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MBA WC OHS SEMINAR

CAPE TOWN, 21 APRIL 2016

HEALTH AND SAFETY (H&S) AS A STRATEGIC ISSUE WHEN MANAGING THE BUSINESS OF CONSTRUCTION AND PROJECTS

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'Failure of management' versus 'Accident'(1)

- Management refers to the management of all built environment stakeholder organisations, including the client, project manager, designers, and quantity surveyor, not just the contractors
- There is no such thing as an 'accident' (Myth)!
- Definitions include, among other: "An unplanned event"
- Are 'accidents' unplanned?
  - Absolutely not!
  - Any review will indicate that they are meticulously planned by default i.e. through actions and / or omissions
- Given that the five functions of management work are planning, organising, leading, controlling, and coordinating, then unplanned events such as 'accidents' = 'failure of management' (Reality)
- Philosophy and constitutes a state of mind

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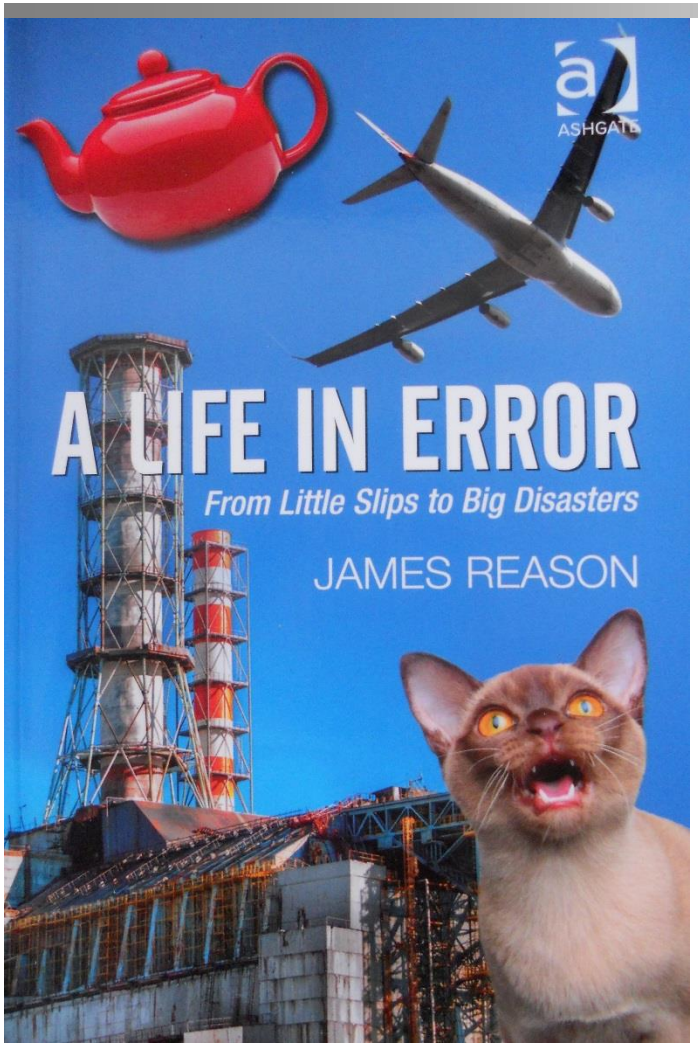
'Failure of management' versus 'Accident'(2)



Chapter 8: Planning Failures

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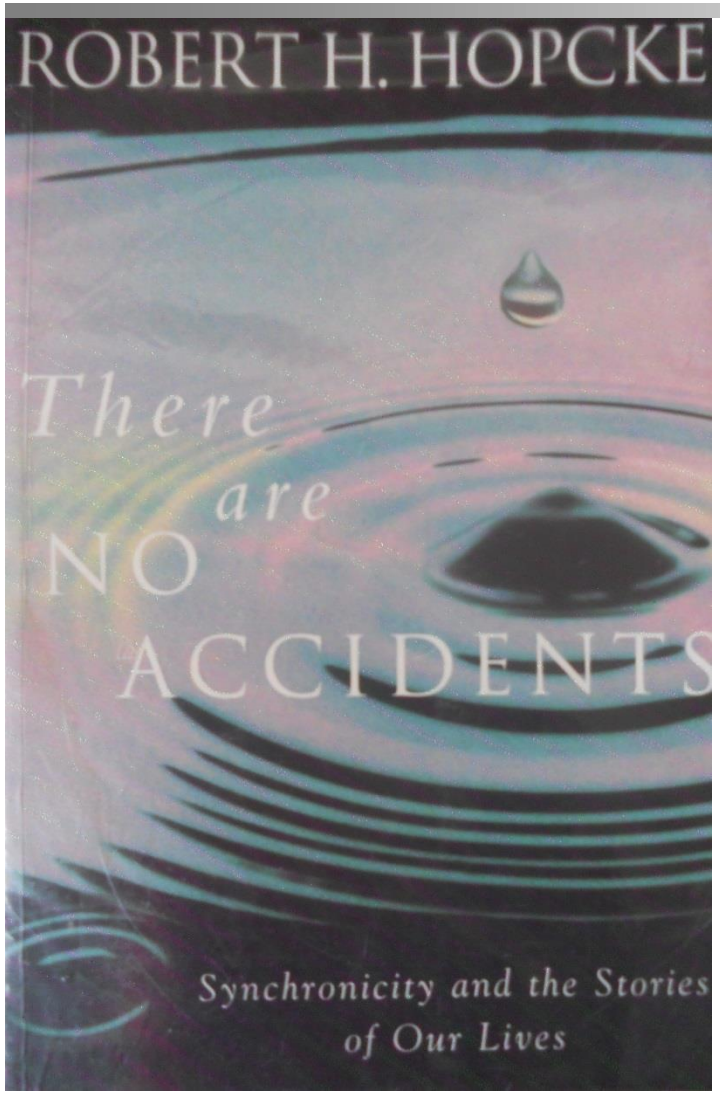
‘Failure of management’ versus ‘Accident’(3)



A different kind of coincidence, a confluence of events that shakes us up. Can see and feel a significance in the randomness. Like pure chance, or just a coincidence. However, Jung refers to it as synchronicity (p. 3).

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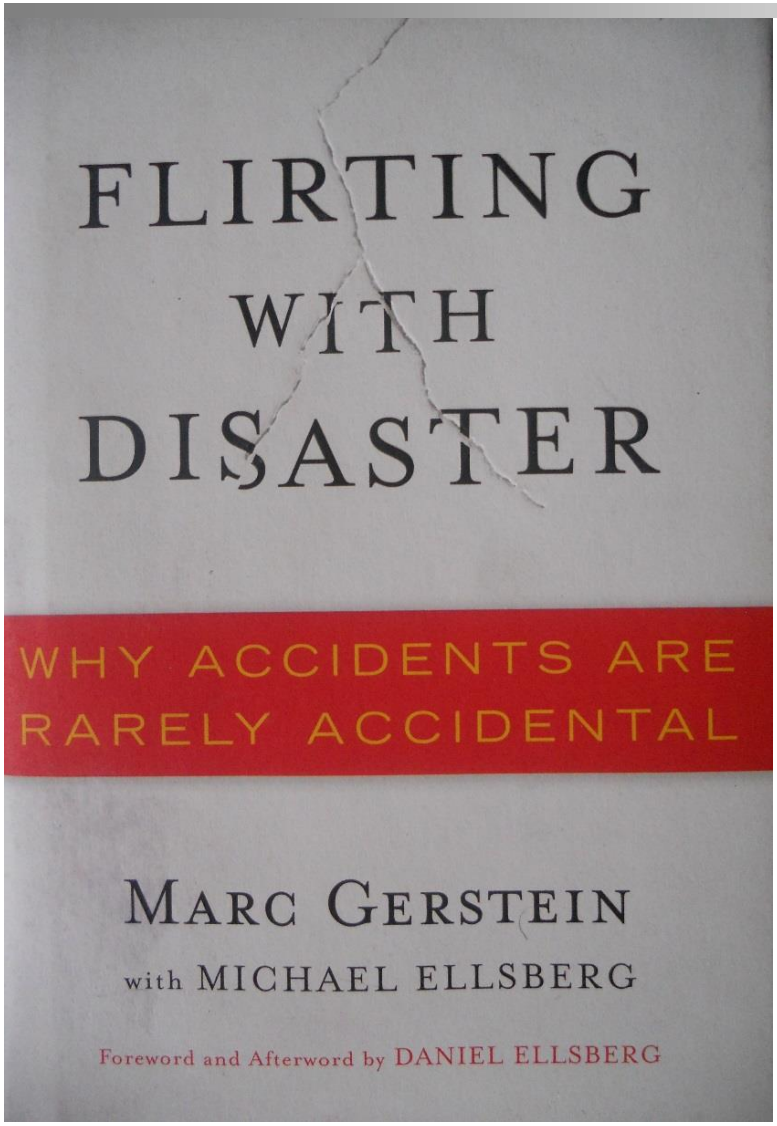
‘Failure of management’ versus ‘Accident’(4)



Functions in a contracting organisation

- Should be represented in some form, usually departments:
  - General management
  - Administration and information technology
  - Financial
  - Human resources
  - Legal
  - Marketing
  - Procurement
  - Production (Projects)
  - Public relations
- More than one in an identifiable department
- However, a function may entail all functions e.g. production
- Contribute / Linked to H&S and impacted upon by H&S performance

