Centre for
Construction Work Health and Safety Research

Work Health and Safety Culture in the ACT Construction Industry

Final report

September 2017

RMIT UNIVERSITY

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This report was commissioned by the ACT Government's Chief Minister, Treasury and Economic Development Directorate through its Workplace Safety and Industrial Relations Division.

Authors
Helen Lingard, James Harley, Rita Zhang & Grainne Ryan

About the Centre for Construction Work Health and Safety Research

The Centre for Construction Work Health and Safety Research provides leading-edge, applied research to the construction and property industries. Our members are able to work with organisations to analyse health and safety (H&S) performance and identify opportunities for improvement. We can develop and evaluate innovative solutions, provide specialised H&S programs or undertake other research-based consulting activities. Our work addresses real-world H&S challenges and our strong international linkages provide a global perspective to our research.

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Executive summary

In 2012, the *Getting Home Safely* report was published following an inquiry into work health and safety (WHS) in the construction industry of the Australian Capital Territory (ACT). The report made 28 recommendations for a safer construction industry in the ACT and specifically recommended initiatives targeting the improvement of the industry's culture in order to drive better WHS outcomes.

In 2017, RMIT's Centre for Construction Work Health and Safety Research was engaged by the ACT Government to undertake a study to provide:

- a baseline understanding of the culture of the ACT construction industry with regard to WHS, and
- evidence relating to the impact and effectiveness of changes introduced since implementing the recommended measures from the *Getting Home Safely* report.

The study was undertaken using a mixed methods (qualitative and quantitative) research design. A baseline safety climate survey was undertaken to understand the prevailing culture in the ACT construction industry. The survey was conducted using a WHS climate assessment tool developed specifically for the construction industry. A total of 417 valid responses were received from participants employed by companies of different sizes, and engaged in different sectors of the ACT construction industry. The majority of the participants were frontline construction workers.

Four focus groups were also conducted (with key construction industry stakeholders) to gain a deeper understanding of the current state of WHS in the ACT construction industry. Focus groups also explored participants' perceptions of the changes to the industry's culture and WHS performance since the publication of the *Getting Home Safely* report. Focus group participants included a cross section of construction industry stakeholders, representing industry associations, unions, government and construction industry employers.

The *Getting Home Safely* report proposed a WHS performance target of 35% improvement in the serious injury rate within three years and further targets thereafter. Participants in the focus groups explained that the industry statistics (utilising lag indicators) are not always a reliable indicator of the state of WHS in the industry. They perceived a cultural improvement in levels of reporting of injury and incidents in the ACT construction industry since 2012.

Focus group participants also indicated that the industry culture has become more supportive of workers' safety than it was previously. However, they perceived that the industry culture in relation to the protection of construction workers' health has not kept pace with this improvement. In particular, issues of work-family balance and mental health were identified as being a significant problem for construction workers in the ACT.

The *Getting Home Safely* report acknowledged that businesses in the ACT construction industry are not homogeneous, and the WHS management framework should recognise the practical needs of varying sized businesses and the differing sectors. The safety climate survey results also showed that the maturity of organisational and workgroup cultures in the ACT construction industry remains 'patchy'.

Compared to larger and small organisations, workers employed by companies employing between 100 and 199 workers reported significantly less positive perceptions in relation to several dimensions

of safety climate at both organisational and workgroup levels. The focus group participants indicated that those medium-sized companies neither have the same level of influence over sub-contracted workers as the large contractors, nor use the informal and personalised management processes, which exist in smaller organisations and are perceived to be effective.

Safety climate scores in the commercial/industrial building sector of the industry were lower than other sectors for all dimensions of the organisational and workgroup safety climate. Issues relating to the intensification of work and challenges inherent in the management of subcontractors by principal contractors were identified in the focus groups in relation to commercial building work.

Safety climate scores for the residential sector were generally higher than the commercial/industrial building sector. Focus group participants suggested that this may reflect the fact that workers in the residential construction sector in the ACT have low expectations and awareness of WHS and perceive they are managing WHS more effectively than they actually are. Participants described this as, “you don’t know what you don’t know”.

Survey respondents who indicated they are employed by a subcontractor organisation also reported less positive perceptions of their organisational and workgroup safety climates than respondents in other employment categories. Focus group participants suggested that principal contractors’ management of subcontractors is an area for potential improvement. Principal contractors were regarded as being too ‘laissez-faire’ in their management of subcontractors.

Safety climate scores varied by workers’ trade. In particular, floor finishing and painting workers reported the lowest safety climate scores.

There were significant differences in safety climate perceptions between participants of different positions. Upper level managers had more positive perceptions of the safety climate than lower level managers, and lower level managers had more positive perceptions of the safety climate than frontline workers. These results suggest that there is a ‘disconnect’ between the way that workers at different levels perceive the emphasis placed on WHS and the quality of WHS management in construction organisations.

Focus group participants identified several areas in which they perceived the culture and WHS performance of the ACT construction industry has improved since the publication of the *Getting Home Safely* report. These are:

- an increase in reporting of WHS incidents and injuries
- greater client attention paid to WHS, and
- improved relationships between clients and contractors.

A number of the issues identified in the *Getting Home Safely* report as areas in need of improvement were identified by focus group participants as still being areas of concern. These are:

- the quality, effectiveness and consistency of WHS training
- the effectiveness of WHS management systems, and
- the effectiveness with which principal contractors manage subcontractors' WHS.

The safety climate survey and the focus group review provide a baseline against which the development of cultural maturity in the ACT construction industry can be assessed in the future.

Part 1: Introduction

The '*Getting Home Safely*' report

Following three deaths in the Australian Capital Territory (ACT) construction industry in 2012 the ACT Attorney General called on the ACT Work Safety Commissioner, Mark McCabe, to conduct an inquiry into compliance with, and application of work health and safety (WHS) laws in the ACT construction industry. An inquiry panel was established and a report was published in 2012 titled '*Getting Home Safely*". The *Getting Home Safely* report made 28 recommendations for a safer construction industry in the ACT. The recommendations were made to industry and the ACT government. The report specifically recommended initiatives which targeted the improvement of the industry's culture in order to drive better work health and safety (WHS) outcomes.

The Centre of Construction Work Health and Safety Research at RMIT was engaged by the ACT Government to undertake a mixed methods (qualitative and quantitative) analysis of the prevailing culture of the construction industry in the ACT. The aim of the study was to determine the extent to which this culture is supportive and enabling for WHS and also to understand how recommendations from the '*Getting Home Safely'* report have been operationalised within the industry and the effect of that implementation. The research aimed to provide the ACT Government with:

- a baseline understanding of the culture of the ACT construction industry with regard to WHS, and
- evidence relating to the impact and effectiveness of changes introduced since implementing the recommended measures from the *Getting Home Safely* report.

Using a WHS climate assessment tool developed specifically for the construction industry, Centre researchers collected data from workers in engaged in different sectors of the ACT construction industry. Workers employed in small, medium and large construction organisations were invited to participate in the survey. The WHS climate data provides a baseline assessment of the WHS climate in different parts of the Territory's construction industry.

Focus groups were also conducted with key industry stakeholders to explore specific issues in more detail.

This report is structured as follows:

- Part 2 provides a review of relevant literature relating to cultural influences on WHS and WHS climate
- Part 3 describes the methods used in the research
- Part 4 presents the results of the WHS climate survey
- Part 5 present an analysis of the data collected during the focus groups, and
- Part 6 presents a discussion of the key findings and draws conclusions from the study.

Part 2: Literature review

What is ‘safety culture’?

A feature of safety culture research is the lack of a clear and consistent definition of the concept (Hale, 2000). This has led to criticism that the term is mis-used (Strauch, 2015). For example, Silbey (2009) questioned the way that safety culture is used as a common explanation for incidents and as a suggested ‘quick fix’ for improving WHS performance. Reiman and Oedewald (2007, p. 748) similarly argue that safety culture has become “a catch-all concept” for psychological and human factors.

Some writers suggest all organisations have a ‘safety culture’ that can either be positive or negative, strong or weak, good or bad. Other writers describe ‘safety culture’ as a state of having achieved a total and overriding commitment to safety, which few organisations may ever achieve (Hopkins, 2006). Generally, cultural drivers of work health and safety (WHS) are understood to comprise the social forces within organisations that shape organisational members’ assumptions, beliefs, values and actions.

Research has found there is an inherent problem with treating a safety culture as something that sits aside from the broader organisational culture, or as a thing that an organisation either has or does not have.

Some writers argue that the definition of safety culture can be too narrow because it may not adequately capture all the organisational and social factors that are important to the healthy and safe operation of a workplace (Sorensen, 2002). Guldenmund (2000) has questioned whether there is such a thing as a ‘safety culture’ at all - as the term implies that a safety culture can be distinguished and separated from aspects of the broader organisational operating culture that can also have consequences for WHS. Instead, Guldenmund (2000) argues that it is more useful to try to understand how cultural drivers of WHS are embedded in organisational systems and structures. A focus on organisational culture potentially reveals the extent to which WHS is integrated into broader organisational work processes and decision making. Hale (2000) also adopts this line of argument, stating that it is more appropriate to talk about the (organisational) cultural influences on safety, rather than the presence or absence of a safety culture. Similarly Haukelid (2008) argues that ‘safety culture should not be something separate from – or in addition to – an organisational culture, but constitute an integrated part of this culture’ (p.417).

It is likely that WHS activities will be driven by all the basic assumptions that make up the organisation’s underlying culture – whether these are specially concerned with WHS or not. Antonsen (2009) writes: ‘there is no such thing as a “safety culture” but rather there are different traits of larger organisational culture that can affect the organisations’ safety levels’ (p.184). He argues work-related attitudes and behaviours should be analysed, and understood as being situated in a wider organisational context in which the organisational culture provides a shared frame of reference for meaning and action.

Given these arguments, we suggest it may be better to examine whether or not there is an organisational ‘culture for safety,’ rather than a safety culture.

Organisational 'culture for safety'

This interpretation positions WHS as an outcome (rather than a subset) of the broader organisational culture.

Schein (2010) defines culture as

> '… a pattern of shared basic assumptions learned by a group as it solved its problems of external adaption and internal integration, which has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems' (Schein, 2010, p. 18).

Understanding culture is useful because '[culture] is a powerful, latent, and often unconscious set of forces that determine our individual and collective behaviour, ways of perceiving, thought patterns, and values' (Schein, 1999, p. 14).

