BESPOKE RESEARCH AND CONSULTANCY FROM HSE

Exploring the relationships between corporate governance and safety: A scoping study

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Report number: HF/23/02

EXPLORING THE RELATIONSHIPS BETWEEN CORPORATE GOVERNANCE AND SAFETY: A SCOPING STUDY

Report approved by: [redacted]

Date of Issue: 11 August 2023

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Technical Reviewer(s): [redacted]

Editorial Reviewer: [redacted]

Project number: PE08611

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KEY MESSAGES

This scoping study has highlighted that there is a gap in the research and literature on the topic of corporate governance and safety performance. It is not yet clear that good corporate governance does lead to good safety performance. Poor corporate governance does however appear to contribute to poor safety performance.

Based on the review of ten major incidents/accidents mapped against good corporate governance principles, eight themes emerged. These themes provide insight into what boards can get wrong, with specific relevance to corporate governance. These were:

1. Organisational silos
2. Risk understanding / (in)competence
3. Conflicts of interest
4. Failure to learn, desire not to learn, and full-scale denial
5. Boardroom biases: Self-serving bias, Groupthink, confirmation bias, cherry picking, risky shift, optimism bias
6. 'Demand for positivity'
7. Cultures of insidious toxicity
8. Diffusion of responsibility / lack of accountability

The report concludes that it would likely be erroneous to assume these issues are present only in organisations that encounter major incidents/accidents. Rather, such organisations are exposed to a degree of independent scrutiny that most organisations avoid.

Future lines of research are required to understand if, and how good corporate governance can contribute to good safety performance. For now, it can be concluded that poor corporate governance is likely a factor in many major incidents/accidents.

EXECUTIVE SUMMARY

Background

This research was conducted on behalf of the UK's Office for Nuclear Regulation (ONR) to explore the relationships between corporate governance and safety performance. Since corporate governance relates to the *system by which companies are directed and controlled*; it was hypothesised that good corporate governance would contribute to good safety performance. An initial scoping literature review illustrated very little existing research in this area. Based on this limited foundation, it was decided by the research team to explore existing data/ materials by utilising a case study analysis approach. Given that *good* safety performance is inherently challenging to identify objectively, the study utilised cases where significant high consequence safety incidents had occurred. Ten incident cases were analysed in total, drawing on numerous publicly available documents.

Key takeaways

The research has highlighted that there appears to be a relationship whereby poor safety performance has links to poor corporate governance. This does not fully reflect whether or not good corporate governance contributes to safety performance per se, but is suggestive that this may well be the case. Further studies could be used to validate this. In the immediate term, the findings do offer some considerations for boards wishing to strengthen corporate governance in the context of safety performance. Indeed, these lessons may well be applicable to all forms of financial and non-financial performance, including safety. Key lessons for boards include:

- **Treat criticism and 'bad news' as an opportunity to improve**

  In the cases reviewed, boards / senior leaders appeared particularly dismissive of bad news, often appearing to act out of self-interest, rather than what was best for the organisation and stakeholders. In these cases, it appeared, at best, that lessons were dismissed, and at worst, retaliation against the bearers of bad news i.e. 'shooting the messenger' was common. Boards should consider how they tackle a range of *boardroom biases* that may impact objectivity, impartiality, and values/moral principles. They may also need to consider specific mechanisms which they can apply to increase the likelihood of both active listening, as well as appropriate response to such news.

- **Better monitoring and shaping of organisational culture**

  Awareness of company culture, as well as shaping the culture is a key board responsibility. Presenting mixed messages; such as clashes between espoused values and lived values (as they manifest) should be of critical interest to the board. An example of mixed messages includes stating 'integrity' is a company value, whilst in practice, rewarding behaviour which may be immoral and/or illegal. Boards need to be open to exploring value contradictions; particularly when managers, systems, and processes either actively, or inadvertently, reward behaviours that directly conflict with espoused values, or 'turn a blind eye' to emergent contradictory behaviours/values. Organisational structures/hierarchies should also be considered as possible enablers and barriers to the flow of important safety information.

Boards may need to consider what mechanisms will be put in place to provide assurance that such monitoring and enhancement of company culture occurs in practice. As part of this, boards should be very aware that migration from espoused values is likely, with consistent attention and action required.

- **Ensuring boards are genuinely diverse and receptive**

  Board diversity is likely to add value in a safety context, supporting bullet points one and two above. Such diversity should include aspects like critical thinking, and bringing genuine challenge to the group. Competence should also be considered here, for example, ensuring competence and experience of the board spans its risk profile.

Future work in this area may also benefit from exploring the risk with other types of corporate failure. The work here focused on safety, but there are likely similar issues linked to other financial and non-financial corporate failings, as well as links to the topic of worker health.

A final thought is that current principles for corporate governance have relatively limited reference to safety. There is scope to enhance corporate governance principles and related guidance to better integrate safety for sectors/industries where safety is a key aspect of business performance.

CONTENTS

1 INTRODUCTION

1.1 Background to the research

Corporate governance is recognised as a key component to promoting transparency and integrity in business. It can be defined as '*the system by which companies are directed and controlled'* (Institute of Chartered Accountants in England and Wales [ICAEW], 2023). The Financial Reporting Council (FRC, 2018) add to this, noting:

> *'Corporate governance is therefore about what the board of a company does and how it sets the values of the company, and it is to be distinguished from the day to day operational management of the company by full-time executives.'*

As identified by the FRC (2018), it is important to add that many corporate governance codes/principles highlight not only the purpose of adding shareholder value, but also the need to have wider positive impact on society. This is summed up by the FRC (2018):

> *"Strong, successful businesses generate value for their owners and wider society. Throughout the UK, large private companies contribute to productivity, generate employment, and provide vital goods and services. Many large private companies are established and run in accordance with a clear purpose and strategy that enables them to generate value for the communities in which they operate."*

There is also recognition that numerous corporate failures add further weight to the need for good corporate governance, with the FRC (2018) noting:

> *"…several large-scale corporate failures have not only drawn public attention to the need for improved transparency and accountability, but also highlighted the risks to wider stakeholders, including the workforce, suppliers and customers, when problems arise."*

When considering corporate governance in the UK; listed companies use the UK Corporate Governance Code, whilst many other companies adopt The Wates Principles (FRC, 2018). Research illustrates that uptake of The Wates Principles (or similar) in the UK is reasonable, but not entirely consistent nor fully adopted (Gaia et al 2022). The research by Gaia et al (2022) is suggestive that provision of general/high level information on governance (such as policies) appears reasonable, but disclosures relating to practical application is more limited in nature. It could be concluded, that, in the UK at least, there is room for improvement.

Next comes the consideration of health and safety in organisations. It is fairly well recognised that the boards running organisations are pivotal in creating the right environment for good health and safety performance. Indeed, in the UK and further afield, it is the board, collectively and personally who hold significant accountability. In the UK, this can lead not only to organisational level fines and other legal actions, but also actions at a personal level, including fines and custodial sentences. To raise

awareness and action in this arena, various bodies educate and provide guidance on such duties and what can be done to deliver good practice in H&S. One such document is provided jointly by the Institute of Directors (IoD) and The Health & Safety Executive (HSE) on *Leading Health and Safety at Work* (HSE, 2013). This document highlights that H&S *is* a corporate governance issue. The IoD/HSE guidance (HSE, 2013) also emphasises a key point from the original Turnbull Report regarding the importance of considering risk more broadly than financial risk:

> *'The Turnbull guidance on the Combined Code on Corporate Governance requires listed companies to have robust systems of internal control, covering not just 'narrow' financial risks but also risks relating to the environment, business reputation and health and safety.'* (in HSE, 2013).

With the above context in mind, there is an unknown element. This is whether good corporate governance does, in practice, contribute to good H&S performance. This is a question raised by the UK nuclear sector regulator: The Office for Nuclear Regulation (ONR). Understanding this provides another avenue to encourage good H&S practice, and potentially, another consideration in a regulatory 'toolkit'.