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General management function

Five functions and 19 activities:

- Planning: forecasting; developing objectives; programming; scheduling; budgeting; developing procedures, and developing policies
- Organising: developing organisation structure; delegating, and developing relationships
- Leading: decision making; communicating; motivating; selecting people, and developing people
- Controlling: developing performance standards; measuring performance; evaluating performance, and correcting performance
- Coordinating

All are required to manage H&S

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Administration and information technology function

- Administration – integral aspect of H&S
- Building Information Modelling (BIM):
  - Major potential contributor to H&S
  - Interrogate constructability
  - Can generate the lineal meters of edge protection
  - Can simulate activities – 'premortems'
  - Awareness and commitment by the firm is required

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Financial function

- Cost of accidents (COA) increases the cost of construction:
  - Based upon the value of construction work completed in the year 2002, namely R 56 343m (South African Reserve Bank, 2003) the total COA could have been between 4.3% (R 2 401.2m / R 56 343m), and 5.4% (R 3 041.5m / R 56 343m)
  - Cost of prevention is between 0.5% and 3% (Smallwood, 2004)
- Workers' compensation insurance rebates
- Synergy between H&S and cost, environment, productivity, quality, and time
- Return on investment in H&S

Human resources function

- Major link between this function and H&S (obvious)
- Development and maintenance of people
- Not just a staff, but a line function, especially at operational level (production function)

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Legal function

- Major link between this function and H&S (obvious)
- Firm's integrity must be assured
- Undue attention and publicity is not ideal
- Management is responsible for corporate governance, especially top management

Marketing (1)

- "Marketing management is primarily concerned with ways of generating revenue, so that the overall organisational objective of profitability can be achieved." (Lavender, 1996)
- Market- or production-oriented approach
- Market-oriented organisation:
  - Structures all other activities around marketing
  - Places satisfaction at the centre of its philosophy and activities – H&S contributes thereto
  - Identifies how to generate revenue by providing the market with what it requires, and then decides how to produce it at minimum cost – H&S can contribute to reducing cost e.g. COA
- Production-oriented organisation:
  - Decides what to produce or construct, and then decides how to market it
  - Bases its activities around its products and / or production process, relying on the product or service to sell itself – H&S contributes thereto

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Marketing (2)

- Basic issues:
  - Extent of market orientation of the organisation
  - Distinction between clients' needs and wants
  - Distinction between features and benefits
  - Effect of external factors
- Conclusion from the study 'The role of Optimum Health H&S in Construction Marketing' was: Optimum H&S provides 'better practice' H&S GCs with a competitive edge, and increases their attractiveness to clients (Smallwood, 2005)

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Marketing (3) Research findings (1)

Action / Intervention / Submission	Response (%)						MS	Rank
	Don't know	Never	Rarely	Some-times	Often	Always		
H&S pre-qualification (Compensation insurance registration)	0.0	0.0	23.1	0.0	30.8	46.2	4.00	1
H&S pre-qualification (Programme)	0.0	7.7	15.4	23.1	15.4	38.5	3.62	2
H&S pre-qualification (Other H&S criteria such as accountability)	0.0	0.0	23.1	46.2	7.7	23.1	3.31	3
H&S pre-qualification (Policy)	0.0	7.7	15.4	46.2	15.4	15.4	3.15	4
Project H&S reporting	0.0	15.4	23.1	15.4	38.5	7.7	3.00	5
H&S project plans	0.0	7.7	46.2	30.8	7.7	7.7	2.62	6
H&S pre-qualification (Specific level of star grading status) (Average)	0.0	7.7	61.5	23.1	0.0	7.7	2.38	7=
H&S pre-qualification (Statistics)	0.0	30.8	30.8	15.4	15.4	7.7	2.38	7=
Incentives for H&S	0.0	46.2	46.2	0.0	0.0	7.7	1.77	9

Table 1: Frequency at which clients require / undertake / request various H&S related actions / interventions / submissions (MS = 1.00 – 5.00) (Smallwood, 2005).

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Marketing (4) Research findings (2)

Phenomena	Response (%)						II	Rank
	No	Minor…….. Major						
		1	2	3	4	5		
Improved productivity as a result of H&S	0.0	7.7	15.4	30.8	38.5	7.7	3.23	1
Programme performance as a result of H&S	0.0	7.7	15.4	38.5	30.8	7.7	3.15	2=
Quality performance as a result of H&S	0.0	7.7	23.1	23.1	38.5	7.7	3.15	2=
Compliance with client H&S requirements	0.0	0.0	38.5	23.1	30.8	7.7	3.08	4
Management commitment to H&S	0.0	0.0	30.8	46.2	15.4	7.7	3.00	5=
Integration of H&S into activities	0.0	0.0	38.5	30.8	23.1	7.7	3.00	5=
Consideration and / or preservation of the environment as a result of H&S	0.0	7.7	38.5	15.4	30.8	7.7	2.92	7=
Past overall H&S performance	0.0	0.0	38.5	46.2	0.0	15.4	2.92	7=
Reduced cost as a result of H&S	0.0	7.7	30.8	38.5	15.4	7.7	2.85	9
Overall H&S performance on work in progress	0.0	7.7	30.8	46.2	7.7	7.7	2.77	10=
H&S culture	0.0	7.7	46.2	23.1	7.7	15.4	2.77	10=
Management of subcontractor H&S	0.0	0.0	41.7	41.7	16.7	0.0	2.75	12

Table 2: Extent to which various H&S related phenomena have contributed to the acquisition of work or additional work (MS = 1.00 – 5.00) (Smallwood, 2005).

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Public relations (PR) function

- Relationship between an organisation and its publics
- Internal and external publics
- Internal - workers, supervision, management, administrative
- External - clients, project managers, designers, general public, future (potential) students, and DoL H&S inspectorate
- H&S is an integral component of corporate social responsibility (CSR)
- H&S performance of a firm enhances their image and reputation

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Departments in a contracting organisation

- Possible:
  - Accounts
  - Estimating
  - Human resources
  - Information technology
  - Planning
  - Plant yard
  - Procurement / Purchasing
  - Production
  - Surveying
  - Marketing / Public relations
- Contribute / Linked to H&S and impacted upon by H&S performance

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Managing the business of construction (1)

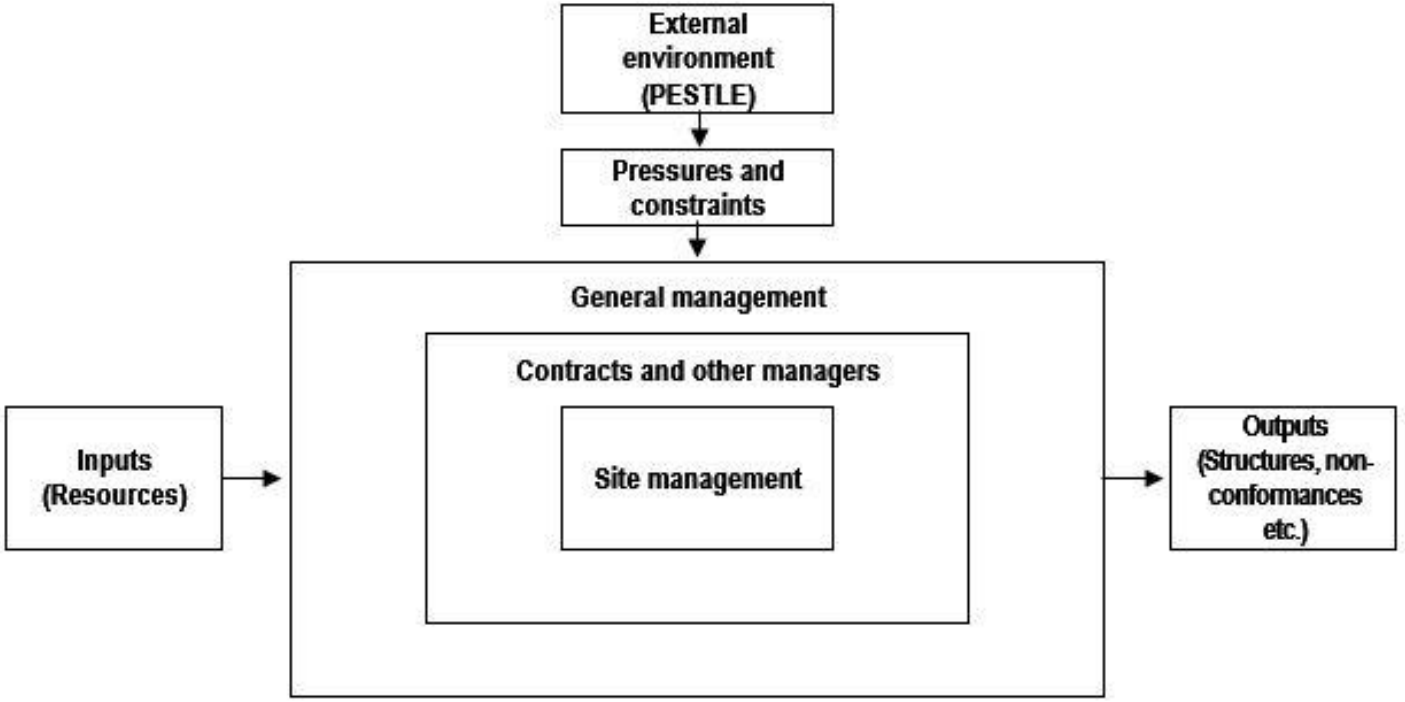

Figure 1: Management of a contracting organisation – a systems view (adopted from Fryer, 2004)