Building a culture for safety assumes that organisational cultures have characteristics that impact on the way WHS is prioritised and enacted within workplaces. Guldenmund (2000) argues that the basic assumptions underlying the operation of an organisation have a profound impact on the effectiveness with which WHS is managed in that organisation. Accordingly, a culture for safety may be defined as 'those aspects of the organisational culture which will impact on attitudes and behaviours related to increasing or decreasing risk' (Guldenmund, 2000, p.251).

Every organisation has a culture, which has the potential to impact on WHS. However, the way and extent to which organisational cultures impact WHS varies. Organisational cultures can impact WHS in positive or negative ways, and the level of the impact can be high or low. WHS might be a core value in some organisations, but not in others.

An organisation's prevailing cultural factors can play a significant role in shaping and enabling good WHS outcomes. It can ultimately determine the effectiveness and performance of the organisation's WHS system.

Understanding organisational culture as multi-layered phenomenon

According to Schein (2010), confusion arises as a result of the failure to recognise the different layers at which organisational culture operates. Schein (2010) developed a three-layer model of organisational culture based on 'degree to which the culture phenomenon is visible to the observer' (Schein, 2010, p. 23).

Schein (2010) proposed organisational cultures have three layers:

- the deepest layer (i.e., basic assumptions)
- an intermediate layer (i.e., espoused beliefs and values), and
- the surface layer (i.e., behaviours and artefacts).

Basic assumptions at the deepest level of an organisation's culture shape the way that organisation members interpret and interact with the environment around them. Some of these basic assumptions might not be specifically concerned with WHS, but they might still have some WHS impact. For example, Guldenmund (2000) suggests that a basic assumption that written rules and procedures are not helpful is not specifically related to WHS, but will likely influence the compliance with rules and

procedures, which will ultimately have an impact on WHS. Guldenmund (2000) argues that these basic assumptions are so deep rooted and the 'truth' about them may be so self-evident that they are not easily recognised or expressed by people within an organisation.

The intermediate layer in Schein's model, i.e., espoused beliefs and values, relates to people's beliefs and attitudes, while the surface layer reflects easily observed behaviours and artefacts.

Clarke (2000) provides examples of WHS-related basic assumptions, beliefs and espoused values, and behaviours and artefacts. The examples are reproduced in Table 2.1.

Table 2.1: Aspects of organisational safety culture (Clarke, 2000)

Surface level (norms and artefacts)	Intermediate level (beliefs and values)	Deepest level (core assumptions)
Safety policy documents Safety information system Safety training Safety rules and procedures Quality and maintenance of equipment Accident reporting Near miss/incident reporting Safety representatives and committees Managers actions (e.g. setting an example on safety, encouraging safety suggestions, consistency between policy and practice) Supervisors' actions (e.g. safety discipline, elevating safety concerns to management)	Managers' attitudes (e.g. safety vs. production priority, blaming workers for accidents) Supervisors' attitudes (e.g. supervisors' fairness in dealing with safety complaints) Workers' safety attitudes Personal beliefs about risk/safety Personal involvement Individual responsibility Evaluation of safety measures Evaluation of work environment	Understanding that safety is the overriding priority

An example of multiple layers of culture is illustrated in recent research undertaken by Sherratt et al. (2013) in the UK construction industry. They analysed the way that WHS is written and spoken about at construction sites. WHS signage, WHS related communication with workers, safety manuals and memos (artefacts in Schein's three layer model) reflected an 'enforcement' orientation to managing WHS. These artefacts reflect a belief that a command and control management style is needed to ensure WHS compliance (an intermediate level belief in Schein's model). This belief, and the artefacts that flow from it, can be traced to a more basic assumption about the need for external rules and enforcement to regulate behaviour. Sherratt et al. (2013) highlight the ambiguities that arose because the enforcement oriented organisational culture was sometimes at odds with statements in corporate WHS policies about worker engagement in, and ownership of, WHS. They also note that modern WHS management theory suggests an engagement oriented culture may be a more effective way to produce positive organisational outcomes.

In a study of cultural influences on safety in a nuclear power plant, Schöbel et al. (2017) similarly showed inconsistencies between organisational artefacts and espoused values. They suggest that these inconsistencies provide clues about important deeper levels of the organisational culture (i.e. basic assumptions). In one example, a clear inconsistency was observed between workers'

perceptions of a discrepancy between the espoused value of “employees are not blamed for reporting errors” and managers’ behaviour. The analysis revealed that, although the reporting system was based on an assurance of anonymity and the error analysis focussed on organisational learning not sanctions, messages asserting blame were unconsciously sent from managers through ways that were not directly related to the reporting system. Managers discussed reported errors at daily morning meetings and, in doing so, individuals and departments were identified and subsequently blamed for system disruptions. The underlying blaming culture (evident in the daily meetings), produced a substantial negative impact on the operation of the reporting system that sought to encourage honest and open reporting.

Guldenmund (2000) argues that basic assumptions reflect the core of an organisation’s culture, while the two outer ‘layers’ (beliefs and espoused values, and artefacts and behaviours) are more appropriately described as the WHS climate. Following Guldenmund (2000), WHS climate might usefully be viewed as the ‘surface’ expression of the culture that has the potential to influence WHS. The distinction between culture and climate, as reflecting layers of varying depth, has been adopted by a number of WHS culture/climate researchers (for example, Havold, 2010).

Understanding cultural influences as multilayered is helpful in distinguishing between the underlying organisational culture and the WHS climate that prevails at a given point in time.

Culture and climate

The terms ‘safety culture’ and ‘safety climate’ are closely related and have some overlap which can cause confusion if they are used interchangeably.

Glendon and Stanton (2000) suggest that safety culture and safety climate have conceptual differences and should be distinguished from one another. Thus:

- culture is understood to represent a deep, relatively stable system of underlying values
- climate is a surface feature of a culture at a given point in time, it can change rapidly, and
- methods of inquiry into safety culture and climate also differ.

A culture for safety is viewed as a relatively enduring characteristic of an organisation that is reflected in a consistent manner of dealing with WHS issues. In contrast, safety climate is viewed as a ‘snapshot’ of the culture for safety at a given point in time and is believed to be relatively easily changed, for example through deliberate organisational interventions, such as safety training and participative decision (Beus et al. 2010).

Wiegmann et al. (2004) suggest that an organisational culture for safety is analogous to the underlying personality of the organisation, while the safety climate may be better seen as the organisational ‘mood’ at a particular point in time.

Zohar defines safety climate to be ‘a summary of molar perceptions that employees share about their work environments … a frame of reference for behaviours’ (Zohar, 1980, p96). Safety climate perceptions emerge from ongoing social interactions, through which employees share personal experience and make sense of the extent to which safety is emphasised by management relative to other competing goals such as production and cost (Hofmann et al., 2017). As such, safety climate is a shared and agreed upon cognition among employees regarding the relative priority placed on safety.

The state of the safety climate provides important information about 'what' is happening in an organisation at a particular point in time, but understanding the organisation culture can explain 'why' WHS is enacted in a particular way.

Despite the theoretical difference between safety climate and safety culture, both are important to an organisation's WHS capability, i.e. the capacity of an organisation to maintain safe operations in a dynamic and uncertain operating environment (Casey et al., 2017).

Zohar and Hofmann (2012) propose that climate acts as a social-cognitive mechanism for understanding the complex phenomenon of culture. Thus, if employees consistently observe that production, schedule, and cost are prioritised over WHS, then the interaction among these climate facets and the relative prioritisation emerging from these interactions will be used to make sense of the deeper level cultural elements of an organisational environment (Hofmann et al., 2017).

The deeper organisational culture can also affect the operation and impact of the safety climate. In a study of 32 organisations, Petitta et al. (2017) found that an autocratic and bureaucratic culture suppressed the effect of safety climate and attenuated the relationship between supervisors' behaviour and employee compliance with WHS requirements.

Why climate is important and its impact on WHS

Cooper and Phillips (2004) suggest that the concept of safety climate is important insofar as it predicts WHS performance at a future point in time. Researchers have empirically investigated the relationship between safety climate and various aspects of safety related behaviour and/or safety performance. Generally (but not always), the results have supported a link between safety climate and performance. For example, Tharaldsen et al. (2008) report a significant inverse correlation between safety climate perceptions and incident rates in offshore oil platforms. Varonen and Mattila (2000) similarly report that the incident rate in a sample of eight wood processing companies was lower when the safety climate measures were high for factors such as organisational responsibility and safety supervision. These studies suggest that safety climate can predict incident occurrence. Research has also shown that safety climate, together with other forms of climate (e.g. service climate), conjointly affect employees' WHS-related attitudes and behaviours (Jiang and Probst, 2015).

Some researchers have relied on self-reported measures of WHS performance, again generally supporting a positive relationship between safety climate and performance. For example, Mearns et al. (2003) report that in the offshore oil industry, favourable safety climate scores are associated with installations that have a lower proportion of self-reported incident involvement. Griffin and Neal (2000) and Neal and Griffin (2002) examined the relationship between safety climate and two types of self-reported safety behaviour: safety compliance and participation. They report that safety climate is positively related to both self-reported compliance with safety procedures, and self-reported voluntary participation in safety related activities, but that the In a study of over 6,000 healthcare workers, Bronkhorst (2015) also found a positive link between safety climate and employees' WHS-related behaviour.

Evidence from longitudinal studies has also emerged to indicate that safety climate is a valid leading indicator of WHS. That is, safety climate measured at one point in time statistically predicts the occurrence of incidents or injuries at a subsequent point in time (see, for example: Zohar 2000; Wallace et al., 2006; Probst, 2015).

In a multi-level climate study, Huang et al (2017) found that organisational level safety climate and group level safety climate interacted in predicting workers' safety behaviour. Specifically, workers reported the highest levels of safety behaviour when both organisational and group level safety climates are high. In the circumstance where group safety climate is low, a positive organisational safety climate is able to enhance the relationship between group safety climate and safety behaviours, as well as increase the levels of safety behaviour. Similarly, when organisational safety climate is low, a positive group safety climate can act as a supplement. This is an important finding as it indicates that a company that concentrates solely on either group or organisational level safety can improve safety behaviours overall but also, as long as both levels are viewed positively, the company will have the best WHS-related behaviour outcomes.

'Top down' or 'bottom up' phenomenon

There is disagreement from writers about whether a culture for safety should be understood as a 'top down' or 'bottom up' phenomenon.