Given that this work has been commissioned by the ONR, the focus will be more specifically on safety, especially in sectors deemed 'safety critical', 'higher hazard' or 'major hazard'. These are sectors where single incidents or sets of precursors can result in significant harm/death to employees, the wider public, and significant damage to infrastructure and the environment etc. As well as generic board guidance on H&S (e.g., HSE, 2013), there are also specific expectations in the UK nuclear sector in relation to governance. This is picked up in various documents, such as the ONR Safety Assessment Principles ('SAPs') for Nuclear Facilities (ONR, 2020), and Licensing Nuclear Installations (ONR, 2021).

1.2 The Wates Principles

In terms of considering corporate governance, The Wates Principles are applicable to the widest range of organisations in the UK, and are therefore considered as very relevant to this research. At a high level, the six principles cover:

1. Purpose and Leadership
2. Board Composition
3. Director Responsibilities
4. Opportunity and Risk
5. Remuneration
6. Stakeholder Relationships and Engagement

Safety is not a separate consideration but can be considered embedded within all principles. It is also important to note that The Wates Principles were adopted for this research as a benchmark of good practice. It was not anticipated that organisations

or incidents reviewed would necessarily be applying them directly, particularly as the current version was published only a few years ago.

1.3 Research scope and research question

ONR approached The Thomas Ashton Institute (TAI)[1] to conduct a research project in this area. The specific area of interest to ONR was to generate a greater understanding of the relationship between safety performance and corporate governance. Given that reporting on corporate governance is required for large private organisations (in the UK and also a number of other nations), corporate governance reporting may provide another mechanism / opportunity to review safety performance; and also leverage safety performance improvement. The work here, however, will focus more broadly on good corporate governance, rather than reporting specifically.

With the above in mind, the overarching research question for this work was:

> *Does good corporate governance contribute to good safety performance?*

The research was split into two distinct phases. The first was to develop an understanding of what is already known based on existing research and literature. This was achieved by conducting a focused literature review. The approach and scope of the second phase was developed following the review to ensure this appropriately built on existing knowledge. A break point was therefore included, and the second phase was discussed with the research team and customer.

Following the break point, it was agreed that the scope of the second phase would be a major accident/incident review and mapping exercise. This involved looking at the topic of interest through the lens of poor safety performance as opposed to good safety performance. This rationale was driven by the availability of materials that are publicly available on negative safety outcomes. Identifying organisations achieving good safety performance was considered, at this stage, methodologically challenging, particularly within the timescales.

Due to this subtle change to the perspective of the research, the research question was therefore reframed as:

> *What are the lessons for corporate governance and safety, in cases where organisations have experienced safety related major incidents/failures?*

1.4 Research challenges

Foreseeable challenges exist in any research on the topic of leadership. A critical challenge encountered on leadership is that research studies often neglect to identify the level of leadership included in the studies. This is common in academic literature

[1] The Thomas Ashton Institute (TAI) for Risk & Regulatory Research is a collaboration between the Health & Safety Executive and The University of Manchester.

and incident investigations / reviews. The terms ‘leader’ and ‘leadership’ are utilised throughout organisational hierarchies, from board members, through to frontline supervisors and line managers. Effort will therefore be needed in some cases to verify if leadership references are at the level that could be considered ‘board level’. This often requires review of information to understand the context in which ‘leaders’ are referred to. Equally, boards and board members can be referred to without explicitly mentioning ‘board’. Consideration of the context of the literature and researcher judgement is therefore often required.

2 METHODS

2.1 Phase 1: Literature review

Literature in the domain of leadership is abundant. As a result, the research team decided to ensure that the review was very focused on the research area of interest, to avoid an overwhelming and unmanageable volume of papers. It is recognised that this could result in some interesting and relevant papers being omitted, but cost and time constraints meant that the investment in a broader search would not be feasible.

The approach to the literature review and findings can be found in Appendix A of this report.

2.2 Phase 2: Major incident reviews and mapping to The Wates Principles

2.2.1 The utility of reviewing major incidents against The Wates Principles

The lack of relevant research identified in the literature review highlighted that this topic area has been exposed to limited study. It was recognised that a research study conducted with organisations considered to be 'good' at corporate governance or 'good' at safety would be of value. However, such a study would take significant time and resource to set up, and would likely benefit from further initial insights to help shape it. It was therefore recognised that use of existing data would be a valuable first step. With this in mind, the exploration of 'major' incidents/accidents, alongside identifying any links to corporate governance and board leadership could make a significant contribution. The Wates Principles were selected to be part of the assessment framework, as these are applicable to large UK private companies, and can be considered 'good practice' in corporate governance for any organisation, operating in any jurisdiction. It is important to note that the interest of the work was related more to corporate governance *good practice*, rather than The Wates Principles per se.

2.2.2 Selecting incidents and review materials

The customer and research team selected the incidents for inclusion. Considerations for selection were:

- Whether enough key materials were available, including independent investigation reports.
- Whether the incident/events could be considered 'major' failings in a safety context. This included *single* events, and *cumulative* events, which appeared to stem from common causes. This therefore brought into consideration healthcare failings/incidents.

- A volume of incidents and materials that was manageable in the timeframe and budget. This ultimately resulted in ten incidents being selected. Some of these included a single report, whereas others included multiple investigation reports, company Annual Reports, as well as other relevant documents, materials, and books.

2.2.3 Mapping incidents

As recognised in the introduction; research indicates that even in the UK, uptake and reporting of The Wates Principles, or other corporate governance principles/codes is variable (Gaia et al., 2022). It would therefore seem unlikely that a range of incidents could be identified alongside clear information on:

a) Whether the organisation was following corporate governance codes/principles.

   Or

b) What corporate governance codes/principles were being applied.

The method adopted was therefore to identify, at a high level, any information (from the incidents selected) that mapped to The Wates Principles. This was achieved by using a data extraction framework, presenting each incident against the six Wates Principles. Key points were extracted where possible, although gaps were also common for some of the principles. The data extraction framework can be seen in full in Appendix B.

It was recognised by the research team that safety can likely apply to all of The Wates Principles, and that there would likely be some subjectivity to where some points were listed. It was decided that the location of the points was not critical, so long as they were captured. It was also decided that points would be captured exclusively under a single principle, to avoid duplication.

3 ANALYSIS AND RESULTS

3.1 Incident Reviews

The data extraction framework summarising the incidents can be found in Appendix B. The framework in Appendix B identifies the relevant sources/references of information utilised for the study. A narrative summary of the findings is provided in this section of the report. The findings are mapped against The Wates Principles. It is important to note that safety can be considered distributed across the principles, with considerable overlap. To avoid double counting of points, the findings were mapped to only one principle which appeared to have a 'best fit', as judged by the authors.

Whilst the incidents and related materials/documents were considered in context of The Wates Principles as an example of corporate governance 'good practice', it is acknowledged that the organisations may not have applied The Wates Principles, or any other corporate governance principles/codes. The key area of interest was recognising what lessons may be extracted in relation to corporate governance. Also in this vein, whether the incidents occurred before or after the launch of the current version of The Wates Principles was not considered to cause any conflicts for the method.

The ten incidents included in this review, and a brief synopsis of them is provided below.

3.1.1 Pembroke Refinery Amine Regeneration Unit Explosion

The incident occurred in June 2011, resulting in four deaths and one further serious injury. The incident was investigated by the Health and Safety Executive (HSE). The incident investigation report produced by the Competent Authority (CA) was used for the analysis in this study.

3.1.2 Boeing 737 Max (Loss of all crew and passengers and two aircraft)

On 10th March 2019, Ethiopian Airlines flight to Nairobi had just set off when within minutes of take-off Boeing 737 crashed killing all 157 passengers and crew members on board. Five months prior to this in October 2018 another Boeing 737 crashed in Indonesia also minutes after take-off killing all 189 passengers and crew. The total loss of life was 346. The investigation report utilised was the 'Final committee report on the design, development and certification of the Boeing 737 Max', produced by The House Committee on Transportation & Infrastructure.