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Managing the business of construction (2)

- External PESTLE influences on the business of construction and projects:
  - Political
  - Economic
  - Social-cultural
  - Technological
  - Legal
  - Environmental
- All impact on H&S

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Strategic planning (1)

- A systematic process of envisioning a desired future, and translating this vision into broadly defined goals or objectives and a sequence of steps to achieve them
- In contrast to long-term planning (which begins with the current status and lays down a path to meet estimated future needs), strategic planning begins with the desired-end and works backward to the current status
- At every stage of long-range planning the 'planner' asks, 'What must be done here to reach the next (higher) stage?'
- At every stage of strategic-planning the 'planner' asks: 'What must be done at the previous (lower) stage to reach here?'
- Also, in contrast to tactical planning (which focuses at achieving narrowly defined interim objectives with

Strategic planning (2)

predetermined means), strategic planning looks at the wider picture and is flexible in choice of its means (Business Dictionary, 2016)

- In terms of H&S:
  - Desired-end (Zero harm) → Current status (fatalities, Injuries, and Disease)
  - Objective 1:
    - H&S Management System certified
  - 12 Issues (Steps) relative to Objective 1, first two of which are:
    - Management responsibilities – all three levels and functions
    - Contract reviews – all three levels should be involved, namely top, middle, and site (operational)

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Corporate social responsibility (1)

- "Mechanism for entities to voluntarily integrate social and environmental concerns into their operations and their interaction with their stakeholders, which are over and above the entity's legal responsibilities." (Standards Australia International, 2003)
- Motivators for H&S: legal considerations; moral / religious beliefs; ethical issues; humanitarian concerns and a respect for people; a desire for sustainability; compliance with national and international standards; a desire to reduce the costs of accidents / incidents; the desire to reduce organizational risk; adherence with total quality management principles; support of local industry OH&S and image initiatives, and the pursuit of better practice

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Corporate social responsibility (2)

- Triple Bottom Line (TBL) reporting requires organisations to report their performance in accordance with a range of financial, environmental and social indicators. OH&S performance is an important component of these social indicators

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Respect for people (1)

- Respect for people is the catalyst for the value 'people are our most important resource'
- However, poor welfare facilities on site, among other, are not a manifestation of respect for people
- This value is critical as it is the catalyst for H&S culture
- Supervisors and workers that are exposed to hazards and risk are people that have a body, mind, and a soul. They invariably have a partner, a family and are derived from a community
- Such a value is the foundation for H&S and sustainability of an organisation

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Respect for people (2)

Workers change room, shower, and lockers, Max 4 project, Lund, Sweden (Smallwood, August 2012)

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Respect for people (3)

Workers' mess area, Max 4 project, Lund, Sweden (Smallwood, August 2012)

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Respect for people (4)

Mess facility, Sancti Spiritus, Cuba (Smallwood, 2007)

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Respect for people (5) (Lack of) (1)

‘Outdoor dining’, SEP (Smallwood, 2007)

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Respect for people (6) (Lack of) (2)

Lockers, SEP (Smallwood, 2007)

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H&S Policy (Values)

- Definition: code of behaviour; ethics; standards (moral), and principles
- Influence vision, goals, mission and assumptions
- Critical - H&S is a 'life and death' issue
- H&S must be a value not a priority - priorities change e.g. production and time (and cost) may be priorities at a stage (always are)
- Examples:
  - 'People are our most important resource'
  - 'H&S is a basic human right'
  - 'H&S will be granted status equal to or greater than that afforded to cost, productivity, quality and time'

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H&S Policy (Purpose)

- Definition: what people want to contribute, in the broader sense, to all stakeholders, so that they are inspired to their highest level of performance
- Ultimate purpose - sustainability of the organisation (the business of construction)
- Prevention of fatalities, injuries, and disease is a means to an end, not the end!

H&S Policy (Vision) (1)

- Definition: the ability to see the potential in, or necessity of opportunities right in front of you
- Practical terms - creating the future by taking action in the present

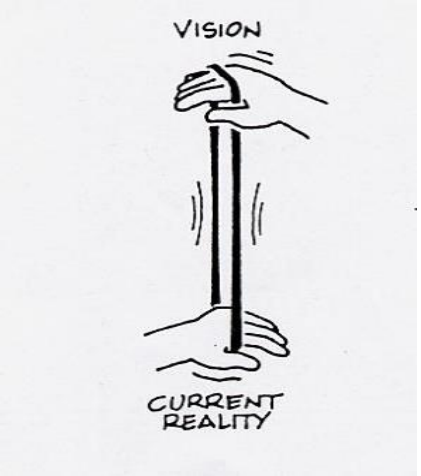

Figure 2: Creative Tension (Senge, 1990).

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H&S Policy (Vision) (2)

- Current reality – recurring ‘accidents’ accompanied by regular incidents
- Vision: ‘fatality, injury, and disease-free work place’
- Importance - only having a vision and working towards it will extricate an organisation from current reality

H&S Policy (Goals)

- Represent aspirations, serve as a common bond and provide a standard for evaluation
- Goals are related to vision - vision of a 'fatality, injury, and disease-free workplace' requires a goal of 'zero incidents'
- 'Zero incidents' (for that matter deviations):
  - Although incidents may occur - must never accept that incidents must occur!
  - Transparent - workers, unions and shareholders (?)
  - 'Aim low - score low'
  - A lesser goal = compromise, as it leaves a subtle message that incidents will occur and that they are acceptable, and
  - 'State of mind' / 'Philosophy'

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H&S Policy (Mission)

- Clear, definable and motivational point of focus
- Complementary to the vision and goals
- Vision such as ‘fatality, injury, and disease-free workplace’ and a goal ‘zero incidents’ requires continual improvement (mission)

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H&S Policy (Assumptions)

- Important, as even though research, anecdotal evidence or experience might indicate that increased H&S a decrease in incidents – it is not guaranteed
- Must assume that incidents will be minimised - else will not allocate the optimum resources and fail to realise the vision
- The business 'provides' the resources

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Impact of 'accidents' (1)

Pretoria North Shopping Centre slab collapse, October, 1996 (Davis, 1996)

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Impact of 'accidents' (2)

Investec Office Complex scaffolding collapse, Sandton, August, 1997 (Prinsloo, 1997)

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Impact of 'accidents' (3)

Investec Office Complex scaffolding collapse, Sandton, August, 1997 (Prinsloo, 1997)

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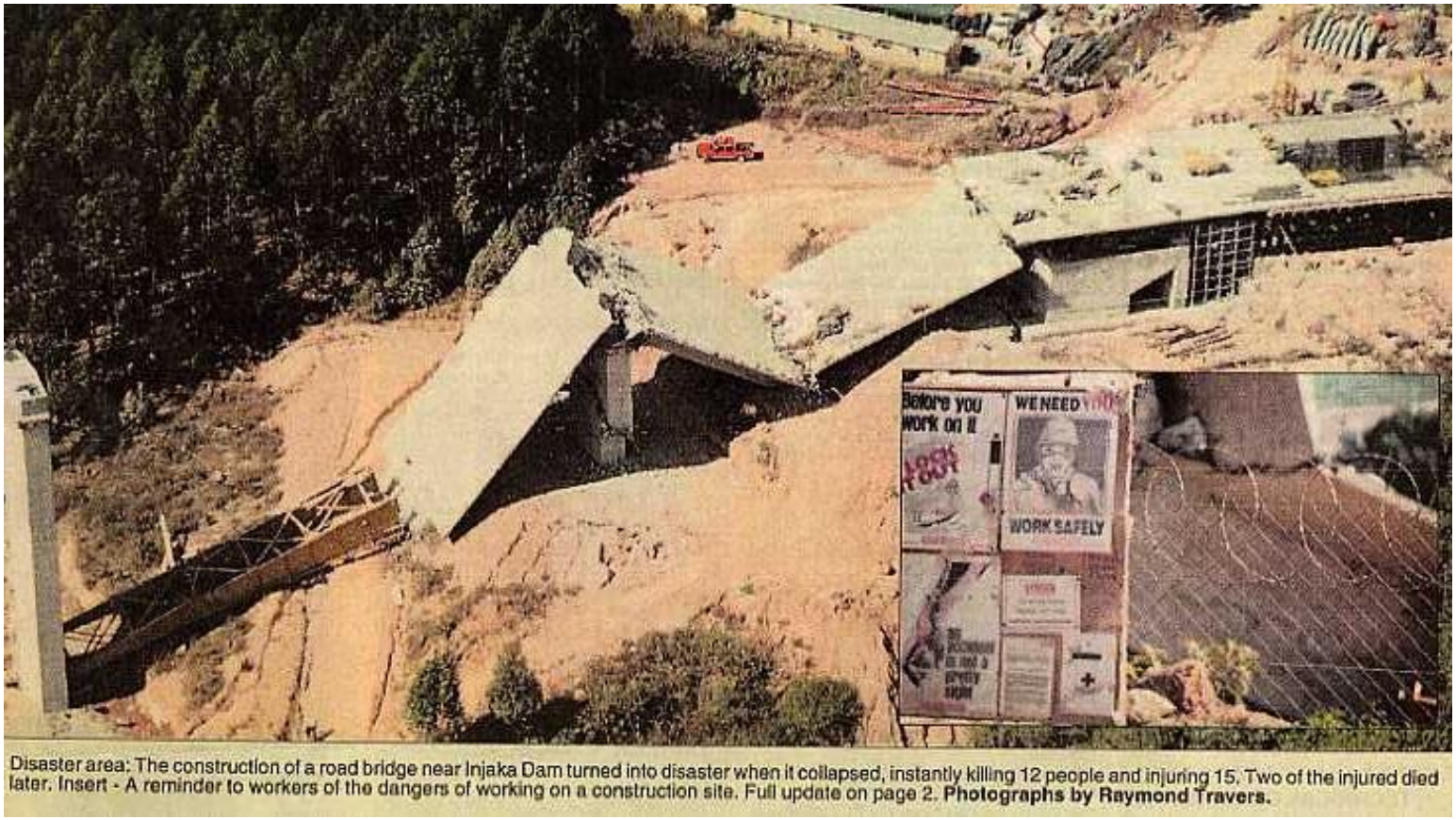
Impact of 'accidents' (4)