A culture for safety is sometimes viewed as an ideal state that organisations should strive to achieve. In this view, the culture is seen as something that:

- an organisation 'has' (Henriqson et al., 2014)
- sits aside from the broader organisational culture, and
- is something that can be readily manipulated and used to support organisational WHS strategies (Glendon & Stanton, 2000).

Seen in this way, a culture for safety is initiated by organisational leaders and amenable to top down control. The culture for safety is imbued with pragmatic meanings and seen as an object for understanding how organisational members signify risk and WHS in order to generate a sense of commitment and motivation that guides and shapes behaviour (Henriqson et al., 2014).

Implicit in this approach is the assumption that managers should develop a unitary culture for safety that is aligned with managerial ideology and strategy (Glendon & Stanton, 2000).

Proponents of this approach assume that, in an ideal culture, all members of the organisation will develop shared ideas and beliefs about WHS risks and incidents. A top down perspective on safety culture rarely recognises that different cultures can coexist within a single organisation. If writers taking this perspective do recognise the existence of multiple cultures, they frame such diversity as a cultural weakness because the 'ideal' situation is believed to be a strong and unitary culture in which every member of the organisation shares similar beliefs and ideas about what is safe and what is not. Thus, one culture (usually that of management) is seen to be dominant and other cultures, where they are recognised to exist within an organisation, are subordinated (Richter & Koch, 2004).

An alternative approach views the organisational culture for safety as something that an organisation 'does' (Henriqson et al., 2014). This perspective considers culture as an emergent property of an organisation that occurs natutally through dynamic and evolving relationships and transactions (Ellis, 2014; Schöbel et al, 2017). See in this way a culture for safety is not 'owned' by the organisation but socially constructed by organisational members – that is, it grows from the bottom up. Culture is understood as shared patterns of meaning developed by members of an organisation (or organisational sub-unit) and used to interpret their beliefs, behaviour and collective identity (Naevetsad, 2009).

This view assumes that organisational cultures have characteristics that impact on the way WHS are prioritised and enacted within workplaces. Safety is positioned as an outcome (rather than a subset) of the organisational culture. Following this view, a safety culture can neither be "bolted on" to an organisation nor easily engineered through managerial intervention.

The bottom up view also acknowledges that multiple sub-cultures can co-exist within a single organisation, which has been described by Richter and Koch (2004) as a 'differentiation' orientation towards safety culture. According to Richter and Koch (2004), conflict can arise between the different perspectives adopted by people within an organisation as is outlined in Table 2.2.

Table 2.2: Differing perspectives that drive workers' responses to WHS (Richter and Koch, 2004)

The producers' perspective	This perspective drives organisational members to produce a product of quality that is consistent with their acquired professional or technical skills and values.
The wage workers' perspective	This perspective drives organisational members to pursue decent pay, co-determination and job security.
The safety perspective	This perspective drives workers to preserve their long term ability to work and cope with emotional aspects of risk taking.

A differentiation approach to understanding organisational culture emphasises a lack of consensus in interpretations, experiences and assignments of meaning in organisations (Richter and Koch, 2004).

Some writers identify diversity of viewpoints and perspectives as being an opportunity, rather than a problem. For example, Blewett et al. (2012) argue that multiple interpretations of safety will always exist within an organisation and understanding and considering those views and interpretations in the design and implementation of change can help organisations to deal with problems, challenges and daily frustrations more effectively.

Parker (2000) describes cultures as forming around three types of social grouping (which can also overlap within an organisational context):

- spatial/functional (e.g., buildings, sites or departments)
- generational, and
- occupational/professional (e.g. manager, supervisor or worker, trade).

Walker (2010) illustrates how a local 'counterculture' for safety developed in an agricultural food production company. The management of the company placed a strong emphasis on production and profit, while developing formal WHS procedures that were highly bureaucratic and sometimes inapplicable to the physical workplace (i.e., agricultural farmland). Skilled workers with knowledge of their own workplace and practices worked closely and developed socially constructing meanings of danger, injury and safety for themselves. The local counterculture challenged the formal safety practices imposed by the organisation, yet was highly effective in ensuring the workers' safety.

Understanding safety culture/climate as multi-level phenomenon

Modern organisations are large and complex and it may be an over-simplification to assume that a single unifying organisational culture/climate will develop. Mearns (2009) argues that a single level perspective does not adequately reflect the state of WHS within an organisation because

organisations are multi-level systems. Within a single organisation, there is significant variation in the quality of WHS implementation between organisational sub-units (Sparer and Dennerlein, 2013).

Most studies of variation in safety culture/climate within organisations have focussed on existing hierarchies or functional units. These studies have investigated the similarities within organisational groups and the differences between them. However, a number of researchers caution against assuming that cultural differences will necessarily reflect existing social structures and groupings within organisations.

Richter and Koch (2004) carried out an in-depth ethnographic analysis of safety culture at a Danish manufacturing facility. They concluded that distinct sub-cultures were present but that these sub-cultures cut across professional, occupational and departmental boundaries. The implication is that facets of organisational safety culture link to higher order culture factors beyond the organisation itself, like industrial culture, socio-economic status, ethnicity and national culture.

Research has also revealed that people engaged at different hierarchical levels within an organisation can develop varying understandings of WHS. A number of studies have found that managerial employees perceive the safety climate within an organisation to be more positive than other employees. In the resources sector, Mearns et al. (1998) report the existence of fragmented safety subcultures based on levels of seniority and occupation. This led Mearns et al. to suggest that more in-depth analysis is needed of how social groups form and interact to develop distinct beliefs about risk and safety. Other researchers have found similar evidence to support the existence of safety subcultures within organisations (Arboleda et al., 2003; Cox and Cheyne, 2000; Harvey et al., 2002; Prussia et al., 2003).

Assessing culture or the safety climate at the whole organisation level can mask subtle but important differences that are relevant to organisational WHS performance. In reality, sub-cultures and localised climates are likely to develop in different parts of an organisation. This means it is useful to evaluate the culture or climate at different levels and in different parts of an organisation's operations (Zohar, 2008; Zohar, 2013; Petitta, et al., 2017).

Organisational level

Policies and processes at the organisation level establish the context within which WHS is enacted within organisational sub-units (for example, in departments, projects or workgroups). However, there is considerable scope for sub-units in an organisation to develop distinct cultural characteristics.

Zohar (2000) proposed two levels of safety climate:

- that arising from the formal organisation-wide policies and procedures established by top management, and
- that arising from the safety practices associated with implementing company policies and procedures within workgroups.

Zohar tested this proposition in a manufacturing context and confirmed that workgroup members:

- develop a shared set of perceptions of supervisory safety practices, and
- discriminate between perceptions of the organisation's safety climate and the workgroup safety climate.

Research also shows that the development and influence of the safety climate cascades down through multiple layers of management within an organisation through a process of collective social learning. Thus, Tucker et al. (2016) report that that Chief Executive Officers have a direct influence on workplace safety, although their influence relies on the collective efforts of managers lower down in the organisation whose safety-related actions are influenced by perceptions of the top management team (TMT) safety climate. Thus executives' experiences of a TMT safety climate (driven by the CEO) are positively related to supervisors' perceptions of the organisational safety climate, which, in turn, influences the extent to which workers believe supervisors are collectively supportive of safety.

Group level

Construction projects are subsystems of an organisation's larger portfolio of work (Blismas et al., 2004a; Blismas et al, 2004b). Each project is delivered through a temporary and often complex organisational structure in which professional services are brought in under a variety of contractual arrangements, and construction work is outsourced to a general contractor and a multiplicity of trade contractors. Uniformity of WHS practices cannot be assumed within a single organisation because work is highly decentralised and local managers (project managers and workgroup supervisors) necessarily exercise discretion in deciding how to implement organisational policies and procedures (see Aritua et al., 2009). Consequently, to understand the state of the safety culture (or climate) in the 'projectised' construction industry, consideration should be given to cultural aspects of the organisation and local work groups.

The concept that culture is a shared meaning that naturally emerges through interaction between members of a social group acknowledges that multiple cultures can coexist and that non-leaders in organisations can be a source of culture. Projects are delivered through temporary multidisciplinary teams. Each organisation involved in a project will have its own organisational culture and team members will bring their assumptions, beliefs and values to the project.

There is a growing recognition that workgroups within an organisation often develop distinct sub-cultures that serve as strong drivers of WHS behaviour and performance (Zohar, 2000).

Zohar suggests that group level safety climates relate to patterns of supervisory safety practices, or ways in which organisation level policies are locally implemented within each workgroup or sub-unit. According to Hofmann et al. (2017), local management (e.g. supervisors) make many "micro-decisions" in the day-to-day operations with their discretions to decide how to implement safety policies and procedures as well as how to prioritise safety when competing goals are in tension.

Group level safety climates are reported to influence workgroups' safety performance through shaping members' safety behaviour (Zohar, 2002b). Lingard et al. (2009) tested whether Australian construction workers discriminate between group level and organisational safety climates. They found that distinct workgroup safety climates are a feature of the Australian construction industry, and are driven by supervisors' and co-workers' actions and expectations. Guldenmund (2007) identifies the important role played by supervisors in shaping workers' views about what is important in an organisation: "The important role of supervisors as the tender of organisational culture in creating congruence by mixing organisation, group and individual interests into a meaningful whole cannot be overstated."

It is also possible for the safety climate to vary in strength and quality at different levels within the same organisation. For example, workers may perceive:

- their supervisors to be strongly committed to WHS (a group level expression of culture/climate), and
- senior managers to be less committed to WHS (an organisation level expression of culture/commitment).

Several researchers have also identified differences in safety climate perceptions among groups of employees engaged under different types of employment contract within the same organisation (Tharaldsen et al., 2008, Glendon and Litherland, 2001)

The development of a culture for safety

Organisational cultures are understood to be amenable to change (Glendon and Stanton, 2000). Major organisational changes (like changes in leadership, or introduction of a new WHS management system) are likely to impact an organisation's culture and its WHS impact.

However, the lack of a common inter-level understanding of the importance of WHS within an organisation can act as an impediment to the development of a culture for WHS. This can arise when two groups (for example, managers and workers):

- wrongly perceive agreement between their own safety values, beliefs or attitudes and the safety values, beliefs or attitudes of the other group
- hold negative stereotypes about each other's' safety values, beliefs or attitudes, or
- have inaccurate perceptions of the others' safety values, beliefs or attitudes (Lingard & Blismas, 2006).