3.1.3 Texas City Refinery Explosion

The Texas City Refinery explosion occurred on March 23, 2005, when a vapour cloud of natural gas and petroleum ignited and violently exploded at the isomerization (ISOM) process unit at the BP Texas City refinery in Texas City, Texas, killing 15

workers, injuring 180 others and severely damaging the refinery. The investigation report by the US Chemical Safety Board (CSB) was utilised for the study.

3.1.4 Deepwater Horizon Rig Explosion & Oil Spill

On April 20, 2010, the Transocean Deepwater Horizon drilling rig, operating for BP (on the Macondo well) experienced an undetected influx of hydrocarbons, which led to a blowout. Consequently, there were two separate explosions, which led to the deaths of 11 workers. A fire broke out on the rig, and it sank two days later. A total of five million barrels of oil were discharged into the Gulf of Mexico, which resulted in severe environmental and ecological damage to the surrounding area. A number of documents were examined, including internal and independent review reports. Several reports also highlight the links between the Deepwater Horizon incident, and the preceding incident at Texas City oil refinery.

3.1.5 Fukushima Daiichi Nuclear Power Plant

On March 11, 2011, the Great East Japan Earthquake triggered a nuclear accident at the Fukushima Daiichi Nuclear Power Plant. The tsunami caused by the earthquake led to severe flooding and the loss of all electrical power at the plant, which thwarted workers' efforts to cool down the reactors. As a result, the nuclear fuel melted, and high amounts of radioactive material was released into the atmosphere. There were approximately 40-50 workers injured in the accident, with many others indirectly affected through mass evacuations of the surrounding areas. Internal and independent reviews of the accident were consulted in the analysis.

3.1.6 Brumadinho tailings dam collapse

In January 2019, the Brumadinho tailings dam[2] in Brazil, operated by Vale, collapsed. The incident and mudflow[3] that followed resulted in 270 fatalities, as well as untold environmental impact. A number of documents were reviewed in the context of mapping to The Wates Principles, as different sources provided different, sometimes contradictory perspectives.

3.1.7 Loss of Challenger Space Shuttle

The Challenger Space Shuttle incident occurred shortly after launch in January 1986. All seven crew members were killed.

The incident has been studied significantly in the context of safety. The original Rogers Commission Report to the President was reviewed.

[2] Tailings dams are huge structures constructed with the wate materials from mining operations. As such, they can also contain toxins/contaminants. There have been failings and fatalities in the past of such dams. The Brumadinho dam was what is known as an 'upstream' tailings dam.
[3] Through the process of liquefaction.

3.1.8 Loss of Columbia Space Shuttle

The Columbia Space Shuttle was lost on re-entry to the earth's atmosphere in February 2003. It resulted in the loss of life of all seven crew members on board. The original Columbia Accident Investigation Board (CAIB) reports were reviewed for this study. Lessons relating to corporate governance and safety were considered, included links between both the Challenger and Columbia incidents.

3.1.1 Loss of life: Maternity and neonatal services in East Kent

An investigation ordered by the UK House of Commons revealed serious concerns relating to maternity and neonatal care in the East Kent region of England (between 2009 and 2020). It is not possible to put an exact figure on the tragic loss of life, but the report provides the following indication:

> *'Had care been given to the nationally recognised standards, the outcome could have been different in 97, or 48%, of the 202 cases assessed by the Panel, and the outcome could have been different in 45 of the 65 baby deaths, or 69% of these cases.'*

Out of all the materials reviewed as part of this research, this investigation appeared to make the most links between issues and board level leadership. The report utilised was: *Reading the signals: Maternity and neonatal services in East Kent – the Report of the Independent Investigation.*

3.1.2 Loss of life: Maternity services at The Shrewsbury and Telford Hospital NHS Trust

The final Ockenden report, commissioned by the Secretary of State for Health and published by UK Government in March 2022, presents the findings of an independent review of Maternity Services at The Shrewsbury and Telford Hospital NHS Trust. The review originally investigated 23 families' cases, but the final report considers the experiences of 1,486 families between 2000 and 2019. The report documents evidence of failings at the Trust, which led to maternal deaths, stillbirths and severe injury and deaths of babies in the Trust's care.

3.2 Mapping to The Wates Principles

The following section summarises considerations under each of The Wates Principles. Appendix B provides the full spreadsheet used to extract points for the materials reviewed. The following sections summarise points under the six Wates Principles. The grey boxes under each principle provide further detail on that principle.

3.2.1 Purpose and leadership

> *An effective board develops and promotes the purpose of a company, and ensures that its values, strategy and culture align with that purpose.*

Whilst *Purpose and Leadership* may appear relatively straightforward, there is an inherent challenge to this first principle. This is the multifaceted nature of an organisation's purpose, which can result in significant conflicts / friction. The three points below cover some elements of an organisation's explicit or implicit purpose, which may come into conflict:

- The purpose in terms of producing a product or service to a certain level of quality.
- The need to deliver the above elements to specified budgets, or to maximise profit for shareholders.
- To conform to societal expectations, such as protecting employees, the public, and the environment.

In essence, *Purpose and Leadership* is more complex than it may appear, as it also relates to balancing a range of conflicting goals and handling dilemmas.

It is here that the incidents reviewed largely start to show a common pattern. This is that written statements on purpose and values do not necessarily translate through to emergent cultures. It would appear that in many cases (e.g., Brumadinho, Challenger, NHS East Kent, Boeing), the emergent culture is at odds with such written statements. The extract below is taken from the Boeing Annual Report of 2017 (p8), relating to Company Values:

> *"Our [Boeing] Enduring Values*
>
> *The importance of our purpose and mission demands that we work with the utmost integrity and excellence and embrace the enduring values that define who we are today and the company we aspire to be tomorrow.*
>
> *These core values – integrity, quality, safety, diversity and inclusion, trust and respect, corporate citizenship and stakeholder success – remind us all that how we do our work is every bit as important as the work itself.*
>
> *Living these values also means being best-in-class in community and environmental stewardship."*

The investigation materials reviewed regarding the loss of two Boeing 737 Max aircraft (and the loss of 346 lives) appear to illustrate multiple conflicts with these *Enduring Values*. Whilst this incident provides an illustration of a stark disconnect, it is by no means isolated. Analysis of the Deepwater Horizon incident highlighted that in contrast to BP's focus on safety, there was evidence of an 'every dollar counts' culture, which rewarded personnel for reducing or controlling costs, but had no equivalent reward for safety performance. Many of incidents and materials reviewed

illustrate that company purpose and values etc. can run into direct conflict with the desire or 'need' to be profitable / increase shareholder value.

This leads to another key element of the first of The Wates Principles, which is the concept of *culture*. Arguably, for any board, it is 'their business' to know and shape the culture of the organisation. The key takeaway of the reviews here is that the *true* culture that manifests in organisations can be very different to written statements, slogans, or corporate values etc. As observed in multiple cases reviewed in this work, the culture generated can be at odds with values or purpose. It also brings to light a point on what the board *really* see as the organisation's purpose. The work of Rasmussen (1997) raised the concern that management pressures will typically be towards efficiency, which can degrade safety. Boards may push the 'efficiency gradient', potentially unwittingly, towards the edge of the safety envelope, and beyond.

There were also signs of toxic cultures which were unaddressed by boards, for example cultures where bullying appeared commonplace and accepted, and warning signs were seemingly ignored (e.g., NHS East Kent). In the field of safety science, the concept of 'weak signals' is often referenced. Such signals can be considered as potentially difficult to detect, but may indicate safety related issues/ weaknesses. Whilst it may be easier to state this in hindsight, many signals appeared far from 'weak', but on the end of the spectrum that was 'loud and clear'. Reflections on why such signals were ignored or overlooked will be picked up in the following sections.