Sombre ... workers survey the scene yesterday at the nwested building where they say heavy marble tiles caused an overload.

Investec Office Complex scaffolding collapse, Sandton, August, 1997 (Nesbitt, 1997)

Impact of ‘accidents’ (5)



Disaster area: The construction of a road bridge near Injaka Dam turned into disaster when it collapsed, instantly killing 12 people and injuring 15. Two of the injured died later. Insert - A reminder to workers of the dangers of working on a construction site. Full update on page 2. **Photographs by Raymond Travers.**

Injaka Bridge collapse, Mpumalanga, July, 1998 (Travers, 1998)

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Impact of 'accidents' (6)

Coega Bridge collapse, Port Elizabeth, November, 2003 (Markman, 2003)

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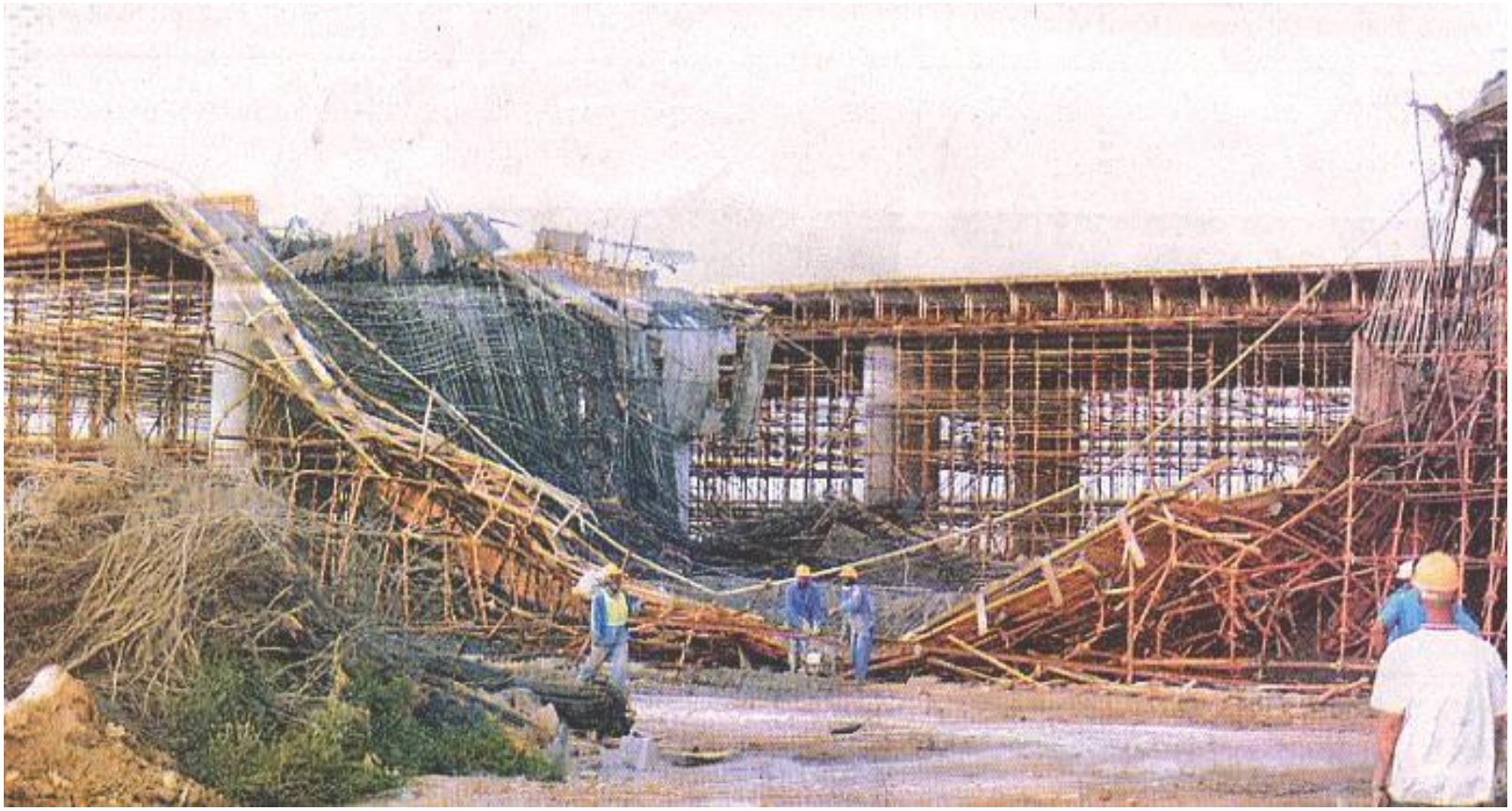
Impact of 'accidents' (7)



Coega Bridge collapse, Port Elizabeth, November, 2003 (Markman, 2003)

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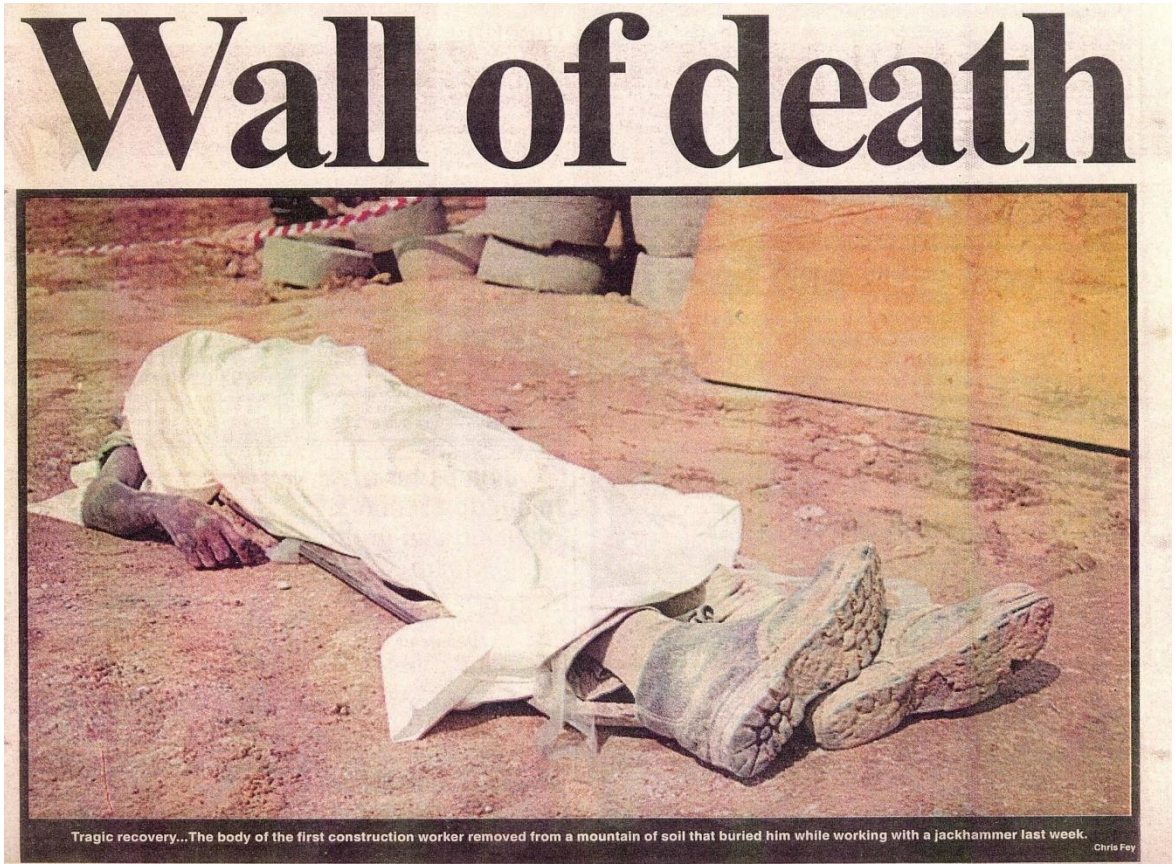
Impact of 'accidents' (8)