In the UK rail industry, Clarke (1999) examined the safety beliefs and attitudes of senior managers, supervisors and train drivers. Three points can be made about organisational culture and safety arising from Clarke's study:

- supervisors play a critical role in communicating safety messages in organisations. It is supervisors who communicate 'what managers really want'
- managers' behaviour may sometimes be inconsistent with their espoused values about safety. This results in ambiguity about how safety should be treated, and
- employees will interpret what managers say and do over a period of time and form their own opinions about the relative priority of safety. These interpretations will become significant cultural drivers for safety-related behaviour within an organisation.

Hudson (2007) suggests that merely defining and describing the components of a culture for safety is insufficient to help organisations develop such cultures. He advocates understanding cultural influences on safety using an evolutionary model in which organisations are placed on a continuum from those with advanced cultures for safety to those with cultures at less advanced stages of development. Hudson argues that defining intermediate stages can assist organisations to engage in culture change in manageable (and measurable) steps.

Hudson (2007) identifies levels of cultural maturity ranging from a pathological culture to a generative culture for safety, as shown in Table 2.3. Throughout the development of cultural maturity, the organisation would become increasingly informed about WHS and show increasing levels of internal trust and accountability for WHS.

Table 2.3: Hudson's five-level framework

1. Pathological	Who cares about safety as long as we are not caught?
2. Reactive	Safety is important: we do a lot every time we have an accident.
3. Calculative	We have systems in place to manage all hazards.
4. Proactive	We try to anticipate safety problems before they arise.
5. Generative	Work health and safety is how we do business around here.

Culture/climate in the construction industry, and the impacts on WHS

Cultural influences on construction WHS

The construction industry is different to many other industries in that it is project-based and project teams form a temporary coalition to deliver a bespoke product (i.e., building or other facility) for a single client. There is a heavy reliance on subcontracting and a prevalence of small-to-medium sized firms. Contracts are typically awarded on the basis of competitive tendering, which can create pressures to 'cut corners' with regard to WHS. Fragmentation in the supply network also creates challenges in developing a seamless and consistent approach to the management of WHS, and project coalitions will often include organisations operating at varying levels of cultural maturity with regard to WHS.

There is a growing interest in understanding how the prevailing industry culture and organisational cultures of construction firms impact WHS. Feng et al. (2014) explain that numerous models of safety culture have been developed and applied in the construction industry. Feng et al. (2014) operationalise safety culture as comprising: management commitment, communication and feedback, supervisory environment, supportive environment, work pressure, personal appreciation of risk, training and competence level, safety rules and procedures, workers' involvement and appraisal of work hazards. A safety culture survey was administered to construction workers in Singapore and the results revealed that safety culture acts as the linking mechanism through which an organisation's voluntary investment in WHS translates to improved performance, in terms of reduced incident rates (Feng et al., 2014). That is, when construction firms invest in WHS beyond a level of minimal compliance, they develop stronger and more supportive cultures that drive performance improvements (Feng et al., 2014).

Choudhry et al. (2007) argue that a positive and mature culture for safety is important to the improvement of WHS in construction. In particular, they position organisations with such a culture as being proactive in their approach to WHS. Choudhry et al. (2007) develop a model of culture applicable to the construction context that comprises perceptual, psychological, behavioural, and managerial factors. Thus, a culture for safety is regarded holistically as the product of an interaction between workers' WHS knowledge and perceptions of the work environment, features of the environment, including management actions performed in relation to WHS and observable aspects of WHS behaviour. Choudhry et al. (2007) argue that understanding cultural influences shaping WHS in construction requires the application of different methods of data collection and analysis, including surveys, focus groups and document analysis.

Chinda and Mohamed (2008) drew on a European Quality Management Excellence Model to identify enablers of a culture for safety in the construction context. They developed a construction safety culture (CSC) model that identified six constructs (five enablers and one set of goals) and attempted to allocate points to reflect the relative contribution of each enabler to the achievement of goals. Enablers of WHS were leadership, people, partnerships and resources, policy and strategy, and processes. Subsequent work by Mohamed and Chinda (2011) sought to examine the dynamic interactions between the enablers and goals contained in the original CSC model. They developed a series of causal loop diagrams to show how factors including managers' safety commitment, resource requirements, worker participation, the cost of incidents, an effective WHS policy and the implementation of WHS initiatives in a construction organisational context interact with one another to produce WHS outcomes. In particular, Mohammed and Chinda (2011) undertook simulation modelling on the basis of which they concluded that focusing on improving safety leadership could help speed up organisations progression towards higher levels of cultural maturity with regard to WHS.

Biggs et al. (2013) suggest that cultural influences on WHS may differ in construction compared to other industries, due to the project-based nature of work. In a study of leaders' perceptions of culture in a large Australian construction organisation, Biggs et al. (2013) report that values, beliefs and attitudes (often thought of as core components of culture) were considered to be less important than managerial behaviour. In particular, the way in which influential leaders actively reinforce WHS standards when interacting with project personnel was considered to be a key component of a culture for safety in the construction context. Worker engagement and involvement in decision-making about WHS was also identified as being a key factor contributing to a culture for safety in the construction environment. Biggs et al. (2013) also identified barriers to the development of a culture for safety in construction. These included production and cost pressures, and workload and time pressures. These competing priorities were most acutely experienced by middle managers and supervisors who can experience role-conflict in the face of competing project goals. The management of subcontractors was similarly identified as a challenge to the development of a culture for safety. This was identified not just in terms of the transience of the workforce, but in terms of achieving cultural integration in an environment in which subcontractors have varying levels of WHS competence. It is noteworthy that leaders in the Australian construction organisation expressed a concern that the organisation's high WHS standards could result in them failing to win work if contractor selection decisions were based solely on price competition. This observation reflects the important role played by construction clients in driving cultures that support and enable WHS in the construction projects they procure (Huang and Hinze, 2006).

Cultural influences on WHS have been assessed in the construction industry in a number of different ways, For example, Mohamed (2003) developed a Balanced Scorecard tool to benchmark organisational safety culture. Mohamed (2003) argued that this Balanced Scorecard approach could provide a medium to translate an organisation's WHS policy into a clear set of goals across four perspectives: management, operational, customer, and learning. These goals could then be further translated into a system of performance measurement that would allow organisations to engage in the strategic management of their organisational culture and performance. Importantly, Mohamed incorporated different perspectives into the Balanced Scorecard approach to reflect the objectives and expectations of different stakeholder groups in construction projects.

Molenaar et al. (2009) undertook research to quantify the relationship between corporate culture and WHS performance in the construction industry. A survey was administered in three US-based construction companies with above average safety records. Subsequent statistical analysis provides evidence of links between aspects of the corporate culture and WHS performance (Molenaar et al., 2009). Molenaar et al. (2009) used a multi-attribute model of corporate culture, measuring three

distinct components - people, process, and values. People aspects were: the role of top management, the role of field personnel and subcontractor relationships. Process aspects were: the attributes of the safety plan, assessment and change of the safety program, the provision of safety training and education, the application of safety incentives and the application of disincentives (punishments) for poor safety performance. Value aspects were: safety commitment and behaviour-based safety. Molenaar et al. (2009) reported that five latent variables described the corporate safety culture in their analysis. These were: a company's safety commitment; safety incentives that are offered to field personal for safe performance, subcontractor involvement in the company culture, safety accountability and dedication among project-based personnel, and disincentives for unsafe behaviours. They concluded that, at least in the US construction industry, these characteristics of an organisational culture are statistical indicators for organisational WHS performance. Importantly, subcontractor involvement had a negative relationship with WHS performance, while all the other factors were positively linked to WHS performance. Molenaar et al. (2009) explain this in terms of challenges inherent in creating a unified cultural approach to WHS in the context of subcontracting. They also observe that the company with the highest level of self-performed work in their analysis had the best culture for safety and WHS performance.

Cultural differentiation in construction

Given the complexity of supply networks and hierarchical nature of construction projects, it is not surprising that organisational and project cultures, and performance have been identified as being 'patchy' within construction organisations. Lingard and Blismas (2006) argued that seeing WHS from the perspective of others is important for the development of shared mental models in relation to WHS in construction project teams.

Gherardi et al. (1998) show how construction organisations have multiple cultures with the potential to impact WHS as different professional groups experience and make sense of WHS and danger in different ways. Gherardi et al. (1998) examined the accounts of workplace incidents among employees in a medium-sized Italian construction organisation. Engineers explained accidents as following a simple linear causal pathway and tended to conceptualise problems in abstract terms (e.g. human error, economic factors or production pressures). In contrast, the causal reasoning of site managers focused on multi-dimensional factors with much greater reference to situated site practices and the synchronicity of events. Gherardi et al, highlight the implications for these two world views for the design of WHS processes. Engineers tended to favour top-down management processes for planning, controlling and preventing things from going wrong, site managers viewed safety in much more relational terms. Their approach was more protection than prevention oriented and they emphasised the importance of good and balanced social relations, giving and receiving trust and maintaining constant awareness of and responsiveness to the work environment. Gherardi et al. (1998) argue that a single homogeneous view of an organisational culture should not be assumed. Rather, it is valuable and important to understand differences in interpretation and priorities among organisational sub-cultures.

Research has also shown how employees at different organisation levels perceive WHS differently in the same organisation or project environment. Fung et al. (2005) explored cultural divergences between construction personnel at varying levels of employment, i.e., top management, supervisory staff and frontline workers. In their study Fung et al. (2005) undertook a survey to explore perceptions of WHS culture and performance. They used a culture survey tool developed by the UK Health and Safety Executive and a subsequent factor analysis of the data produced eight testable factors relating to WHS. These were: organisational commitment and communication, line management commitment, supervisors' role, personal role, workers' influence, risk taking behaviour, obstacles to

safe behaviour and incident reporting. Correlation analysis revealed these factors were significantly inter-related. Importantly, managers, supervisors and workers had significantly divergent perceptions of these factors. In particular, managers and workers differed significantly in their perceptions of WHS. Managers generally perceived the state of WHS to be more positive than did workers.

Gilkey et al. (2012) undertook a similar study to that of Fung et al. (2005) in the residential construction sector in the USA. They administered a Safety Culture and Risk Perception Survey to employees or subcontractors. Managers also completed the survey. Gilkey et al. (2012) report that managers appraised the overall safety culture more positively than workers. Managers also perceived a higher level of management commitment to WHS than did workers (Gilkey et al., 2012).