Key takeaways for corporate governance: Principle One

From the cases reviewed, boards appear to be falling short on this first principle. In particular, there is a gap between written statements on purpose, values and culture, and the *actual* emergent cultures. For reasons that are unclear, boards in a number of the examples reviewed were not addressing these issues. Nor were they enabling a culture where safety is effectively supported. In some cases, issues/ concerns were overlooked, disregarded and even covered up. These points will be covered in more detail in other principles, but there is serious concern that shortcomings under this first principle can be the result of: ignorance; neglect; and in some cases, for nefarious reasons.

To improve performance here, boards likely need to understand what culture is, and how to understand/assess it, as well as how to influence it – recognising that what they say, what they do, and what they don't do, all have serious implications. Written statements alone do not create the 'right' culture. Indeed, they may create a level of dissonance resulting in a moral conflict for employees if the stated purpose and values are at odds with the true culture. In this vein, boards also need to understand the range of factors that create goal conflicts for employees, and how these are resolved at an operational level. They should also be more actively involved in ensuring that values / culture expectations are being applied / 'lived'.

3.2.2 B

> *Effective board composition requires an effective chair and a balance of skills, backgrounds, experience and knowledge, with individual directors having sufficient capacity to make a valuable contribution. The size of a board should be guided by the scale and complexity of the company.*

c
omposition

Board composition was not commonly identified in the materials reviewed, particularly in a safety context. One investigation report (Texas City) did propose the inclusion of a non-executive board member with experience of refineries and process safety to bring a degree of safety relevant competence to the board. Extrapolating from this suggestion, it may be the case that numerous boards operating in safety critical contexts do not consider the appointment of a board member with relevant risk management competence. Similarly, the Ockenden report recommends that "each Trust board must identify a non-executive director who has oversight of maternity services, with specific responsibility for ensuring that women and family voices across the Trust are represented at board level." The recommendation relates to the importance of bringing a range of information to the attention of the board from different stakeholders.

Another incident also shed some light on issues with Non-Executive Directors (NEDs) / Independent Directors (IDs) being shielded from important information (NHS East Kent). It was unclear whether this was 'by design' or accidental. If NEDs/IDs are to be effective in bringing challenge; then responsibilities, structures, processes and authorities likely need to be in place to enable NED / ID scrutiny and challenge. It may also be the case that such individuals need the right environment to for receptivity to challenge; and perhaps that individual character is such that they are confident / assertive to challenge.

Key takeaways for corporate governance: Principle Two

There was relatively limited information relevant to Principle Two. However, ensuring a board is composed of relevant safety/risk management competence related to the risk profile of the organisation is likely a key point. There may be lessons that could be drawn in from other corporate failings on this topic, for example on competence levels related risk awareness / management in the banking sector at the time of the financial crash.

3.2.3 Director responsibilities

> *The board and individual directors should have a clear understanding of their accountability and responsibilities. The board's policies and procedures should support effective decision-making and independent challenge.*

The materials reviewed frequently appeared to illustrate limitations linked to director responsibilities. In some cases there appeared to be a lack of will to accept accountabilities as a board, and at individual director level (e.g. NHS East Kent, Brumadinho). Indeed, it appears that a number of biases came in to play which negatively impact on director responsibilities. Firstly, there appeared to be a number of cases where '*self-serving'* bias may have contributed to board members accepting positive feedback / outcomes (as down to their own positive influence); but rejecting negative feedback / outcomes (citing these as due to 'external' factors / or 'wider industry' issues) (e.g., Brumadinho). In some cases, boards appeared to argue with safety concerns/facts presented to them, seemingly in a state of denial of serious issues (e.g., NHS East Kent). There were also cases of 'diffusion of responsibility', whereby the root causes (likely at more senior levels) were deflected downwards and 'blamed' on those working at the 'sharp end' of operations (e.g., NHS East Kent, Boeing). Following the Fukushima Nuclear Accident, members of the company's board tried to deflect responsibility for the accident from the company by attributing blame to the unexpected effects of the tsunami.

Several cases also appeared to illustrate Groupthink / consensus seeking and optimism bias (e.g., Challenger). These factors can have a very detrimental impact on the effectiveness of decision-making. In these circumstances, decisions are made to maintain group harmony, and involve limited/no critical thinking, or any robust evaluation of risk. Instead, it appears, that other interests or pressures took priority. Pressures on decision making ranged from delivering to certain timescales, or limiting further deadline slippage (e.g., Challenger).

Another concern fitting in to this principle is a worryingly low level of independent challenge. In several incidents reviewed, any form of critical thinking / challenge seems to have been ignored (e.g., Boeing), or viewed as a threat by boards / board members (e.g., NHS East Kent, NHS Shrewsbury & Telford). At an NHS Trust (Shrewsbury & Telford), the board found 'false reassurance' in external reviews (e.g., CQC), but failed to learn lessons from contrary information based on their own internal investigations or listen to families' complaints. The culture in a number of organisations illustrated what could be considered a *'Demand for Positivity'*. This often manifested in nefarious ways, whereby there was a significant degree of '*plausible deniability'* at play. Subtle behaviours by senior individuals encouraged cultures of oppressing challenge, or 'bad news' from emerging to the boards. In some cases, there even appeared to be mechanisms to ensure punitive responses

by (ab)using organisational systems (e.g., Human Resources Department). Here an employee, who could have been considered a key witness to safety issues was dismissed, seemingly to silence them from raising such concerns (NHS East Kent). Documents from other incidents highlighted alleged fraudulent activity to mislead various regulators and stakeholders on safety issues (e.g., Brumadinho, Fukushima). 'Demand for Positivity' also appeared to be a potential issue regarding contracted services, whereby contractors may feel pressured in to providing safety documentation that fits with what managers in the receiving organisation 'want to see', rather than what they need to see (e.g. Brumadinho). There was a perception that contracted service providers may yield to such pressure in order to help secure future contracts, and therefore the financial incentives of this. *'Diffusion of Responsibility'* could also be observed, whereby a *'blame game'* shifted focus from organisation/board failings to the 'sharp end'. This was observed with some details relating to the Boeing 737 Max incidents, whereby failings were blamed on pilots. Overall, some boards appear to view their position as giving them the prerogative to override 'subordinates' / 'juniors', and contractors on key safety critical considerations. It appears that a fear factor comes in to play here (from those outside the board), and it may therefore be a board tactic to misuse their power and influence.

As a final consideration, there may be further scope to explore how challenging the board can be better integrated. With this in mind, there could be lessons for Principle Two (board composition) to ensure board members are selected so that they do bring scrutiny/challenge to the group. There may be further considerations for boards as to how they consider and manage organisational power dynamics and organisational hierarchy. These can be misused by senior leaders to inappropriately influence safety related matters.

Key takeaways for corporate governance: Principle Three

Due to various biases and group dynamics, it appears that boards/board members will sometimes try to avoid accountability when things go wrong. It also appears, from several cases reviewed, that boards can, and will act in nefarious ways; generating cultures that actively supress information/evidence/facts highlighting safety concerns. There is likely a need to better understand why this happens at individual and collective levels in boards. It is quite possible that the desire for a board member / boards to protect their own image and reputation is a higher priority – ultimately 'self-preservation'. It may also be a gradual/insidious process. Research drawing on the concepts of 'ethical fading', which consider/explain 'why we lie to ourselves' in managerial roles (e.g. see Wong & Gerras, 2015), could add significant value. As could broader inclusion of research on business ethics more generally.

What does seem apparent is that internal oversight, even via NEDs / IDs may not be independent enough. It may also be the case that more guidance is needed for boards to understand what an 'effective' decision means in the context of safety, and how H&S risk is more robustly assessed. There are further links here to Principle

Two (board composition). There may be scope for more effort to ensure boards are not selecting other members (deliberately or unconsciously) who are unlikely to challenge. Consideration / review of recruitment methods used for board members may be of value. Current selection methods may be perpetuating the issues identified. It would be remiss of boards to ignore this factor.