Wall (earth) collapse, Randburg, February, 1999 (Frey, 1999)

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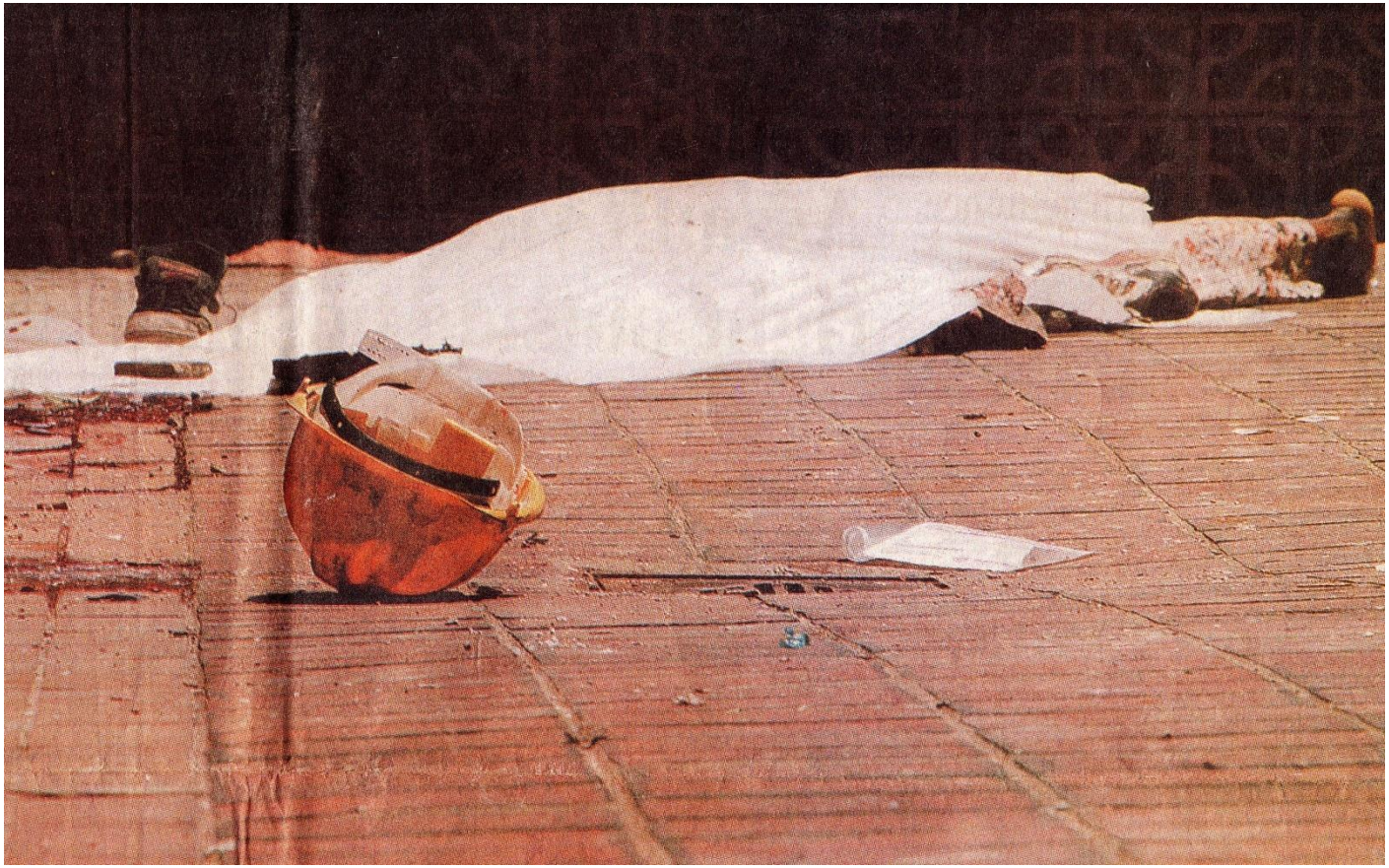
Impact of 'accidents' (9)



Suspended platform (scaffold) collapse, Hillbrow, February, 2001 (Safodien, 2001)

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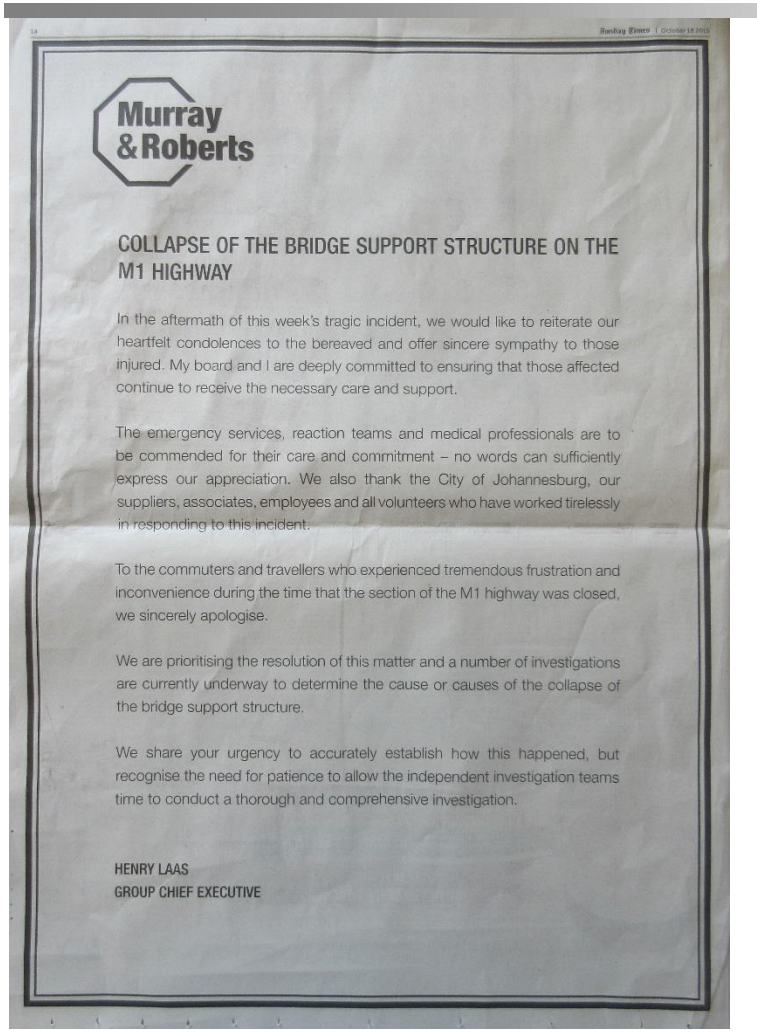
Impact of 'accidents' (10) (Public pain)

M1 Highway Temporary Bridge collapse, Johannesburg, 14 October 2015 (Reuters)

Impact of ‘accidents’ (11) (Media ridicule)

M1 Highway Temporary Bridge collapse, Johannesburg, 14 October 2015 (Sunday Times, 2015)

Impact of ‘accidents’ (12) (Damage control)



Murray & Roberts

COLLAPSE OF THE BRIDGE SUPPORT STRUCTURE ON THE M1 HIGHWAY

In the aftermath of this week's tragic incident, we would like to reiterate our heartfelt condolences to the bereaved and offer sincere sympathy to those injured. My board and I are deeply committed to ensuring that those affected continue to receive the necessary care and support.

The emergency services, reaction teams and medical professionals are to be commended for their care and commitment – no words can sufficiently express our appreciation. We also thank the City of Johannesburg, our suppliers, associates, employees and all volunteers who have worked tirelessly in responding to this incident.

To the commuters and travellers who experienced tremendous frustration and inconvenience during the time that the section of the M1 highway was closed, we sincerely apologise.

We are prioritising the resolution of this matter and a number of investigations are currently underway to determine the cause or causes of the collapse of the bridge support structure.

We share your urgency to accurately establish how this happened, but recognise the need for patience to allow the independent investigation teams time to conduct a thorough and comprehensive investigation.

HENRY LAAS
GROUP CHIEF EXECUTIVE

M1 Highway Temporary Bridge collapse, Johannesburg, 14 October 2015 (Murray & Roberts, 2015)

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Impact of 'accidents' (13) (Share holder 'pain')

- M1 Motorway, Johannesburg, temporary bridge collapse:
  - Immediately after the incident on Wednesday afternoon the company's share price dropped sharply by 7.32% to R11.15, leaving it 48.37% lower than a year ago (Slabbert, 2015)
- Injaka Bridge collapse:
  - Following the news the share price slipped from R15.30 to R12.50 (18.3%) (Temkin, 1998)

Direct and indirect cost of accidents (1)

- Direct:
  - Medical
  - Wages (percentage)
- Indirect:
  - Lost time – injured worker
  - Lost time – idle workers
  - Lost time – management and supervision
  - Time spent by First Aiders etc.
  - Damage to plant, equipment, tools and materials
  - Incidental costs due to disruption
  - Loading of assessments

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Direct and indirect cost of accidents (2)

- Reduced productivity
- Idle plant and equipment
- Legal action
- Penalties
- Overheads in general
- Funeral
- Negative image
- Loss of goodwill
- Opportunity cost
- Reduced equity (share price)

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Total cost of accidents

- Based upon the value of construction work completed in the year 2002, namely R 56 343m (South African Reserve Bank, 2003) the total COA could have been between 4.3% (R 2 401.2m / R 56 343m), and 5.4% (R 3 041.5m / R 56 343m) (Smallwood, 2004)
- Cost of prevention is between 0.5% and 3% (Smallwood, 2004)

Impact of inadequate H&S

Aspect	Response (%)
Productivity	87.2
Quality	80.8
Cost	72.3
Client perception	68.1
Environment	66.0
Schedule (Time)	57.4

Table 3: Aspects negatively affected by inadequate health and safety according to project managers (Smallwood, 1996).