Similar findings are reported in very large projects in the commercial sector of the US construction industry. For example, Gittleman et al. (2010) examined safety climate perceptions at four levels in a very large commercial construction project. These were senior management, superintendents, supervisors, and craft workers. This study also found that senior managers and superintendents (frontline leaders) rated the safety climate at least 20 per cent more positively than workers (Gittleman et al., 2010). Gittleman et al. (2010) also report differences in perceptions regarding the priority of safety on the job, with a nine per cent difference between management and workers' mean scores.

These findings highlight a need to understand cultural influences on WHS from multiple perspectives.

Safety climate studies in construction

Safety climate studies are increasingly used to understand the environmental and ecological factors that impact WHS in construction organisations and projects (Gao et al., 2016). Research has also linked safety climate perceptions to aspects of subjective or objectively measured WHS performance. For example, Choudhry et al. (2009) report two safety climate factors, i.e., management commitment and employee involvement, and inappropriate safety procedures and work practices as being significant contributors to WHS performance as perceived by construction workers. In the residential construction sector in the US, Arcury et al. (2012; 2015) also report work safety climate is significantly linked to self-reported safe work practices and use of personal protective equipment. However, to test for causal relationships multi-wave longitudinal studies are required. These are relatively rare but, in a notable exception, Tholén et al. (2013) undertook a multi-wave safety climate study in a Swedish road construction project. Tholén et al. (2013) report that safety climate exerted a lagged effect on individual workers' safety behaviour. But the study also revealed a reciprocal relationship in which safety behaviour also influenced safety climate. Tholén et al. (2013) explain these results by suggesting that a positive safety climate is an important predictor for good safety performance but, in turn, good safety performance can also improve the safety climate. This virtuous circle could play an important role in achieving sustained continuous improvement of WHS in the construction context.

Research in the construction industry has revealed how factors in the external institutional environment in which a construction firm operates can shape facets of the safety climate. For example, He et al. (2016) used institutional theory to investigate the way that coercive, mimetic and normative pressures to conform were linked to various facets of a construction organisation's safety climate. He et al. (2016) found that coercive pressures arising from compulsory safety requirements (such as those imposed by government departments or industry associations) were statistically significantly linked to safety commitment and employee involvement and the applicability of safety procedures and work practices. Mimetic pressures to copy or adopt similar or WHS practices to organisations perceived to be successful were linked to safety commitment and employee involvement, applicability of safety procedures and work practices, and the perception of safety

responsibilities in an organisation. Finally, normative pressures to conform to standardised WHS practices in pursuit of legitimacy were linked to safety commitment and employee involvement. Although He et al. (2016) conducted their research in the construction industry in China; it is highly likely that institutional pressures also play a role in shaping the safety climates and WHS-related behaviour of construction organisations in different construction markets.

In construction, as in other industries, management commitment to safety is one of the most frequently measured dimensions of the safety climate (Guo et al., 2016). In the US construction industry, Pinion et al. (2017) report that management commitment to safety is positively linked to workers' perceived level of job control. Pinion et al. (2017) argue that, because jobs that are high in demands and low in control are associated with low safety citizenship behaviour, increasing workers' job control has the potential to improve both the safety climate and performance. The links between management commitment to safety and WHS performance have been widely discussed but recent research in the construction industry of New Zealand revealed that the effect of management commitment on workers' safety motivation and knowledge is fully mediated by social support. This means the level of social support workers experience in their work environment is the conduit through which managers communicate WHS values and priorities (Guo et al., 2016). Guo et al. also report that production pressures were directly, significantly and negatively linked to construction workers' safety knowledge, safety motivation, safety compliance and safety participation. This finding provides evidence for the need for more careful consideration of WHS when resourcing and scheduling construction work.

While the majority of studies have focussed on measuring the ***organisational*** safety climates, (and assuming this is homogeneous), there is emerging evidence that distinct group-level safety climates develop within construction organisations. For example, Glendon and Litherland (2001) reported significant between-group differences in safety climate within an Australian road construction and maintenance organisation. Lingard et al. (2009) also report that subcontracted workgroups develop unique and distinct safety climates in the Australian construction industry.

Subcontracting is a key feature of the construction industry, which is known to present significant challenges in the management of WHS. In this context, workers involved in subcontracted companies are only loosely connected with the principal contractor and relatively isolated from their own company, which could affect the development and impact of the safety climate (Melia et al., 2008). In construction there is likely to be a particularly strong connection between group-level safety climate and safety performance owing to the multi-tiered subcontracting system and prevalence of semi-autonomous workgroups. In this context, the influence of immediate supervisors and co-workers is likely to be strong, relative to that of senior management.

Facets of the group safety climate have been linked to subcontractors' safety behaviour. For example, Choudhry and Fang (2008) report that, when co-workers and supervisors are perceived to be unsupportive of safe behaviour, subcontracted construction workers are more likely to adopt unsafe work practices. Similarly, Melia et al. (2008) report that workers' perceptions of their co-workers' safety responses were linked to their self-reported safety behaviours in independent Chinese and Spanish construction samples.

Consistent with the view that group-level safety climates are likely to be a stronger, more proximal, predictor of safety performance than organisational safety climate, group safety climate has also been found to mediate the relationship between organisational safety climate and the injury frequency rate of subcontracted workgroups in the Australian construction industry (Lingard et al., 2010).

Supervisors in the construction industry are reported to play a particularly important role because of the decentralised and non-routine nature of work. In a study undertaken in the commercial construction sector in Australia, Lingard et al. (2012) identify supervisors' safety leadership as an important linking mechanism between the organisational safety climate and safety performance. In the Danish construction industry, Kines et al. (2010) examined the frequency with which supervisors discuss WHS with workgroup members. They reported that supervisors interact very frequently with group members but that 85-97% of these exchanges involved discussing production issues. WHS topics were only raised in 6-16% of exchanges between supervisors and workers. They introduced a feedback based coaching program to encourage supervisors to increase the WHS content of their daily verbal exchanges with workers. This program significantly increased the frequency with which WHS was included in discussions between supervisors and workers (from 6% to 62% at one site).

Kines et al. (2010) also reported that workgroup safety performance and physical safety levels at the worksite were significantly improved as a result of the coaching program. The extent to which production was discussed in supervisor-worker exchanges did not reduce during this research, leading Kines et al. (2010) to conclude that increasing WHS communication does not reduce communication about other aspects of workgroup performance.

Safety culture at the London Olympic Park

The UK Health and Safety Laboratory undertook a detailed analysis of the cultural influences on WHS at the Olympic Park construction project in London. This analysis was commissioned by the UK Health and Safety Executive (HSE) and the Olympic Delivery Authority (ODA).

The ODA and its delivery partner mandated the use of a safety climate assessment tool (SCT) among companies working at the Park. The SCT assessed eight components to the safety climate:

1. Organisational commitment
2. Health and safety oriented behaviours
3. Health and safety trust
4. Usability of procedures
5. Engagement in health and safety
6. Peer group attitude
7. Resources for health and safety, and
8. Accident and near miss reporting.

SCT scores were analysed to provide a statistical overview of the safety climate (indicated by a mean score for each of the eight factors) of companies involved in the Olympic Park. The SCT scores across companies operating on the Olympic Park were much higher than the highest scores in the HSE's 'all industry' dataset.

Seven 'top performers' (i.e, companies with the most positive or improved SCT scores) were identified and selected to participate in developing a case study. Interviews and focus groups were conducted with these seven companies to collect qualitative data related to each of the SCT factors. The qualitative work aimed to understand how the 'top performers' achieved health and safety success.

Table 2.4 summarises the main themes identified for each component of safety climate. These themes were believed to have contributed to the development of a positive safety climate (and culture for safety) at the Olympic Park construction project.

Table 2.4: Safety climate components and related themes

1. Organisational commitment	
Productivity vs. safety *Visibility and approachability*	Management should prioritise health and safety and provide support to workers where conflicting pressures may arise. Management should be frequently visible on site and demonstrate their commitment to safety, leading by example or questioning unsafe behaviours. They should be approachable so that workers feel comfortable raising safety issues without worrying about being criticised.
2. Health and safety oriented behaviours	
Making safety personal *Health and safety campaigns* *Safety Observation/Focus on safe procedures*	Management should use campaigns and training courses that are relevant and appropriate to workers. Management use credible campaigns to enhance workers' commitment to healthy and safe behaviours, e.g. safety weeks. Management should maintain a focus on working to safe procedures on site, e.g. by using observation cards and regular inspections/site visits.
3. Health and safety trust	
Valuing the workforce *Reward and recognition* *'Just' consequences to actions*	Management should demonstrate that workers contributions through work and ideas are highly valued. Management should use incentive methods to recognise and reward their workers' contributions to health and safety, e.g. reporting incidents and near misses or making suggestions. Management should address unacceptable or unsafe behaviours by applying 'just' consequences to create a fair environment.
4. Usability of procedures	
Development of risk assessments as 'live' documents *Training* *Monitoring*	Management should ensure risk assessment documentation is subject to ongoing review and revision and is accessible to workers. Management should use various types of training to ensure employees' understanding of risk assessment documents. Management should use a number of systems for monitoring the ongoing relevance and appropriateness of the documents relating to work procedures or method statements.
5. Engagement in health and safety	
Ongoing engagement/communication mechanisms *Standardised communication mechanisms* *Daily communication mechanisms*	Management should ensure effective two-way communication so that issues are raised and shared, allowing for appropriate measures to be identified. Management should develop various formal communication mechanisms for safety related decision making. Management should also develop daily communication mechanisms to ensure communication occurs between workers and supervisors on an ongoing basis, e.g. toolbox talks, and daily activity briefs.

6. Peer group attitude	
Fostering a supportive environment *Empowerment to stop work*	Management should allocate sufficient time and resources to enable workers to develop strong working relationships, and to take responsibility for their own and others health and safety. Management should nourish an open and honest culture where workers feel confident to stop work when they feel unsafe.
7. Resources for health and safety	
Provision of resources and time spent planning *Welfare* *Training*	Management should allocate sufficient time and resources to ensure workers receive appropriate equipment and training, and works activities are undertaken appropriately. Management should invest in the provision of health and welfare facilities, to foster an environment in which workers feel cared for. Management should provide effective training to ensure the competence of all workers, supervisors and managers on sites.
8. Accident and near miss reporting	
Near miss reporting *Valuing reports*	Management should ensure that workers understand near misses, e.g. what should be reported, and how the information reported can be used to improve health and safety performance on sites. Management should take prompt and appropriate actions to respond to workers' reporting.