3.2.4 Opportunity & risk:

> *A board should promote the long-term sustainable success of the company by identifying opportunities to create and preserve value, and establishing oversight for the identification and mitigation of risks.*

In many of the incident cases reviewed; effectively managing non-financial risk seemed secondary to other aspects of business performance. This appeared to be related to lack of investment in facilities/safety (e.g., BP Texas City), lack of safety/risk management understanding (e.g., Chevron Pembroke, Challenger, NHS East Kent), or the perceived pressure to deliver on other aspects of business performance (e.g., Boeing, BP), which created a direct conflict with doing things in a safe way. In one case where fraud was alleged (Brumadinho), it appeared that safety was actively considered as secondary to other aspects of business performance. It is also noteworthy that the action brought by the Securities and Exchange Commission (SEC, 2022) against an organisation (Brumadinho) was directly linked to safety. There were also some indications of limited understanding of risk management. One organisation indicated that they aspired for 'zero harm', yet in principle, applied practices that significantly increased risk (e.g., Brumadinho), as outlined by Hopkins and Kemp (2021). Other cases illustrated lack of clarity on processes and competence related to risk management (e.g., Columbia).

In some cases, it was flagged that complex organisational structures / silos exacerbated safety communication by stopping key information flowing to the right people for decision making purposes (e.g., Challenger, Columbia).

From several of the incidents considered, it would appear that safety is often eroded due to a lack of appropriate assessment / evaluation and/or competence on H&S. In several of the cases reviewed, there appears to be an unhealthy level of optimism from boards; that something going wrong is deemed incredibly unlikely. Boards may need to consider the countervailing forces that are required to ensure that safety margins are appropriately considered, and not eroded where they are needed. It was felt that this principle had a degree of overlap with *Board Composition*, and *Director Responsibilities*.

Key takeaways for corporate governance: Principle Four

In many cases reviewed, assessment of risk did not seem to be robust. In some cases, processes and competence appeared to be lacking. In addition to this, a seemingly optimistic view that nothing would go wrong only exacerbated the issues further. These factors in combination with other issues and biases (e.g., denial) seem to create the ideal conditions for organisations to enter an extremely dangerous/precarious zone in a safety context.

> *A board should promote executive remuneration structures aligned to the long-term sustainable success of a company, taking into account pay and conditions elsewhere in the company.*

3.2.5 Remuneration

Board remuneration did not stand out as a factor in the materials reviewed. This topic may benefit from more focused investigation, and may need consideration / inclusion of other materials / documents.

It is certainly a topic that would be worthy of consideration. For example, some attention has been drawn to factors relating to departing board members and pay. Boeing's CEO at the time of the 737 Max incidents was noted to have departed with an estimated $62 million, not including severance pay (Reuters, 2020). Understanding the links between accountability and remuneration would likely be beneficial.

> *Directors should foster effective stakeholder relationships aligned to the company's purpose. The board is responsible for overseeing meaningful engagement with stakeholders, including the workforce, and having regard to their views when taking decisions.*

3.2.6 Stakeholder relationships & engagement

Numerous incidents reviewed illustrated a lack of stakeholder relationships and engagement. This included with employees and wider society. Indeed, many incidents illustrated a disregard, or even disdain for stakeholders, for example, key safety related information being withheld (e.g., Boeing), not shared with contractors

(e.g., BP), allegedly being produced fraudulently (e.g., Brumadinho), or not showing any attempt at compassion or listening (e.g., NHS East Kent, NHS Shrewsbury & Telford).

Key takeaways for corporate governance: Principle Six

From some of the cases reviewed, it appeared that stakeholders, such as employees and the public; as well as the environment, were considered an inconvenience to other business objectives. There certainly appears to have been a significant mismatch in comparison to what would be expected under this element of The Wates Principles.

4 DISCUSSION / OVERARCHING THEMES

The review of incident materials for the ten incidents appeared to show clear and similar issues which could be mapped to corporate governance. In the context of this research, these issues could be considered poor practice when considered against The Wates Principles. What follows are eight themes which draw out these observed issues separate to the six Wates Principles. These illustrate quite serious weakness in boards, and clearly have lessons for corporate governance.

1. **Silos**

   Organisational functions likely need separation to make them manageable, and various subcommittees can support boards in understanding issues and opportunities etc. However, silos clearly have downsides, creating barriers to information flow / availability to the right people at the right time. Silos appear to play a role in preventing information reaching the right people, particularly the board. It is unclear in many cases if this is deliberate; to contribute to a case of 'plausible deniability' or is purely accidental. The manner in which some of the organisations reviewed were structured; and the relationships/ cultures that existed, appeared to show a degree of organisational dysfunction. How organisations are decomposed into functions/silos may need a greater level of scrutiny to ensure they do not create unintended consequences such as blocking critical information.

2. **Risk understanding / (in)competence**

   For safety critical and high hazard sectors, competence is a critical consideration. Traditionally this focus is on the 'sharp end' of work, but it is at board level that this competence (or incompetence) can amplify issues. 'Soundbites' seem commonly adopted in the language of safety in corporate messaging, whether this be through corporate values such as 'honesty' and 'integrity', through to ambitions for 'zero harm'. Arguably these may be regarded as platitudes, which are, in several cases, unsubstantiated by important leadership behaviours; for example allocation of critical resources (referenced in the Columbia report), and time invested in managing safety. Across the multiple data sources relating to Brumadinho, there are suggestions of a 'vision for zero' [harm] in some documents, while other sources identify risk practices following ALARP principles; yet other materials make note of sacrifices to good risk management practices (see Hopkins & Kemp, 2021). This arguably makes the reality of 'zero harm' incongruent with actual board level commitment to safety. Organisations perhaps need to be clearer on what they mean by a vision for 'zero harm'. Given that most organisations are likely to desire people do not get harmed by work activities; what does it mean in practice? From a corporate governance perspective,

boards should understand what this means in the context of how they manage safety related risk (relevant to principles one and four). In essence, effective risk management and a strong culture do not necessarily emerge from soundbites alone.

Indicating the desire for a 'safe' culture is one thing, but then enabling an alternative culture seems commonplace across the incidents reviewed. It appears that many boards are lacking in the competence, to, as a minimum, act as an 'intelligent customer' on safety, and processes, such as internal audit may well be overlooking safety, maintaining a narrower focus on financial risk.

Perhaps a key lesson for boards is that whilst 'disastrous decisions' contribute to major incidents; so do 'disastrous omissions'; or 'neglect'. There is also a danger in some cases that those in more senior roles see it as their prerogative to override decisions of those more 'junior', or 'subordinate' (e.g., as a contractor) to them, even if those more junior individuals have the greatest technical or safety understanding (e.g., Challenger, Brumadinho).

3. Conflicts of interest

Several incidents show clear conflicts of interest, particularly between organisations (in the incident case examples), and contractors brought in for particular services. Perhaps the simplest way this can be expressed is by the phrase: *'Don't bite the hand that feeds you'.* Contracting companies benefit financially from their employing companies / benefactor. Providing services/advice which may conflict with what the benefactor *truly* wants to hear can jeopardise future financial security. Here we can see that facts, honesty, and integrity, may become of secondary importance. Whether this phenomenon is known (and deliberate), or an unknown to leaders/board members is in most cases not completely clear. Regardless of these two options, the company culture is 'owned by the board'. This includes how it manifests in reality, not just the messages in 'culture campaigns'.

4. Failure to learn, desire not to learn, and full-scale denial

Multiple incidents (e.g., Challenger and Brumadinho) illustrate that lessons on risk are often present prior to major incidents. For example O-rings, defined as 'Criticality 1' features, with previous failings (Challenger); and previous tailings dam failures (particularly upstream tailings dams) causing loss of life. The repeated failure to learn lessons from previous investigations is also evident (e.g., failures at Texas City were still evident at Deepwater Horizon five years later). Perhaps, so powerful are the multiple factors impacting decision making in corporate cultures that various biases, such as optimism bias, seem to prevail over 'hard' data and technical expertise.