95.8% stated that inadequate or the lack of H&S increases overall project risk

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Impact of H&S / inadequate H&S (1)

Relationship		Impact (%) No……..Major					MS	Rank (with in)	Rank (over all)
Phenomenon	Parameter	1	2	3	4	5			
Inadequate H&S	Productivity	0.0	0.0	18.2	54.5	27.3	4.09	1=	14=
	Worker satisfaction	0.0	0.0	36.4	18.2	45.4	3.09	1=	14=
	Quality	0.0	0.0	36.4	45.4	18.2	3.82	3	21=
	Client satisfaction	0.0	27.3	18.2	27.3	27.3	3.73	4	23=
	Cost	0.0	9.1	9.1	45.4	36.4	3.64	5	25=
	Environment	0.0	9.1	54.5	9.1	27.3	3.55	6=	28=
	Project time	0.0	27.3	9.1	45.4	18.2	3.55	6=	28=
Accidents	Cost	0.0	0.0	18.2	9.1	72.7	4.55	1	7
	Worker satisfaction	0.0	9.1	0.0	27.3	63.6	4.46	2	8=
	Productivity	0.0	0.0	9.2	45.4	45.4	4.36	3	10=
	Project time	0.0	0.0	27.3	45.4	27.3	4.00	4	17=
	Quality	0.0	18.2	27.3	45.4	9.1	3.46	5=	31=
	Client satisfaction	0.0	27.3	9.1	27.3	36.3	3.46	5=	31=
	Environment	0.0	27.3	45.4	18.2	9.1	3.09	7	33

Table 4A: Impact of various phenomena on various project parameters (II: 0 – 4) (Smallwood, 2001)

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Impact of H&S / inadequate H&S (2)

Relationship		Impact (%) No……..Major					MS	Rank (with in)	Rank (over all)
Phenomenon	Parameter	1	2	3	4	5			
Poor productivity	Project time	0.0	0.0	0.0	10.0	90.0	4.90	1	1
	Cost	0.0	0.0	9.1	0.0	90.9	4.81	2	3
	Client satisfaction	0.0	9.1	9.1	45.4	36.4	4.09	3	14=
	Quality	0.0	0.0	36.4	36.4	27.2	3.91	4	20
	Worker satisfaction	0.0	27.3	18.2	9.1	45.4	3.73	5	23=
	H&S	0.0	27.3	18.1	27.3	27.3	3.55	6	28=
	Environment	27.3	9.1	36.4	18.2	9.1	2.55	7	36
Rework	Productivity	0.0	0.0	0.0	27.3	72.7	4.73	1	4=
	Cost	0.0	0.0	0.0	36.3	63.6	4.63	2	6
	Project time	0.0	0.0	9.1	36.4	54.5	4.46	3	8=
	Worker satisfaction	0.0	0.0	18.2	36.4	45.4	4.27	4	12
	Client satisfaction	0.0	9.1	18.2	18.2	54.5	4.18	5	13
	Qualtiy	0.0	0.0	27.3	45.4	27.3	4.00	6	17=
	H&S	9.1	18.2	9.1	27.2	36.4	3.64	7	25=
	Environment	9.1	18.2	54.5	9.1	9.1	2.91	8	34=

Table 4B: Impact of various phenomena on various project parameters (II: 0 – 4) (Smallwood, 2001)

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Impact of H&S / inadequate H&S (3)

Relationship		Impact (%) No……..Major					MS	Rank (with in)	Rank (over all)
Phenomenon	Parameter	1	2	3	4	5			
Poor project time performance	Cost	0.0	0.0	0.0	18.2	81.8	4.82	1	2
	Client satisfaction	0.0	9.1	0.0	0.0	90.9	4.73	2	4=
	Productivity	0.0	0.0	9.2	45.4	45.4	4.36	3	10=
	Quality	0.0	9.1	9.1	54.5	27.3	4.00	4	17=
	Worker satisfaction	0.0	18.2	18.2	27.3	36.3	3.82	5	21=
	H&S	0.0	18.1	27.3	27.3	27.3	3.63	6	27
	Environment	18.2	9.1	45.4	18.2	9.1	2.91	7	34=

Table 4C: Impact of various phenomena on various project parameters (II: 0 – 4) (Smallwood, 2001)

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Financial implications of H&S performance (1)

- **Facts:**
  - Compensation insurance (CI) = R2.20 / R100.00 wages (building)
  - Claims ratio (CR) = $\frac{\text{CI claims}}{\text{CI assessments}}$
- **Rebates and loadings:**
  - 50% = 10.0% Rebate
  - 24% = 36.0% Rebate
  - 75% = 16.0% Loading
  - 100% = 75.0% Loading

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Financial implications of H&S performance (2)

- **Based upon:**
  - Wages = 27% of turnover
  - Therefore per R1m turnover, CI assessments are:

1 000 000 x 0.27 = R270 000 x 100.00 / 102.20

= (R264 188)

R 5 812 CI assessments

  - Indirect costs = 7 / x Direct costs (+/- 50% of 14.2 / x direct)
- **Known:**
  - Direct costs = CI claims (% of CI assessments)

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Financial implications of H&S performance (3)

Cost	Contractor		
	A	B	C
CR	50%	75%	100%
CI assessments (Rs)	5 812	5 812	5 812
CI claims (Rs)	2 906	4 359	5 812
Indirect cost (Rs) (7 / x direct cost)	20 342	30 513	40 684
Total COA (Rs)	23 248	34 872	46 496

Table 5: Total cost of accidents (COA) scenarios for contractors with differing CRs per R1m turnover

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Financial implications of H&S performance (4)

Turnover (Rm)	Contractor			
	A	B	C	A-C
1	23 248	34 872	46 496	23 248
10	232 480	348 720	464 960	232 480
50	1 162 400	1 743 600	2 324 800	1 162 400
100	2 324 800	3 487 200	4 649 600	2 324 800
500	11 624 000	17 436 000	23 248 000	11 624 000
1 000	23 248 000	34 872 000	46 496 000	23 248 000
1 500	34 872 000	52 308 000	69 744 000	34 872 000
2 000	46 496 000	69 744 000	92 992 000	46 496 000

Table 6: Total COA scenarios for contractors with differing CRs for various annual turnovers

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Financial implications of H&S performance (5)

Financial Component	Contractor			
	A	B	C	D
CR	50%	75%	100%	24%
Bidding cost (Rs)	952 381	952 381	952 381	952 381
5% Mark-up (Rs)	47 619	47 619	47 619	47 619
Gross bid (Rs)	1 000 000	1 000 000	1 000 000	1 000 000
Initial cost (Rs)	(952 381)	(952 381)	(952 381)	(952 381)
Gross profit before rebate / loading and indirect COA (Rs)	47 619	47 619	47 619	47 619
Rebate / (Loading) (Rs)	581	(930)	(4 360)	2 092
Gross profit after rebate / loading and before indirect COA (Rs)	48 207	46 689	43 259	49 711
Indirect COA (Rs)	(20 342)	(30 513)	(40 684)	(9 765)
Gross profit (Rs)	27 859	16 175	2 576	39 945
Gross profit (%)	2.93	1.70	0.27	4.19
Improvement on / Decrease mark-up (%)	(43.47)	(66.07)	(94.67)	(16.27)

Table 7: Impact of rebates / loadings and indirect COA on gross profit for differing CRs

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Motivators for addressing H&S (1)

'Motivator'	Response (%)							MS	Rank
	Un-sure	Did not	Minor…..…….…….…… Major						
			1	2	3	4	5		
OH&S Act	11.1	0.0	0.0	0.0	11.1	0.0	77.8	4.75	1
Image	0.0	0.0	0.0	0.0	0.0	55.6	44.4	4.44	2
Construction Regulations (H&S)	0.0	0.0	0.0	0.0	11.1	33.3	55.6	4.44	3
Professionalism	0.0	0.0	0.0	0.0	0.0	66.7	33.3	4.33	4
Reputation	0.0	0.0	0.0	0.0	0.0	77.8	22.2	4.22	5
H&S is an organisation value	0.0	0.0	0.0	11.1	0.0	44.4	44.4	4.22	6
H&S is a moral issue	0.0	0.0	0.0	0.0	11.1	66.7	22.2	4.11	7
+ Impact of optimum H&S on environment	0.0	0.0	0.0	0.0	33.3	22.2	44.4	4.11	8
Organisation H&S policy	0.0	0.0	0.0	11.1	11.1	33.3	44.4	4.11	9
+ Impact of optimum H&S on cost	0.0	0.0	0.0	0.0	33.3	33.3	33.3	4.00	10
+ Impact of optimum H&S on profitability	0.0	0.0	0.0	0.0	33.3	33.3	33.3	4.00	11
+ Impact of optimum H&S on schedule	0.0	0.0	0.0	0.0	33.3	33.3	33.3	4.00	12
Preservation of organisational integrity	0.0	0.0	0.0	11.1	11.1	44.4	33.3	4.00	13
COID Act	0.0	0.0	0.0	11.1	22.2	22.2	44.4	4.00	14
National Constitution	11.1	0.0	0.0	0.0	44.4	0.0	44.4	4.00	15

Table 8A: Extent to which 'motivators' contributed to respondents' organisations addressing H&S (MS: 0.00 – 5.00) (Smallwood, 2014).