Source: Health and Safety Executive, 2012

Measuring safety climate

Safety climate assessment tools

The state of the WHS climate ascertained using questionnaire survey tools can provide important information about 'what' is happening in an organisation at a particular point in time.

RMIT's Centre for Construction Work Health and Safety Research has developed and validated a Safety Climate Assessment Tool for use in the Australian construction industry. This tool adopts a multi-level approach to measuring the safety climate in construction organisations (Lingard, et al., 2014). The tool measures the safety climate across nine components. The nine components were identified through a comprehensive literature review. They were also subjected to the review of industrial professional groups and were considered to be highly relevant to the construction industry context. The nine components are:

- leadership,
- communication,
- organisational goals and values,
- supportive environment,
- responsibility authority and accountability,
- learning,
- trust in people and systems,
- resilience, and
- engagement.

These components are described below.

Safety climate components

Component 1: Leadership

Managerial behaviour has considerable potential to impact WHS. When managers clearly and explicitly express strong WHS values, and reinforce these values with consistent behaviour, then adopting safe and healthy work practices is more likely to be regarded as an unconditional 'way of doing things' in the workplace.

In a large-scale survey across 54 companies and over 4,300 employees, supervisors and top management team (TMT) members, Tucker (2016) found that a CEO-driven TMT safety climate initiative had a marked effect on supervisor's report of a broader organisational safety climate and a subsequent collective support for safety across the workforce.

O'Dea and Flin (2001) identify facets of participative leadership as particularly important in developing a culture that enables WHS, while Barling et al (2002), Mullen and Kelloway (2009), Zacharatos et al (2005), Zohar (2002a), Smith et al. (2016) and Wu et al. (2016) all found links between a transformational leadership style and its positive effect on WHS outcomes. Kelloway et al (2006) also report negative impacts on performance when health and safety leadership is passive or laissez-faire – for example, failing to intervene until problems become serious enough to require attention, or delaying decision making.

It has also been argued that leaders play a key role in shaping safety climates that, in turn, influence WHS behaviour and performance (Hoffmeister et al., 2014).

Hoffmeister et al. (2014) argue that it is possible that different aspects of leadership may affect WHS in different ways and for different reasons. They explored the links between transactional and transformational leadership and WHS in the US construction industry. They report that different leadership styles predicted the safety climate, compliance and participation among journeymen (experienced construction workers) and apprentices. In particular, idealised attributes, idealised behaviours, intellectual stimulation and contingent reward predicted WHS climate among apprentices, while idealised attributes and contingent rewards were the only predictors of safety climate among journeymen. For apprentices, the only significant leadership predictor of WHS compliance was idealised behaviour, while safety compliance among journey men was predicted by idealised attributes, idealised behaviour and contingent reward. In relation to WHS participation idealised behaviour, idealised attributes and contingent reward were predictors for apprentices but no leadership behaviours predicted WHS participation among journeymen. Hoffmeister et al. (2014) also note that the links between idealised behaviours and attributes and safety climate and performance suggest that leaders' values and consistency in behaviour in relation to WHS are important determinants of influence and performance in the construction context.

Consistency is an important characteristic of managerial leadership behaviour in relation to WHS. This is highlighted by Mullen et al (2011) who report managers do not always demonstrate the same style of leadership. However, when managers alternate between transformational and passive leadership behaviours, they minimise any positive effects of the transformational leadership behaviour on workers' health and safety.

Mullen et al. (2017) examined the moderating effect of safety-specific transformational leadership on the link between the provision of a basic level of H&S protection (e.g. H&S training, PPE, equipment maintenance, etc) and worker H&S compliance, participation and attitudes. Safety-specific transformational leadership was reported to strengthen the positive effect of providing these basic H&S measures, by increasing workers' H&S self-reported levels of compliance, participation and attitude. They argue that provision of basic H&S measures is more effective when accompanied with transformational safety-leadership behaviour (Mullen et al., 2017).

Authenticity of leadership has also been linked to safety climate and performance (Birkeland Nielsen et al. 2013a). In a study undertaken in the oil and gas industry, Birkeland Nielsen et al. (2013b) investigated the impact of authentic leadership on WHS risk perception and safety climate. They found that authentic leadership was positively correlated with the safety climate, whereas a negative correlation was found between authentic leadership and risk perception. They explain this finding by suggesting that workers whose supervisors demonstrate authentic leadership have a more positive perception of the workplace safety climate and this leads them to have lower perceptions of risk. Thus when supervisors promote transparent, fair and ethical workplace environments, safer and healthier work climates will develop and workers will understand the importance of acting safely (Birkeland Nielsen et al., 2013).

Zohar (2002a) suggests that the quality of leader-member interactions influences managers' level of concern for workers' WHS which, in turn, affects workers' perception of the safety climate in a workgroup. Under conditions of high quality leader-member exchange relationships supervisors and workers work to support the attainment of group goals, including the protection of individual members' health, safety and welfare (Zohar, 2002a). Further research by Zohar et al. (2014) suggests that leaders can maintain their influence on safety climate perceptions and role behaviour in their workgroups, even when they are physically distant from the workplace.

Component 2: Communication

Open, frequent and multi-directional communication about WHS is identified as an important component of an organisational culture that enables WHS performance communication (HSE, 2005a; HSE, 2005b).

The UK Health and Safety Executive (2005a) suggest that effective WHS communication within an organisation occurs in three directions:

1. top down – management to frontline
2. bottom up – frontline to management, and
3. horizontal – between peers or functional groups.

Communication can either be formal or informal. Informal communication enables managers to verbally communicate the importance of safety and to listen to workers' concerns. Examples include conducting management tours and 'walking the job, talking to people, listening to people' (HSC, 2001, p. 67). Managers can develop a deeper understanding of WHS issues by actively discussing challenges and issues with workers. Jeschke et al. (2017) found certain WHS topics were relevant and useful for supervisors to broach in their daily dialogues at work. Supervisors experienced positive changes in their daily work methods and work interactions over a 2-10 month post intervention period when areas such as body language, communication (feedback and questioning techniques), conflict management and planning systems were considered.

Tucker and Turner (2015) found that the risk of young workers experiencing a safety incident is significantly increased when they do not feel comfortable or able to express their WHS concerns. . Olive et al. (2006) suggest that organisations should develop an atmosphere (and supporting structures) that allows workers to feel comfortable about raising WHS issues and encourages them to ask questions. The importance of workers raising H&S concerns in high risk work environments is significant because it can facilitate incident prevention and organisational learning (Conchie et al., 2012).

Relationships are critical to effective communication. Good supervisor-employee relationships are conducive to workers' willingness to raise safety concerns with their supervisors. Where relationships are good, workers are more likely to raise WHS concerns and internalise the organisation's WHS values and are less likely to be involved in a work-related accident (Kath et al, 2010; Mullen, 2005).

Cigularov et al. (2010) examined the influence of H&S communication in the US construction industry. They reported that when workers feel they can talk openly and freely to their supervisors about H&S, there are safer work practices and fewer instances of work induced bodily pain

Component 3: Organisational goals and values

What is valued, and what the organisation and its members aspire to be, are fundamentally shaped by the basic assumptions at the heart of an organisation's culture.

Analysis of serious organisational incidents often reveals 'normalised' unsafe practices that led people to ignore early warning signs in order to maintain production or project progress. The assumption that a high production rate is for 'the greatest good' of the organisation is often cited as a factor in WHS corner-cutting (see, for example, Guldenmund, 2000). In the construction industry, time and cost are so ingrained as basic assumptions about what constitutes a successful project that workers may come to believe that these take priority over WHS. Perceptions of the priority of safety relative to other organisational goals is a key component of the safety climate.

Zwetsloot et al (2013) proposed that health, safety and wellbeing at work represent important values in themselves. However, other organisational values (or 'basic assumptions') also contribute to WHS outcomes. They identified three clusters of organisational values that are influential to WHS in an organisation. These are summarised in Table 2.5.

Table 2.5: Organisational values and their influence on health and safety (Zwetsloot et al, 2013)

Valuing people	A positive attitude toward people and their 'being', including core values of interconnectedness, participation and trust
Valuing desired individual and collective behaviour	'Doing', primarily comprising core values of justice and responsibility
Valuing alignment of personal and organisational development	'Becoming', characterised by core values of development and growth, and resilience

Component 4: Supportive environment

Various features of the physical and psychosocial work environment influence WHS-related behaviour and performance (Christian et al, 2009). Having a supportive work environment is believed to influence WHS directly, because it results in open and effective communication, addresses

appropriate levels of training, resource allocation, work planning, and supervisory concerns. Significant improvements in WHS compliance were observed by Hammer et al. (2016) when interventions regarding supervisor support for work and family were implemented. Furthermore, organisational support is also believed to influence WHS indirectly by engendering higher levels of organisational commitment (Barling et al, 2003), job satisfaction (Parker et al, 2001) and trust (Zacharatos et al, 2005).

Early research interest focused on perceived organisational support – that is, the global perceptions workers form about the extent to which the organisation is concerned about their wellbeing (Eisenberger et al, 1990). Perceptions of organisational support have been linked to workers' compliance with organisational WHS policies, and reduced involvement in work accidents (Gyekye & Salminen, 2007). Organisational support has also been linked to employee's psychological wellbeing within high stress occupations (Biggs et al., 2014). Biggs et al. also found that stressors are exacerbated by work environments that fail to provide supportive resources. In such circumstances, disengagement, withdrawal and performance deficits are the result. Wallace et al (2006) and Larsson et al (2008) both found perceptions of support were strong predictors of WHS-related behaviour, whilst Feng et al. (2014) found that WHS performance improves when there is a higher level of WHS investment.

Work organisation has also been examined as a driver of WHS outcomes. Work organisation refers to the 'way work processes are structured and managed, such as job design, scheduling, management, organisational characteristics and policies and procedures' (DeJoy et al, 2010, p. 140). Guo et al. (2016) identified production pressure as a critical factor that has direct and significant effects on WHS motivation, knowledge, participation and compliance. Guo et al. also found that creating a supportive environment for workers and supervisors is effective in reducing unsafe behaviour. Various aspects of job design have also been linked to better WHS performance, including job autonomy (Parker et al, 2001; Barling et al, 2003), task variety and opportunities for skill development (Barling et al, 2003).