Given that organisations following corporate governance principles will have functions such as audit, it brings into question the effectiveness of these systems in identifying and resolving safety issues.

Questions should perhaps also be raised regarding 'change programmes' to fix issues. As the NHS East Kent Inquiry identified, leadership paid 'lip service' to such change, as well as board members in denial of issues, to the level of antagonistic relationships with regulators and other stakeholders.

5. **Biases: Self-serving bias, Groupthink, confirmation bias, cherry picking, risky shift, optimism bias (opportunity over risk)**

There appear to be numerous individual and group biases at play across the incidents reviewed. In the context of corporate governance, it may be fair to cluster many of these as *'boardroom biases'.* Considering these critically, there are some trends that emerge:

- Protect personal reputation, perhaps in the guise of 'protecting the organisation' (as a more socially acceptable euphemism).
- Prioritise productivity, efficiency, and performance related goals over safety and quality - *'bad things are unlikely to happen'*.
- 'Cherry picking' data, often overriding technical expertise, to fit the desired (productivity) decision option.
- Personalise positive outcomes (e.g., due to board 'excellence'), but externalise negative outcomes (e.g., due to 'industry' /'sector' issues, or workers etc.).

There may be a need to consider how such biases impact on the wider functions of corporate governance. Some mechanisms already exist to bring a degree of impartial scrutiny, for example non-executive directors (NEDs) or independent directors (IDs). However, the level of true independence can, and should also be brought in to focus. The biases identified here also have the potential to impact on NEDs/IDs. If NEDs/IDs are to be considered analogous to a 'barrier' in risk management parlance, then the work here highlights that these barriers can inherently include deficiencies. To borrow another analogy (from James Reason), in essence, 'holes in the Swiss cheese'. A robust approach necessitates that these limitations are recognised with appropriate countermeasures: to do nothing would be to set up for failure.

6. **'Demand for Positivity'**

Few people like to hear bad news, and for good reason. When boards become unreceptive to bad news, and create cultures that 'demand' only good news; the repercussions can be severe. In several cases reviewed, there was

a degree of ‘plausible deniability’ for boards, as they clearly didn’t explicitly ‘demand’ only good news / reject ‘bad’ news. What is less clear is whether this lack of awareness is shaped nefariously or is due to ignorance or incompetence. Arguably, neither would be considered a legitimate reason for such a culture existing.

One possible reason for this type of culture is the human emotional response to hearing bad news or critical feedback. Indeed, the Inquiry into NHS East Kent illustrates that members of the board were ‘angry and hurt’ by such feedback. Further evidence for the Trust illustrated that the board took efforts to invalidate feedback, such as from the staff surveys. This is a critical point to consider. It may be a significant assumption to expect board members to act in an objective, rational manner. Indications here illustrate that board behaviour can very much be driven by personal emotions such as anger. It’s likely other emotional responses will be as relevant, such as fear, embarrassment etc.

In close, ‘Demand for Positivity’ can therefore be considered on a spectrum, from relatively subtle through to quite blunt/direct. This leads to the following point, which relates to how such cultures manifest.

7. Cultures of insidious toxicity

Culture and safety culture are constructs that are frequently utilised by organisations to label, measure, and improve safety. Many safety problems are cited as caused by ‘bad’ cultures. But culture is created not only by safety posters and safety initiatives, but the subtle actions that are punished, penalised, and rewarded. Unfortunately, the case studies reviewed indicate that the overt messages of ‘safety first’ and ‘zero harm’ etc. are/can be overridden by insidious leadership behaviours. It also brings into focus potential mismatches/conflicts between espoused values and emergent values, i.e. values that are listed on company websites are not necessarily supported, and in some cases conflicting behaviours may actually be those that are encouraged/incentivised. This is of central importance to the first Wates Principle in relation to *‘ensuring that the company’s values, strategy and culture are aligned with its purpose’*.

There is likely other literature that could be drawn into understanding this challenge, but factors such as complex organisational structures, high levels of bureaucracy, unclear roles etc. can all contribute to filtering out ‘bad news’ or any form of constructive criticism or challenge.

The term ‘insidious’ may or may not be fully appropriate, but it appears that these cultures can be built steadily and stealthily over time.

8. Diffusion of responsibility / lack of accountability

Several cases reviewed illustrate that locating accountable persons at board level is a significant challenge. Whilst this level is where much accountability actually sits, it is somewhat of a paradox that the accountable people are rarely identified clearly. There may be links here to remuneration. Whilst board members remuneration might factor in accountability and associated 'broad shoulders', or the fact that 'the buck stops here', board member responses following an incident rarely seems to reflect this part of their accountability. Instead, deflection / 'scapegoating' seem to be relatively common.

5 CONCLUSIONS

This scoping research project has highlighted a number of useful, but perhaps disturbing factors that are relevant to corporate governance. There is most certainly further research that could be completed here, and also there is likely a need to consider how corporate governance practices can be strengthened further.

5.1 Closing thoughts

The human condition - to be able to counter facts and expertise seems overwhelmingly powerful. Boards and senior executives are certainly not immune to this. It may indeed be that the power and influence that is part of being a board member makes such groups more susceptible to this condition. Related research in the domain of power and influence in organisations is highly relevant here.

It may also be easy to jump to the conclusion that the cases reviewed in this study are 'outliers'. This is a possibility; however, it is also possible that the findings here are common in many organisations. The organisations and incidents covered in this research certainly crossed the boundary of safe operations. But this is not to say that that those organisations which do not cross this boundary are 'safe' or apply good corporate governance practices. Herein is a gap that needs further exploration. What is clear, is that organisations which do cross this boundary are exposed to a level of external, independent scrutiny which tends to highlight a range of failings; many of which could be considered to all under corporate governance.

When considering how to inoculate boards from the issues identified in this work, it is unlikely that awareness of such limitations will alone offer a strong enough countervailing force. Boards likely need to consider how they integrate effective systems, structures, and processes to increase robustness of corporate governance practices. Further independent scrutiny and oversight may add strength. Existing measures, such as internal audit, NEDs/IDs etc. may not be enough. As noted in this report; conflicts of interest can result in such individuals and service providers being 'captured' by an organisation, as well as being driven by conscious and/or unconscious bias. Indeed, even professions intended to be 'people focused', such as Human Resources, appear to have fallen for such 'capture'.

The focus of this work is clearly on safety, however the recommendations likely have wider implications. In an age where factors such as Environmental, Social, and Governance (ESG) reporting are gaining greater societal and investor scrutiny; such improvements are a necessity for any organisation with real intent to take a more ethical stance to their business. Corporate governance principles may benefit from review in light of these findings to help continued improvement across sectors.

Future work in this area may draw on research in business ethics, as well as more applied research conducted with organisations and their boards.

5.2 Recommendations

Recommendations are provided below. Note, that these are not in a priority order.

1. **Collaboration with key bodies with roles relating to corporate governance**

   The findings here clearly have implications for making corporate governance more robust, particularly in the context of safety. Working with such bodies will likely help keep momentum. This may include collaboration particularly with the FRC and IoD to name two.

2. **Use of further incident case studies, including financial and non-financial losses.**

   The authors of this work felt that a degree of 'data saturation' had been reached from the ten incidents reviewed; that is, no additional themes appeared to be emerging. There may however still be benefits of exploring other organisational failures and links to boards and corporate governance. If corporate failures for other financial and non-financial losses are broadly similar to those linked to safety failures, then this perhaps adds further weight to the emphasis and oversight of ensuring good corporate governance. Such a further review could consider other ethical failings and incidents, for example the seemingly high rate of whistleblowing cases.

3. **In depth study/studies with organisations applying corporate governance codes/principles to their reporting**

   This work has started to pave the way on the links between safety and corporate governance. Identifying and working with organisations that appear to perform well on corporate governance would add a fresh perspective. It is likely that appropriate leading indicators would need to be identified to support the assessment of safety performance in a proactive rather than reactive manner (i.e., safety is more complex than 'not having accidents').