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Motivators for addressing H&S (2)

'Motivator'	Response (%)							MS	Rank
	Un-sure	Did not	Minor……..…….. Major						
			1	2	3	4	5		
Construction Management issue	0.0	0.0	11.1	0.0	11.1	33.3	44.4	4.00	16
+ Impact of optimum H&S on productivity	0.0	0.0	0.0	0.0	37.5	25.0	37.5	4.00	17
Marketing edge / advantage	0.0	0.0	11.1	0.0	11.1	33.3	44.4	4.00	18
H&S specification	0.0	0.0	0.0	0.0	33.3	44.4	22.2	3.89	19
+ Impact of optimum H&S on quality	0.0	0.0	0.0	0.0	33.3	44.4	22.2	3.89	20
Impact of poor H&S on productivity	0.0	0.0	0.0	0.0	44.4	22.2	33.3	3.89	21
DoL enforcement of legislation & regulations	22.2	0.0	0.0	11.1	22.2	11.1	33.3	3.86	22
Resulting client satisfaction	0.0	0.0	0.0	11.1	22.2	44.4	22.2	3.78	23
Corporate social responsibility issue	0.0	0.0	0.0	22.2	0.0	55.6	22.2	3.78	24
Impact of poor H&S on cost	0.0	0.0	0.0	11.1	33.3	22.2	33.3	3.78	25
Impact of poor H&S on profitability	0.0	0.0	0.0	11.1	33.3	22.2	33.3	3.78	26
Impact of poor H&S on schedule	0.0	0.0	0.0	11.1	33.3	22.2	33.3	3.78	27
Other Regulations	12.5	0.0	0.0	12.5	25.0	25.0	25.0	3.71	28
Resulting worker satisfaction	0.0	0.0	0.0	0.0	44.4	44.4	11.1	3.67	29
Impact of poor H&S on quality	0.0	0.0	0.0	11.1	33.3	33.3	22.2	3.67	30

Table 8B: Extent to which 'motivators' contributed to respondents' organisations addressing H&S (MS: 0.00 – 5.00) (Smallwood, 2014).

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Motivators for addressing H&S (3)

'Motivator'	Response (%)							MS	Rank
	Un-sure	Did not	Minor…… Major						
			1	2	3	4	5		
Impact of poor H&S on environment	0.0	0.0	0.0	22.2	22.2	22.2	33.3	3.67	31
Resulting designer satisfaction	0.0	0.0	0.0	11.1	33.3	44.4	11.1	3.56	32
'I am my brother's / sister's keeper'	0.0	0.0	0.0	22.2	11.1	55.6	11.1	3.56	33
Detailed inclusion of H&S in contract documents	0.0	0.0	11.1	11.1	11.1	55.6	11.1	3.44	34
Client 'pressure'	0.0	0.0	11.1	11.1	22.2	33.3	22.2	3.44	35
Client requirements	0.0	0.0	11.1	0.0	44.4	33.3	11.1	3.33	36
Cost of accidents	0.0	0.0	11.1	11.1	44.4	0.0	33.3	3.33	37
Economic benefits of H&S	0.0	11.1	0.0	11.1	11.1	55.6	11.1	3.33	38
Employer association guidance	22.2	0.0	0.0	11.1	44.4	22.2	0.0	3.14	39
Cost of compensation insurance	0.0	0.0	11.1	0.0	66.7	11.1	11.1	3.11	40
H&S Preliminaries in the BoQ	0.0	11.1	11.1	11.1	33.3	22.2	11.1	2.78	41
Worker 'pressure'	0.0	0.0	33.3	22.2	22.2	11.1	11.1	2.44	42
Compensation insurance provider 'pressure'	0.0	11.1	11.1	33.3	33.3	11.1	0.0	2.22	43
Union 'pressure'	0.0	0.0	55.6	11.1	22.2	0.0	11.1	2.00	44

Table 8C: Extent to which 'motivators' contributed to respondents' organisations addressing H&S (MS: 0.00 – 5.00) (Smallwood, 2014).

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Motivators for addressing H&S (4)

Basic	→	Reactive	→	Compliant	→	Proactive	→	Resilient
Little interest in H&S – doing the minimum to get by. Exposed to significant H&S issues		Aware that H&S is an issue, but usually responding to issues. Systems are forming, but immature		H&S is a core part of doing business. Focus is on compliance with systems and processes		Starting to get ahead of the game – anticipating and preventing H&S issues		World class H&S performance – creating a process of continuous improvement / innovation

Figure 3: Anglo American plc's H&S Journey Model (Anglo American plc., 2014)

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Motivators for addressing H&S (5)

Response (%)					Mean Score
SD	D	N	A	SA	
0.0	0.0	11.2	44.4	44.4	4.33

Table 9: Extent to which respondents agree the model represents their organisation's H&S development (MS: 1.00 – 5.00) (Smallwood, 2014).

Response (%)					Mean Score
Basic	Reactive	Compliant	Proactive	Resilient	
0.0	12.5	25.0	25.0	37.5	3.88

Table 10: Respondents' organisations' current H&S status (MS: 1.00 – 5.00) (Smallwood, 2014).

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Contributors to optimum H&S performance (1)

Aspect / Intervention / Stakeholder	Response %						MS	Rank
	Unsure	Minor ..... Major						
		1	2	3	4	5		
H&S rules	9.5	0.0	0.0	14.3	14.3	61.9	4.53	1
H&S induction	4.5	0.0	0.0	9.1	27.3	59.1	4.52	2
H&S awareness	4.5	0.0	4.5	4.5	22.7	63.6	4.52	3
Management commitment to H&S	4.5	0.0	0.0	13.6	22.7	59.1	4.48	4
Management accountability for H&S	4.5	0.0	4.5	4.5	27.3	59.1	4.48	5
Hazard identification and risk assessment	4.5	0.0	0.0	4.5	45.5	45.5	4.43	6
H&S inspections	4.5	0.0	0.0	13.6	27.3	54.5	4.43	7
Integration of H&S into all activities / tasks	9.5	0.0	0.0	9.5	33.3	47.6	4.42	8
H&S Coordinator / Manager	5.6	0.0	0.0	16.7	22.2	55.6	4.41	9
Toolbox talks	9.1	0.0	0.0	18.2	18.2	54.5	4.40	10
Safe work procedures (SWPs)	4.5	0.0	0.0	9.1	40.9	45.5	4.38	11
H&S training	4.5	0.0	0.0	13.6	31.8	50.0	4.38	12
H&S management system (H&SMS)	5.0	0.0	5.0	15.0	15.0	60.0	4.37	13
Site management	4.8	0.0	0.0	4.8	52.4	38.1	4.35	14
H&S policy	4.5	0.0	4.5	13.6	22.7	54.5	4.33	15
Focus on H&S	4.8	0.0	0.0	9.5	47.6	38.1	4.30	16
Worker participation	4.8	0.0	0.0	14.3	38.1	42.9	4.30	17

Table 11A: Extent to which aspects / interventions / stakeholders contributed to respondents' organisations receiving a rebate from FEM (MS = 1.00 – 5.00) (Smallwood, 2011)

Association of Construction Health & Safety Management

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Contributors to optimum H&S performance (2)

Aspect / Intervention / Stakeholder	Response %						MS	Rank
	Unsure	Minor ..... Major						
		1	2	3	4	5		
Incident investigation	9.1	0.0	4.5	9.1	31.8	45.5	4.30	18
Management involvement in H&S	4.5	0.0	4.5	9.1	36.4	45.5	4.29	19
H&S Officer	4.5	0.0	0.0	22.7	22.7	50.0	4.29	20
H&S education	9.1	0.0	0.0	13.6	40.9	36.4	4.25	21
H&S Consultant	20.0	0.0	0.0	20.0	20.0	40.0	4.25	22
H&S culture	4.5	0.0	0.0	22.7	27.3	45.5	4.24	23
H&S disciplinary procedure	19.0	0.0	4.8	14.3	23.8	38.1	4.18	24
H&S plans	4.8	0.0	0.0	28.6	23.8	42.9	4.15	25
H&S legislation (OH&S Act & COID Act)	4.8	0.0	4.8	14.3	38.1	38.1	4.15	26
H&S meetings	4.5	0.0	0.0	22.7	36.4	36.4	4.14	27
Client	11.1	5.6	0.0	5.6	44.4	33.3	4.13	28
Construction Regulations	9.1	0.0	9.1	4.5	45.5	31.8	4.10	29
H&S goal setting	15.8	0.0	5.3	15.8	31.6	31.6	4.06	30
Allocation of financial resources to H&S	9.1	0.0	4.5	22.7	27.3	36.4	4.05	31
Medical surveillance	20.0	0.0	5.0	20.0	25.0	30.0	4.00	32
First line supervision	4.5	0.0	0.0	36.4	27.3	31.8	3.95	33
H&S specification	9.5	0.0	0.0	33.3	28.6	28.6	3.95	34

