organizational relevance. This pattern is consistent with prior work finding that both investigation [15,39] and audit outputs may frequently be superficial [7–9]. Woolley et al [14] concluded that investigation actions had not ascended beyond the organizational ceiling; the present audit findings concur: improvements at the site level *stay at the site level*.

The findings suggest at least three improvements to audit design. First, audit corrective actions should be classified by both control strength and organizational level. This would reveal whether actions concentrate on administrative controls and localized issues. Second, audit processes should include an explicit escalation test: where noncompliances may indicate recurring or systemic issues, the action should not be closed solely at the project level. Third, audits should require clearer verification of field risk controls, particularly where the audit objectives include process effectiveness.

5. Limitations

Sample size aside, the study analyzed documented corrective actions and not the full audit process, so the findings reflect what reports formally converted into action, not everything auditors may have observed or influenced.

Further, the largely administrative nature of the corrective actions could reflect projects having already eliminated the most severe hazards. While this effect cannot be ruled out, it likely does not explain most of the findings, since other research has also found a logic of superficial paperwork within audits [6,8,9].

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This study cannot determine why actions were concentrated at lower levels. As highlighted elsewhere [9], many factors influence audit findings, including biased auditor preconceptions or experience, time pressure, audit scope and techniques, management support, gaming behavior and goal displacement, and organizational climates. The data identify the pattern, but not the social or organizational mechanisms that produced it.

Another limitation was the single-coder analysis. Several steps ensured coding consistency: replicating methods from similar studies [8,14], developing detailed codebooks from industry guidelines, and conducting intra-rater reliability testing. The results should therefore be interpreted with caution and considered exploratory rather than as widely generalizable estimates. Further research is warranted before drawing firm conclusions.

6. Conclusion

Within this sample, documented improvement efforts clustered around project-level administration and observable site issues, while omitting company management and higher organizational tiers. The findings indicate a downward concentration in what audit reports document. They do not, by themselves, establish that audits as a whole fail as an assurance mechanism, but they do suggest that documented audit outputs may privilege local paperwork and visible conditions over higher-order and upstream interventions.

CRediT authorship contribution statement

Ben Hutchinson: Writing – original draft, Writing – review & editing, Visualization, Project administration, Methodology, Investigation, Formal analysis, Data Curation.

Disclaimers

None.

Declaration of generative AI and AI-assisted technologies in the manuscript preparation process

During the preparation of this work the author used OpenAI GPT-5.5 for spelling and grammar suggestions. After using this tool/service, the author reviewed and edited the content as needed and takes full responsibility for the content of the published article.

Conflicts of interest

All authors have no conflicts of interest to declare.

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Appendix

Table A1
Examples of audit corrective actions coded to each level of the hierarchy of controls

Hierarchy of control level	Corrective action examples
Elimination	"Boom of EWP positioned in open lane of roadway" "Eliminate crumbling edge of bench" "Remove exposed wire at eye level"
Substitution*	"Swap high-toxicity, solvent-based paints with low-VOC or water-based types" "Use mechanical fasteners instead of welding to eliminate hazardous fumes" "Introduce battery-powered tools to minimize fuel exhaust fumes"
Isolation	"Ensure workers and rolling operations are separated by at least the minimum 10 m exclusion" "Ensure segregation of LV, HV, and plant which was not present" "Ensure consideration of establishing drop zones under construction [areas]"
Engineering controls	"Ensure split pins are used in quick hitches" "Ensure emergency lanyards are installed around RAP conveyor" "Ensure adequate access road windrows are installed"
Administrative controls	"The (Safe Work Method Statements) require a signature by those conducting the work" "Display first aid signage on the site office and consider signage adjacent the location of the first aid kit" "Numerous vehicles … in use did not have pre-starts completed for the day of the audit"
PPE	"Ensure only safety glasses are worn on site" "Ensure personnel wear mandatory hard hats" "Provide respirators to workers cutting concrete"

Note: * = Illustrative examples as these actions were not identified in this dataset. EWP, elevated work platform; HV, heavy vehicle; LV, light vehicle; PPE, personal protective equipment; RAP, recycled asphalt pavement; VOC, volatile organic compounds.

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Table A2
Examples of audit corrective actions coded to key Rasmussen risk management framework categories and sub-categories

Levels	Examples
Government policy and budgeting*	"Lobby the state government to mandate" "safety-in-design" "legislation for (XYZ issue)" "Submit a formal policy recommendation to the Department of Labor to increase national budget for workplace safety inspectors" "Propose legislative amendments to create a national framework for (XYZ issue)"
Regulatory bodies and associations*	"Submit a formal request to the safety regulator for a review and relaxation of (specific plant registration) to better align with current industry norms" "Partner with the (national industry association) to draft a new Code of Practice for the safe operation of autonomous plant equipment" "Collaborate with the (standards committee) to update existing electrical safety standards to address (XYZ emerging issue)"
Clients and external associations*	"Negotiate Principal Contractor duties during the tender phase to ensure client provides sufficient budget for dedicated onsite safety resourcing" "Update the service agreement for future projects to include a requirement that all sub-contractors must pass an independent third-party safety audit before arriving on site" "Implement a client-led program targeting Critical Control management"
Company management*	*Safety Management Systems:* "Implement review of company Permit to Work process to ensure (working at height risks) are adequately addressed during permit approval" "Revise Safety Management Plan template to include sub-contractor audit and inspection schedule requirements" "Implement business-wide minimum standards for project safety performance measures, to be documented within project safety management plan"
Project management – Technical and operational	*Applied Risk Management & Work Procedures:* "No evidence of a written onboarding instruction – create written instruction" "An assembly point was clearly identified in the pre-start meeting discussion though not on the paperwork – ensure added to paperwork" "Re-draft (Site Safety Plan) into current format with key roles and responsibilities clearly defined" "The (Vehicle Management Plan) contained limited information, with opportunity to add additional requirements … (listed various factors)" *Project Communication and Training:* "A prestart meeting was not conducted for two subcontracted workers conducting works at the (place) work site – ensure prestart meeting held for all contracted workers" "There was no electronic or hard copy record of the (Safety Manager) having been inducted to the project. (Safety Manager) to redo induction and record to be maintained" "There was no evidence on site that individual workers could easily access legislation, codes or standards … Provide link to project site personnel to access the (company name) safety information" *Project Management & Planning:* "The (Project Safety Plan) contains a section on inspections and observations however it does not stipulate frequency of inspections … ensure project creates a schedule of inspections/observations/audits" "No evidence that the risk register has been reviewed to date. Project to undertake monthly risk register reviews and update where necessary" "No evidence of subcontractor prequalification of (name) was provided … Ensure subcontractor qualification is undertaken per (company procedure referenced)"
Staff – Physical processes and decision-making	*Work Methods:* "the SWMS for the project requires a signature by those conducting the work" "Operator acknowledgement was not provided on the plant risk assessment documentation. Operator acknowledgement to be obtained and records maintained" "Gaps were identified in full completion of the (process name) checklists i.e., not all fields had been checked off correctly"
Work – Equipment and surroundings	*Eliminate, Improve or Review Workplace Issue or Hazard:* "Repair bench edge to remove trip hazard" "Storm water pipe not rerouted. Pipe to be installed to reroute water around excavation from existing stormwater"" "Unbunded chemicals. Ensure adequate bunding" *Implement, Improve or Review Workplace Safety Feature or Device:* "Install firefighting equipment in crib/kitchen" "Compile manifest and stocktake first aid kit" "Lack of signage at the track immediately beyond the (company name) … site. Ensure signage is installed"

Note: * = Illustrative examples as these actions were not identified in this dataset.

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