4. **Independent investigations & scrutiny**

   Within this research project, independent investigations have been identified as key sources of data that give insight into board level issues. These are simply not addressed in the same way as 'internal' investigations and reporting. The authors strongly promote external independent and competent investigation, which may broaden out to further external scrutiny/verification in the context of corporate governance. The conflicts of interest and potential biases at play identified in this research indicate that purely 'internal' reviews and audits may not contain the level of transparency and integrity that are

sought after by investors, stakeholders, or wider society. This research project has identified that there is significant value to using multiple information sources/reports to triangulate information, and identify various reporting inconsistencies.

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APPENDIX A LITERATURE REVIEW ON SAFETY AND CORPORATE GOVERNANCE

A.1 Aim and research questions

The research aims to provide underpinning evidence for relevant good practice for the functioning of Nuclear Licensee boards in respect of their role in ensuring effective management of nuclear hazards and risks. In respect of this, a key question is: Does good corporate governance equate to good safety governance, and overall safety performance?

The aim of the literature review is to highlight (where possible) how board performance / corporate governance relates to safety performance in a high hazard / major accident hazard context. 'Governance' is defined as the system by which organisations are directed and controlled by their board of directors; it refers to the higher level processes by which managers are held to account and through which the broadest strategic decisions are taken (Acona Ltd, 2006).

The literature review aims to address the following research questions:

- What does good corporate governance 'look like' in order to contribute to safety performance in high hazard / major accident hazard industries/sectors?
- Why and how does corporate governance fail in relation to high hazard / major accident hazard industries/sectors?

A.2 Literature search strategy

The literature search was completed by the HSE Information Management team in July 2022. The search included both academic papers and grey literature[4] published from 2016 onwards.

The search terms were agreed with the customer, and included a number of keywords, such as 'corporate governance', 'board of directors', 'executive board', 'leadership board', 'risk management', 'major accident', 'organisational safety' and 'safety performance'.

A number of databases were searched including the Web of Science, PsychInfo, Science Direct, ProQuest (including Business & Industry, Gale Group Trade & Industry, Embase, Healsafe, Health & Safety Science Abstracts, Chemical Safety Newsbase), CMI, and IAEA. An internet search was also conducted using Google Scholar.

[4] Grey literature refers to any information that is not produced by commercial publishers. Examples of grey literature include reports by government departments, academics, business and industry, white papers, working papers and conference proceedings.

The HSE Information Management team provided a summary of the search results, which included full paper abstracts. The search results were sifted by two researchers using the inclusion and exclusion criteria summarised in Table A1. Papers that were identified as relevant were then fully reviewed.

Table A1 Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
• English language only • Systematic reviews, meta-analytical papers and primary research studies (quantitative and qualitative) • Studies on boards/board characteristics or corporate governance in the context of safety and/or high hazard industries • Grey literature, such as research reports, conference papers and case studies.	• Non-English language papers (unless translated paper is available) • Studies on boards/board characteristics or corporate governance that do not focus on safety (e.g. financial performance, environment/climate change) • Literature sources, such as presentations, lecture notes and opinion pieces • Non-empirical peer-reviewed studies (e.g. theoretical papers)

A.3 Overview of search results

Figure A1 provides an overview of the search results. The literature search returned a total of 67 unique records (abstracts) following the removal of duplicates. The abstracts were screened using the inclusion and exclusion criteria set out in Table A1. A total of 16 papers were identified as potentially relevant and were fully reviewed. Of these, seven contained some relevant information although it should be noted that none of the papers directly addressed the research questions.

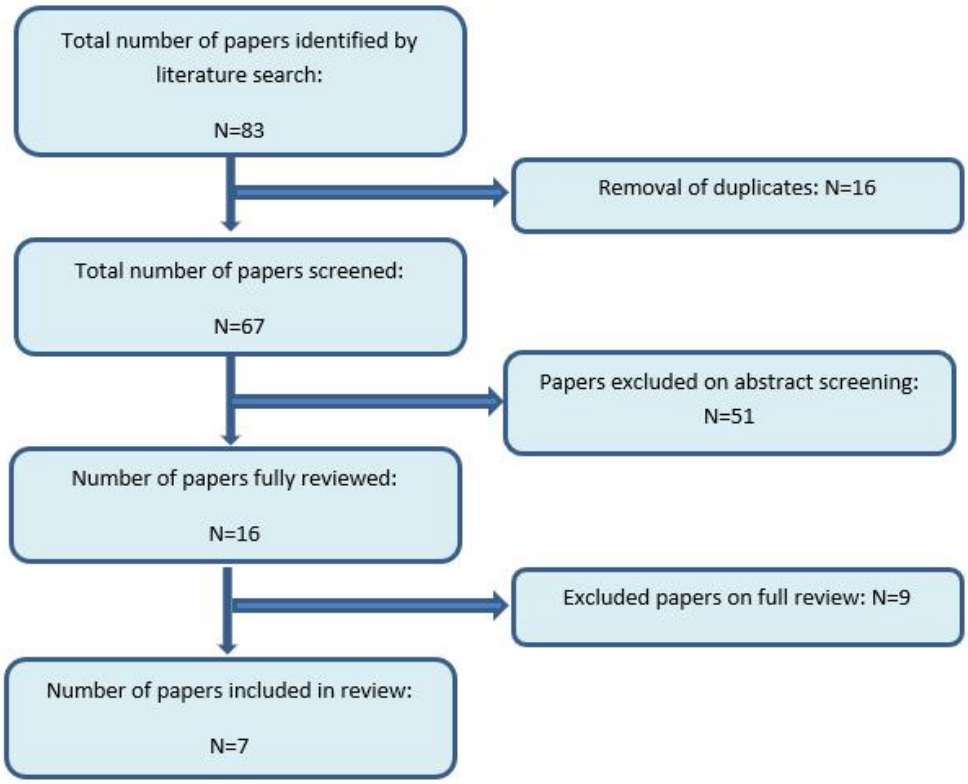

Figure A1. Overview of search results

A.3.1 Excluded papers

A number of papers were excluded on the basis that they were out of scope; specifically, some papers covered topics in relation to the role of directors in managing environmental performance and/or climate change; the emerging impacts of climate risks in the context of fresh food safety; the relationship between environmental governance and toxic emissions in high polluting industries; and the factors that influence environmental engagement in the context of energy companies. A small number of papers focused on corporate social responsibility in relation to areas such as, investment in green innovation and climate change as well as general leadership behaviours in relation to managing (process) safety, i.e., limited applicability to corporate governance.

A.3.2 Included papers

A total of 7 papers were included in the review. The papers were selected on the basis that they contained some relevant information; however, none directly addressed the key research question as to whether good corporate governance is related to good safety performance.

The seven papers included:

- Two review papers examining managerial and non-technical factors contributing to major incidents (Waring, 2015) and the effectiveness of board oversight in healthcare contexts (Millar et al., 2013) respectively.
- Two papers discussing the recommendations that came out of the investigations into the BP Texas City (Bresland, 2017) and Deepwater Horizon incident (Manuele, 2017); these papers were selected for inclusion as some of the recommendations specifically related to the role of the Board of Directors.
- A qualitative study examining the role of the board of directors in occupational health and safety governance in a sample of Swedish companies across different sectors (Lornudd et al.,(2021).
- A quantitative study (Sponbergs, 2007) exploring the extent to which boards in a sample of companies owned by municipalities in Sweden followed principles of good governance.
- A case study of how process safety was managed in a UK multinational energy company (McBride and Collinson, 2009), which contained some references to corporate governance arrangements.