Table 11B: Extent to which aspects / interventions / stakeholders contributed to respondents' organisations receiving a rebate from FEM (MS: 1.00 – 5.00) (Smallwood, 2011)

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Contributors to optimum H&S performance (3)

Aspect / Intervention / Stakeholder	Response %						MS	Rank
	Unsure	Minor ..... Major						
		1	2	3	4	5		
Recognition of H&S performance	14.3	0.0	4.8	23.8	28.6	28.6	3.94	35
H&S measurement	10.0	0.0	15.0	15.0	20.0	40.0	3.94	36
Quality management system (QMS)	15.0	0.0	5.0	25.0	25.0	30.0	3.94	37
H&S message / theme for the month or week	11.8	0.0	5.9	23.5	29.4	29.4	3.93	38
Feedback on H&S performance	4.5	4.5	0.0	27.3	31.8	31.8	3.90	39
Improvement process e.g. Total quality management (TQM)	21.1	0.0	5.3	26.3	21.1	26.3	3.87	40
H&S Representatives	4.8	0.0	4.8	33.3	28.6	28.6	3.85	41
Partnering	9.1	9.1	0.0	18.2	36.4	27.3	3.80	42
Project manager	5.3	0.0	15.8	21.1	26.3	31.6	3.78	43
Participation in H&S competitions	7.1	7.1	14.3	14.3	21.4	35.7	3.69	44
H&S notice board	6.3	0.0	6.3	43.8	25.0	18.8	3.60	45
Participation in H&S star gradings	16.7	8.3	8.3	16.7	25.0	25.0	3.60	46
H&S incentives	18.8	0.0	12.5	25.0	31.3	12.5	3.54	47
Client appointed H&S Agent	5.6	5.6	5.6	38.9	22.2	22.2	3.53	48
H&S newsletter	15.4	7.7	23.1	23.1	15.4	15.4	3.09	49
Designer	11.1	22.2	11.1	22.2	11.1	22.2	3.00	50
H&S suggestion box	14.3	14.3	14.3	28.6	14.3	14.3	3.00	51
Unions	15.4	30.8	7.7	30.8	0.0	15.4	2.55	52

Table 11C: Extent to which aspects / interventions / stakeholders contributed to respondents' organisations receiving a rebate from FEM (MS: 1.00 – 5.00) (Smallwood, 2011)

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Zero targets – are they achievable?

Action / Belief / Intervention / Practice / State (13 / 38)	U	Least. ……Very					MS	Rank
		1	2	3	4	5		
People are our most important resource	0.0	0.0	1.1	4.3	8.7	85.9	4.79	1
A goal of 'Zero harm'	0.0	0.0	0.0	3.3	20.7	76.1	4.73	2
A mission of 'continuous improvement'	0.0	0.0	0.0	4.4	19.8	75.8	4.71	3
A goal of 'Zero accidents'	0.0	0.0	1.1	3.3	25.0	70.7	4.65	4
A goal of 'Zero incidents'	0.0	1.1	1.1	3.3	21.7	72.8	4.64	5
Consciousness and mindfulness	1.1	0.0	0.0	6.6	27.5	64.8	4.59	6
H&S management system	0.0	0.0	0.0	3.3	35.2	61.5	4.58	7
Respect for people	0.0	0.0	1.1	8.8	20.9	69.2	4.58	8
Design hazard identification and risk assessments	0.0	0.0	0.0	4.3	34.8	60.9	4.57	9
Construction hazard identification and risk assessments	1.1	0.0	1.1	3.3	33.7	60.9	4.56	10
A vision of a 'Fatality, injury, and disease-free work place'	0.0	2.2	0.0	5.4	26.1	66.3	4.54	11
Core competencies e.g. values, aptitude, and integrity	1.1	0.0	2.2	7.7	29.7	59.3	4.48	12
Conformance to requirements	0.0	1.1	0.0	7.6	34.8	56.5	4.46	13

Table 12: Importance of actions / beliefs / interventions / practices / states in terms of achieving zero accidents, injuries, fatalities, and disease in construction (MS = 1.00 – 5.00) (Smallwood and Emuze, 2016)

Association of Construction Health & Safety Management ACHASM

Commitment versus participation versus involvement

- Commitment – is relative
- Participation – more than commitment
- Involvement – more than participation

Leadership (1)

- Management = 'getting things done through others'
- Leadership = 'influencing others'
- 'Managers do things right'
- 'Leaders do the right thing'
- Approaches (Lingard and Rowlinson, 2005):
  - Impact on workers propensity to 'care for H&S':
  - Transformational – value based interactions underpinned by trust, loyalty, openness, and reciprocity
  - Transactional – more focused on hierarchical than egalitarian values – 3 dimensions:
    - Constructive – identify employees' needs and expectations, and motivate them through rewards for performance
    - Corrective –monitor subordinates' actions relative to standards and detect and correct errors
    - Laissez-faire – disown their 'supervisory responsibility

Leadership (2)

- Management commitment – not just top, but supervisory commitment
- Supervisory commitment has a major impact as supervisors:
  - Task workers
  - Implement policies, rules, procedures, and protocol
  - Provide feedback to management

(Lingard and Rowlinson, 2005)

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H&S culture, H&S climate, and Leadership

- H&S culture – embodies values, beliefs, and assumptions
- H&S climate – employees' shared perceptions of the organisational atmosphere
- H&S culture versus climate?
- H&S culture → H&S climate → H&S performance
- 'Good' H&S culture:
  - 'All incidents can be prevented'
  - Genuine management commitment to H&S
  - H&S policy
  - Communicate the importance of H&S in all management's actions
  - Adequately resource H&S
  - Adopt a long-term view – H&S is part of business strategy

H&S climate and H&S performance

- H&S climate impacts on organisational behaviours:
  - Communication
  - Decision making
  - Problem solving
  - Conflict resolution
  - H&S related behaviour
- Research indicates that H&S climate can predict incidents
- Multi-level H&S climate:
  - Organisation versus projects or units
  - Performance differ

(Lingard and Rowlinson, 2005)

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H&S at Board level

PROPOSED HEALTH AND SAFETY (H&S) MEASUREMENT LINKED TO PROPOSED H&S INCENTIVES AT BOARD LEVEL IN NMC

Dr.Theo Haupt
Prof. John Smallwood

SEPTEMBER 2006

Construction Research Education and Training Enterprises
PO Box 40108
Walmer
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Commitment

Indicator variables in terms of clients' role and influence on contractor H&S (Musonda, Pretorius & Haupt 2012):

- **Demonstrate a positive H&S attitude**
- **Actively promote H&S**
- **Provide adequate resources for H&S implementation**
- **Routinely evaluate H&S in all work schedules**
- **Evolve incentives for good H&S behaviour**
- **Include H&S as a major agenda item in project meetings**

Involvement

Indicator variables in terms of clients' role and influence on contractor H&S (Musonda, Pretorius & Haupt 2012):

- **Personally be active in critical project H&S activities**
- **Always be present in project H&S meetings**
- **Contribute to H&S training**
- **Actively oversee H&S on critical operations**
- **Constantly stay in touch on H&S issues**
- **Always communicate information on H&S to all parties**
- **Conduct regular audits and inspections**

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Accountability

- Measure in terms of authority and responsibility
- Possible measures (Outcome):
  - CI claims ratio (WC claims / WC insurance paid)
  - Rand WC insurance claims / production costs
  - No. of lost work day cases / workers
  - No. of lost workdays / Total No. of worker days
  - First Aid Injury Incidence Rate
  - Medical Aid Injury Incidence Rate
  - Disabling Injury Incidence Rate
  - Fatality Rate / 100 000 Full-Time equivalent workers
  - Abovementioned per shift
- Is this practiced?
- Preferably performance measures that predict H&S performance e.g. chairing H&S meetings

Measurement

- Rather measure predictors of performance (Performance) than failures (Outcome)
- If H&S culture → H&S climate → H&S performance, then measure issues relative to the aspects
- If commitment, participation, and involvement are all relative, then measure issues relative to the aspects

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Managing H&S in the business of construction (1)

- Understanding of the 'dynamics' of H&S as opposed to the 'mechanics', among other: image; reputation; attractiveness of the business to clients; economics of H&S, and synergystic effect of optimum H&S
- H&S is a 'Board' issue
- It is a strategic as opposed to an operational issue
- It is addressed in strategic planning
- There is a vision – 'zero'!
- H&S is a 'sustainability of the organisation' issue
- H&S is used to 'position' the business
- H&S is an integral part of 'doing business'
- All functions / departments in the business contribute to H&S
- Management commitment, participation, and involvement
- Business reporting on H&S (corporate social responsibilty)

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Managing H&S in the business of construction (2)

- H&S is the first item on a 'board' or 'management' (business) meeting
- If H&S culture → H&S climate → H&S performance, then measure issues relative to the aspects at all levels

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