Component 5: Responsibility, authority and accountability

Clearly articulated and understood responsibilities are a feature of organisations with good WHS performance. In the construction industry, Törner and Pousette (2009) report attainment of high WHS standards requires people at many levels in an organisation to assume responsibility for WHS in their work. Managers need to allocate resources to a level consistent with, and sufficient to, meet the organisation's WHS objectives which includes allowing sufficient time for people to perform their work safely. Adequate 'thinking time' is needed so workers can plan and carry out their work in a safe and healthy manner (Glendon & Litherland, 2001). Pre-start sessions with supervisors play a key role in preparing workers for their daily tasks. The proactive resolution of conflicts between safe working practices and schedule-driven pressures is a characteristic of organisations with effective cultures for safety (HSE, 2012).

Responsibility for WHS is not held exclusively by managers. There is a growing recognition that co-workers have a role to play in looking out for, and helping to protect, the health and safety of their workmates (Burt et al, 1998; Lingard et al., 2011; Zhang et al., 2015). However, the concept of a 'just culture' captures the need for balanced accountability applying both to individuals and those in the organisation responsible for designing work processes and systems of work (Dekker, 2008). In a just culture people are not punished for actions, omissions or decisions taken by them which are commensurate with their experience and training, but gross negligence, wilful violations and destructive acts are not tolerated. In such a culture that the implementation of fair and legitimate procedures, rules and ramifications is important (Dekker, 2016).

It is important that responsibility is not pushed down to the workforce amidst organisational constraints that make it difficult or impractical for them to work safely. For example, Nordlöf et al. (2015) found that steel manufacturing workers in Sweden perceived WHS to be their individual responsibility but that also felt constrained by the work environment and, in particular, the priority placed on production by management.

The extent to which workers have autonomy or control over the way they work can also influence the extent to which they exercise WHS responsibility. For example, Pinion et al. (2017) note that workers in the construction industry with low job control have poor perceptions of management commitment to WHS, which negatively impact WHS performance. Pinion et al. (2017) suggest that injury and incident prevention programs would benefit from allowing workers' more autonomy or control over their work tasks, work environment and work task outcomes.

Component 6: Learning

Reason (1997) identifies learning as a feature of an organisational culture for safety. Learning is characterised by:

- the willingness and competence to draw the right conclusions from the information generated by the safety system, and
- the willingness to implement changes or reforms when necessary.

Jeffcott et al. (2006) suggest learning in relation to safety involves ongoing reflection on practice, encouraging the reporting of incidents and errors, and learning from mistakes and failures. Organisations characterised by learning:

- are highly committed to gathering and analysing safety related information,
- disseminate safety-related information to the whole organisation, and
- develop vigilance and expertise among frontline staff to enable them to identify and respond to errors.

Learning involves ongoing reflection about current safety practices and beliefs, and the search for ways of eradicating or minimising risks (Pidgeon, 1998; Pidgeon, 1991). Wiegmann et al (2004) suggest that an effective incident reporting system is a keystone in identifying vulnerabilities associated with existing safety management before an incident occurs. However, a system improves safety only if an organisation is willing to learn proactively and to adapt its operations. Thus, managers need to respond to incidents (including near misses) and address identified safety issues in a timely manner. If workers observe that their reporting of incidents or deviations does not lead to any action, they will come to see these occurrences as part of 'normal' work conditions (Hale, 2003) and organisations will lose valuable opportunities for learning and improvement.

Silva et al. (2017) identify four practices associated with learning from incidents:

1. reporting all incidents including near misses (or those without injury or days lost)
2. analysing all incidents in a systematic manner
3. producing and using statistical data to support analysis and decision making, and
4. having clear rules and communication channels to share relevant safety information.

Practices that were found to inhibit learning included:

- not implementing changes when WHS deficiencies are identified
- a lack of internal discussion about causal factors in safety incidents
- overly centralised learning processes, with minimal involvement from operatives and workers, and
- poor communication limiting the dissemination of learning outcomes.

Learning is also characterised by people maintaining a questioning attitude. Hale (2003) argues that it is important for workers to have 'creative mistrust' in the risk control system. This means they are always expecting new problems, or new implications from old problems, and never believe their organisational culture or WHS performance is perfect.

Previous research has found that frontline workers in the construction industry have a great deal of health and safety knowledge and are highly motivated to use this knowledge, but often do not possess the skills required to communicate their knowledge effectively (Maloney et al., 2007). There are considerable opportunities in engaging workers through participatory management processes to contribute to the improvement of work processes and procedures (see, for example, Lingard et al. 2015).

Some learning organisations apply benchmarking, internally between projects and externally with other comparable organisations. Benchmarking can help organisations to assess their strengths and weaknesses and facilitate continuous process and performance improvement (Saw et al., 2010).

Learning is also supported by the use of appropriate WHS metrics. The use of valid leading indicators can help an organisation to take proactive safety improvement measures (Lingard, et al., 2013). Mearns (2009, p.491) defines leading indicators as performance measures 'that provide information that helps the user respond to changing circumstances and take actions to achieve desired outcomes or avoid unwanted outcomes'.

Leading indicators:

- measure how well an organisation is managing health and safety risk more directly than the occurrence of incidents, and
- provide an immediate feedback mechanism, enabling organisations to improve WHS management processes before deficiencies result in incidents, injuries or illnesses (Hinze et al., 2013).

Component 7: Trust in people and systems

Hale (2000) suggests that management structures or systems established to deliver WHS are important for maintaining good performance. Structures include elements of WHS management systems such as management plans, policies, procedures monitoring and reporting mechanisms. However, there is difference between the existence of these structures and the trust people put in them.

Trust is defined as an individual's tendency to rely on other people or structures in a risk situation (McKnight and Chervany, 2001). In relation to WHS, trust is described as individuals' attitudes to, and expectations of, other people and the systems embedded within their organisational environments (Jeffcott et al, 2006).

Burns et al (2006) describe how workers in a UK gas plant reported high levels of trust in their workmates, lower levels of trust in their supervisors, and even lower levels of trust in plant managers. These findings highlight the importance of understanding the expression of trust at different levels within an organisational hierarchy. These differences may be particularly acute in a hierarchical system of multilevel subcontracting, such as exists in construction.

It has been found that supervisors who consistently enforce appropriate WHS behaviour have less underreporting of employee incidents (Probst, 2015). Probst's study demonstrated a link between effective supervisor-worker relationships, in which workers trust their supervisors and the likelihood of workers bringing WHS concerns and incidents to the attention of supervisors without fear of negative consequences.

A recent study found that 'consistency' is important in developing workers' trust in managers' safety leadership (Conchie et al, 2011). Conchie and Donald (2009b) examined the combined effect of safety-specific trust with safety-specific transformational leadership to influence workers' safety citizenship behaviours. They found that in conditions of high safety-specific trust, safety-specific transformational leadership strongly influenced workers' WHS behaviour. However, as safety-specific trust in leaders reduced, leaders' effectiveness at promoting workers' safety citizenship behaviour declines.

In WHS it is important to ensure consistency between 'what is said' and 'what is done' in practice (Simoms, 2002). Thus, for a WHS system to be seen as trustworthy, the processes and practices defined by the system should align with the WHS values espoused by the organisation and how work is actually performed in practice.

The overly bureaucratic nature of many WHS management systems, as well as an observed gap between documented WHS procedures and actual work practices can undermine the effectiveness of a WHS system (Dekker, 2014).

Workers' trust in a safety system is also determined by the quality of information the system provides. Conchie and Burns (2009) reported a sample of UK construction workers' trust in an information source is largely determined by the belief that the source's information is accurate. Pousette and Torner (2016) made similar findings when evaluating the effectiveness of a toolbox talk education intervention that was implemented in a Swedish construction company. In this study the absence of trustful leader-employee relations manifested in an unfavourable safety climate.

It is assumed that trust in WHS management systems is associated with positive WHS outcomes and distrust is associated with negative WHS outcomes (Waddick, 2010). However, recent studies show that having complete trust in a WHS system is undesirable. Thus, Jeffcott et al (2006) reported rule-based trust (that is, a high level of trust in a system of rules) may have negative effects on safety, partly because it reduces flexibility to cope with abnormal situations not covered by pre-specified rules and procedures. This finding is related to the concept of resilience described below.

Component 8: Resilience

Resilience has been defined as:

> … the intrinsic ability of a system to appropriately adjust its functioning prior to, during, or following changes and disturbances so that it can sustain required operations under both expected and unexpected conditions (Hollnagel et al, 2011, p. xxxvi).

Hollnagel (2010) suggests that resilience is related to four essential qualities or abilities. An organisation should have the ability to:

1. respond to new or unusual situations in an appropriate way,
2. flexibly monitor what is going on, including its own performance,
3. anticipate future events that could impact on health and safety, and
4. learn from experience.

Reason argues organisations should have an abiding concern with failure and recognise that their safety systems are fallible. A belief that safety systems are infallible can make people 'forget to be afraid'. Thus, a resilient organisation knows hazards are never completely eradicated and that errors, unexpected situations and incidents are inevitable. Unexpected, adverse events are seen as important indicators of areas in which the safety of a system can be improved (Olive et al, 2006).

An organisation's resilience is reflected by flexibility and variability in operations. Many organisations attempt to reduce the number of unsafe acts by requiring workers to comply rigidly with procedures. They see errors and violations as workers' deviations from standard procedures and as such, subject to sanctions and disciplines. Unfortunately, focussing on punishment leads to the organisations' loss of opportunities to reflect on current procedures and analyse the systemic causes of unsafe acts and human errors. According to Weick et al (1999), collective mindfulness is claimed as an essential component of organisational resilience and is the result of a number of cognitive elements, including preoccupation with failure, reluctance to simplify interpretations, sensitivity to operations, commitment to resilience, and under specification of structures.

Resilience is a concept that stems from the ultra-safe sector. Using the construction industry as a test case, Harvey et al (2016) explored the applicability of resilience engineering in a less highly regulated context. Due to the construction industry's transient nature (comparable to the highly regulated ultra-safe sector) implementation opportunities were identified at the worker centred level rather than the organisational level. The workers' practice of mindfulness, imagination and the contextualisation of incidents, in order to lower their tolerance of risk, were seen as resilience engineering concepts that could benefit the construction industry.

Component 9: Engagement

Employee engagement refers to a situation in which personnel from all levels of the organisation are involved in decision making, safety planning and providing ideas for improvement and employee participation and feedback are actively sought (HSE, 2005b).