A.4 Summary of included papers

A.4.1 Leadership factors contributing to major incidents

Waring (2015) reviewed managerial and other non-technical factors contributing to incidents in major hazard industries, including Buncefield and Deepwater Horizon. The analysis was reportedly informed by an examination of academic literature and a review of enquiry reports. Contributing factors were identified that specifically related to characteristics and actions (or lack thereof) at the board level; specifically, the need for board members and other senior executives to have the necessary breadth and depth of knowledge about risk management as well as the significant risk exposures in their organisation. Other factors related to complacency, minimal oversight and a reactive approach to managing major hazards at the board level; for instance, with reference to the Buncefield incident, it was discussed that the COMAH report had not been scrutinised or questioned by the board and reflected 'aspirational' rather than the actual conditions on site (Waring, 2015).
These factors echo some of the recommendations that came out of the enquiries into the BP Texas City and Deepwater Horizon incidents. For instance, one of the recommendations resulting from the BP Texas City incident was for the BP board of Directors to appoint an additional non-executive member with specific expertise and experience in refinery operations and process safety (Bresland, 2017). The Chemical Safety Board report into the Deepwater Horizon incident emphasized the important role that the board of directors plays in promoting a culture that emphasizes process safety; consistent with this, one of the recommendations focused on the need for

Boards of Directors to provide oversight and focus on major accident potential (Manuele, 2017).

A.4.2 Board oversight and patient safety

Millar et al. (2013) conducted a review of studies examining hospital board directors' oversight of quality and patient safety. The authors found some evidence suggesting that board practices, such as prioritising quality and patient safety, setting clear and measurable goals for improvement distinguished high from low performing hospitals. Some studies also highlighted the importance of having well-informed board members with relevant skills/expertise (Millar et al., 2013). However, the authors noted methodological limitations with the underlying evidence base as the majority of studies were cross-sectional in nature and conducted in U.S healthcare settings. It was further discussed that board governance is an under-researched area and that the effectiveness (or lack thereof) of board oversight is likely to be influenced by a number of factors (such as the regulatory contexts in which organisations operate) that are not well understood (Millar et al., 2013).

A.4.3 Studies on corporate governance practices

Lornuud et al. (2021) explored the role of the board of directors in occupational health and safety (OHS) governance focusing on how they act to take responsibility of OHS. The study involved carrying out 34 interviews with board members across 13 private sector organisations in Sweden from various sectors (e.g. construction, manufacturing, health/social care). Findings relating to how participating boards enacted OHS governance included taking actions to establish the future direction of OHS in their organisation (e.g. participating in strategic discussions and establishing strategic areas of focus); prioritising OHS (e.g. making OHS the first item in board meetings); and monitoring key performance indicators (such as sick leave and occupational safety metrics). However, the study did not examine the impact of boards' actions on safety-related outcomes.

Similarly, another study examined the extent to which boards owned by the city of Stockholm followed principles of corporate governance (Sponbergs, 2007). Board members across fifteen companies completed a self-report survey, which assessed the importance that they attached to specific board responsibilities and actions (e.g. taking part in discussions about goals and strategy), and the extent to which they were carried out. The study reported low values on activities relating to strategy and control (suggesting that these activities were less likely to have been conducted), which the author highlighted as important aspects of corporate governance. The results also identified gaps between areas that boards considered important, and their perceptions of the work carried out; for example, 30% responded that they took part in discussions about goals and strategies even though 88% of board members

considered it as important. The study relied on self-reports, and it did not evaluate the impact of corporate governance activities in the context of safety.

Additionally, one case study was identified which, although focused on how process safety was managed in a UK multinational energy company, it contained some references to corporate governance arrangements (McBride and Collinson, 2009). For instance, it described how the audit arrangements for health, safety and the environment, including process safety, were tied into existing internal audit arrangements for other types of risk (such as financial); and that internal auditing was overseen by the Audit Committee which reported directly to the Board of Directors. The case study also described how process safety was included within the scope of corporate responsibility (CR) risks with the CR committee reporting directly to the Board of Directors (McBride and Collinson, 2009). However, the case study was descriptive and it did not contain any evaluation of the effectiveness/ineffectiveness of the corporate arrangements in place.

A.5 Reflections on the literature

A key finding of the literature search was the lack of empirical studies that have examined corporate governance and/or the application of corporate governance principles/codes in the context of safety. Some of the studies included in the review offered insights into the failures of leadership in the context of major hazard incidents while others provided predominantly descriptive accounts of corporate governance activities. The lack of empirical research at the board level has also been noted by other researchers. For instance, Waring (2015) observed that most studies focus on supervisors and middle management rather than at board level. It was suggested that the lack of research at board level may relate to potential sensitivity and/or confidentiality issues with accessing board level information and/or potential concerns in the event that negative findings emerged from research/scrutiny (Waring 2015). In essence, the authors of the current work note that participating in such research may be considered a risk from the perspective of potential subjects. This may be in terms of a reputational and regulatory angle, which could be considered to have significant reverberations for the organisation, and its most senior leaders. It is possible that for potential subjects, the easiest control measure is to not engage in such research.

A.6 Suggestions for next phase of work

Given the significant lack of existing research to contribute to answering the research questions, the next steps/ research phase of this project is likely to add significant value. As this research will likely be taking a first step, it may contribute to the initial phase of future research.
Some key considerations will include deciding which direction to explore/tackle the research questions. Two options are:

- to start with those organisations considered to follow good practice on corporate governance, and then review their safety performance; or,

- to identify those organisations with good safety performance and review whether they follow good practice on corporate governance.

Given the budget and timescales it is likely that a small scale qualitative / case study approach may fit well as a first step.

Four key options are outlined below which may help progress the work. These can be discussed to help progress the work:

a) Use of existing data

Initial stakeholder conversations identified that a useful initial research avenue would be to generate an understanding of how widely corporate governance codes are adopted in the first instance. To a large extent, work already exists here with research recently conducted by Gaia et al (2022): *The Wates Corporate Governance Principles for Large Private Companies: The Extent, Coverage and Quality of Corporate governance Reporting*. This report provides useful data on uptake of such principles, and other useful reflections, based on self-reported information by organisations (e.g. from annual reports). The report does not make reference to the term 'safety' in any of the sections, including those on *Opportunities and Risk* (Principle Four). However, there may be an opportunity to request the authors to review/explore references to safety in the original/full dataset (with the approval of the Financial Reporting Council).

Use of other existing data to view the research question from an alternative perspective was considered, such as previous 'major' accidents. These could then be mapped to good practice principles for corporate governance.

b) An exploratory study with a licensee / dutyholder

As outlined at the start of this section, this could take on of two options, either starting with and organisation considered to follow good practice on corporate governance, or one with good safety performance. The research team and customer would need to agree the criteria for both of these performance areas to ensure that performance measures are objective and valid. The work of Gaia et al (2022) may also contribute to this. There are some foreseeable challenges here, as good corporate governance may rely on organisation self-assessment, and safety performance may rely on lagging indicators.

In relation to selection of an organisation, this may be from the nuclear industry, or another high hazard sector. There is a potential opportunity to involve the Coalition Group of the Financial Reporting Council (FRC) more

directly). This could well be a mutually beneficial interest in the topic, and such a relationship may support identifying and recruiting a potential organisation to take part in the work.

c) Research involving topic experts

Another avenue for the research could be to explore the link between corporate governance and safety via topic experts on safety and corporate governance. This may be possible via interviews, and/or workshops involving experts on both safety and corporate governance. Whilst this method would have limited empirical value, it may well enable discussion on some of the more sensitive issues and challenges that may be difficult with participating organisations operating in high hazard sectors.

d) Mixed methods to develop a research protocol

A fourth option here would be to utilise a blend of the other methods outlined above. This may include options ‘a’ combined with ‘c’ which provide more thorough foundations for also developing a research protocol for option ‘b’. Depending on budget and timescales, early research stages such as participant recruitment may be explored.

A.7 Literature Review References

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APPENDIX B TABLE OF MATERIALS AND DATA EXTRACTION FOR INCIDENT REVIEWS

See Appendix as separate document.

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