Workers' participation and involvement in workplace health and safety activities is linked to reduced incidents and injuries (Neal & Griffin 2006; Christian, et al, 2009). The promotion of work engagement within high stress occupations has been reported to have benefits for workers' psychological wellbeing (Biggs, 2014).

Research has identified leader behaviours that are influential in engaging workers in WHS activities. Clarke and Ward (2006) found workers are more likely to participate in WHS activities when managers share WHS information and actively seek to involve workers in strategic health and safety-related decision making. Supervisors play a particularly important role in engaging frontline workers by communicating that they value workers' ideas and trust their judgements about working safely.

In some instances, engagement of workers manifests in empowering workers to use their judgement and knowledge to develop safe and healthy work practices. Dekker (2003) argued that safety rules and procedures are only resources for workers, but they are not sufficient to cover all work situations. Safety also relies on the ability of workers to assess the applicability of procedures and adapt the procedures to local circumstances. Therefore, approach to safety should be considered as adaptive, dynamics, and developmental (Nascimento et al. 2013), and co-constructed by managers and frontline workers.

Consistent with this view, Rocha et al. (2015) proposed and implemented a participatory safety management approach named work debate space (WDS) in an electric company. Photographs of anomalies were used as the media, which triggered the discussion and debate between managers and frontline technicians in relation to safety issues. The WDS created an enabling environment, where technicians were engaged to share their on-site experiences in dealing with risks, while managers learned about the reality of technicians' work, the local assessments of risks, and the adaptions of safety procedures. Engaging workers in the WDS informed managers of how to better regulate safety, and develop safety measures that are practical and applicable to work processes.

The organisational culture maturity continuum

As noted earlier, cultures are inherently 'patchy' in large organisations and are subject to considerable variation. An effective culture for WHS is understood to take some time to develop. Filho et al. (2010) describe how cultures that enable WHS do not develop at the same pace in all organisations. Even within a single organisation, certain business units or functional or geographic areas may develop a culture that enables WHS more quickly than others. The different components of a culture for WHS (such as leadership and communication) might also develop more rapidly than other components, and the patterns of development of cultural maturity might vary between organisations. For this reason a single culture 'index' is unlikely to be meaningful (Parker et al., 2006).

It is likely that the extent to which the culture enables WHS will vary within a single organisation. Zohar (2000) demonstrated that within a single organisation, variation in supervisors' responses to WHS can create significant variation in WHS-related expectations and actions in workgroups. Further, over a five-month period Zohar noted these differences were linked to the experience of incidents requiring first aid or more significant treatment.

There is considerable evidence to indicate that the majority of organisations, particularly large and complex ones, do not develop homogeneous cultures that impact on WHS uniformly throughout the organisation. It is also recognised that organisational cultures progress through different stages of maturity (Parker et al., 2006, p.555; Findley et al., 2007; Tharaldsen et al., 2008; and Lingard et al., 2009). Hudson (2007) argues merely defining and describing the components of an organisational culture that can enable WHS will not help organisations develop such cultures. He advocates understanding culture using an evolutionary model in which organisations are placed on a continuum from those at an advanced stage of cultural development, to those at a less advanced stage. It is argued that defining intermediate stages can assist organisations to engage in culture change in manageable (and potentially measurable) steps. Hudson (2007) developed a five-level framework for describing the progressing development of a culture that supports safety.

This framework emerged from interviews with senior managers in the oil and gas industry. They identified aspects of the organisation they believed were important elements of the organisational culture that impacted upon safety in the industry. Interviewees were asked to describe how an oil

company would function in relation to each element at each of the five levels of cultural maturity (that is, from pathological to generative). Parker et al (2006) used these five levels to develop a framework that can be used by organisations in the oil and gas industry to understand their organisational cultures and safety impacts.

A variation of Hudson's five level culture framework was developed for the UK healthcare sector by Ashcroft et al (2005) who reported on the feasibility and face validity of a five level healthcare culture maturity model. More recently, the five levels specified by Hudson, Parker and others was used to develop an organisational culture maturity assessment tool for analysing the WHS implications of culture in the oil and gas industry in Brazil (Filho et al, 2010). Ayers et al (2013) also used Hudson's model to analyse cultural maturity in the way construction companies engage in consultation with workers about WHS.

A culture maturity continuum was developed by the Centre for Construction Work Health and Safety Research for the Australian Constructors' Association in 2014, based on the nine components of organisational culture identified as being relevant to work health and safety, and using the five levels specified by Hudson. For each of the nine components, descriptors were developed to reflect the five levels of maturity (Lingard. et al., 2014).

The resulting Organisational Culture Maturity Continuum was then subject to validation and testing in four workshops and a series of interviews. In total, 65 industry representatives participated in the workshops including senior managers from construction organisations, health and safety managers, trade union representatives, and other managers and professionals.

In the workshops, participants used the maturity model to assess a fictitious organisation described in a scenario. However, this was an oversimplified description of an organisation that could not reflect the true complexity of real life organisational environments. Participants' noted that using the maturity model in a real construction organisation would present challenges for people in making realistic and reasonable assessments of their own and others' levels of cultural maturity.

Based on their reading of the scenario, readers found it easy to understand and apply the descriptors associated with each component. Although there was some variation within and between participants in applying the scale, the majority of workshop participants acknowledged the descriptors as presenting a coherent set of guiding statements that could be used to interpret the nine components.

The workshop participants generally understood the components (including their associated descriptors) as existing along a continuum. However, it was noted that the descriptors enabled discernment of an 'overriding impression' of organisational maturity, as distinct from considering an organisation as discretely fitting within one or other levels of maturity. Participants' discussions of the variance in assessments did not reveal dissatisfaction with the descriptors or levels, but indicated an appreciation that any such assessment is inherently subjective, and different people may have different points of view.

Workshop participants noted that by combining the components and the descriptors of each of the five levels of maturity, the model stimulated a discussion about what constitutes a mature organisational culture. They noted that the model promoted deeper consideration about how some managerial behaviours can influence WHS and, as a consequence, they were better equipped to understand organisational behaviours and the messages they send from different viewpoints.

Participants' commented that the model could be used to prompt conversations within organisations about managerial behaviour and organisational priorities. Participants acknowledged the importance

of being able to review an organisation (or its component parts) and suggested the maturity model would be a useful tool to focus discussion about organisational and managerial behaviours that can impact WHS.

Some participants were familiar with the words originally used to describe the five levels of maturity – that is, pathological, reactive, calculative, proactive and generative. However, several participants expressed the view that these words were too abstract, and in any case not in common use. Participants suggested that using these words as terms for the levels of cultural maturity could render the meaning difficult to comprehend. The Maturity Continuum was revised on the basis of this feedback although the five-level framework still remains. However, the framework now reflects participants' comments that cultural maturity development is best understood as a continuous progression along a continuum. In response to that understanding, it was deemed appropriate to provide verbal 'anchors' for desirable and undesirable levels of maturity, but to omit labels for each of the levels in between.

This decision reflects the observation, made by many participants in the workshops, that it is difficult to position an organisation in a discrete cultural maturity level – in many cases they fall somewhere between two levels. A cultural maturity continuum or spectrum was considered preferable. The verbal anchors reflecting high and low levels of cultural maturity are now 'Enabling' and 'Impeding'. These anchors also reflect the understanding of WHS as an outcome of the broader organisational culture that can either impede or enable work health and safety in a workplace.

The revised Organisational Culture Maturity Continuum is presented in Appendix 8.1.

Part 3: Research methods

Research design overview

A mixed methods approach was adopted to conduct this research project. Johnson et al. (2007) defined mixed methods research as:

> …the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration (Johnson et al. 2007, p123).

A two-stage sequential mixed methods research design was developed for this project. Specifically, a baseline safety climate survey was undertaken as the first step to understand the prevailing culture in the construction industry in the ACT territory. Then focus groups were conducted with construction professionals and employees to further understand the state of WHS capabilities and the cultural impact on WHS in the ACT construction industry.

The details of the research method will be provided in below.

Baseline safety climate survey

Survey instrument

The Australian Constructors Association (ACA) Health and Safety (H&S) climate survey tool was used to develop the survey instrument in the project. The H&S climate survey tool has undergone a large-scale validation process and is specifically designed for the Australian construction industry. It provides a multi-level analysis and captures information about safety climate at organisational and workgroup levels.

The H&S tool contains 45 questions measuring aspects in relation to the nine cultural components at the organisational level (i.e. 5 questions for each component), and another 45 questions at the group level. In order to keep the length of survey reasonable and minimise the disruptions to construction activities on sites, the number of questions was reduced to 27 at each level (i.e. 3 questions were selected for each component). The selection process was conducted through extensive discussion and negotiation within the research team to ensure that the questions retained are capable of capturing the core meanings of the nine cultural components.

The final survey instrument for the project contained a total of 60 questions, including:

- 5 questions capturing participants' demographic information
- 27 questions measuring safety climate at the employer organisational level
- 27 questions measuring safety climate at the workgroup level, and
- one open ended question for participants to express their opinions about safety issues in the ACT construction industry.

Sampling

A stratified sampling approach was adopted, through which the survey sample was divided into different subgroups according to company size, and industry sector (i.e. residential, commercial/industrial, and engineering construction). The stratifying process was done based on statistics provided by the Australia Bureau of Statistics (ABS).

The recorded total employed persons in the construction industry in the ACT territory were about 14,000 at August 2016 (ABS, 2016a). Based on the total population, as well as the established and recognised statistical approach for determining sample size, the targeted sample size for the safety climate survey was determined to be 414 workers.

The information about Value of Work Done by industry sector in the ACT was used to decide the approximate proportion of employment in each industry sector, i.e. 46.69% for the residential sector, 28.87% for the commercial/industrial sector and 24.44% for the engineering construction sector (ABS, 2016b). These proportions were applied to the targeted sample size to determine the number of workers to be surveyed for each industry sector.

Reference was also made to the information about the number of businesses registered in the construction industry in the ACT (ABS, 2016c) to determine the sample size allocations between companies of different sizes for each industry sector.

Participant recruitment

The ACT Government assisted in the participant recruitment process. A strong and active promotion of this research project was conducted by the ACT Government within the ACT construction industry. The target of the promotion included individual construction organisations, and relevant building and construction industry associations, including Master Builders Association (MBA), Housing Industry Association (HIA).

Survey administration

The survey was administered using two different modes of distribution, including face-to-face mode and web-based mode.

The face-to-face survey was administered using the ‘TurningPoint’ automated response system with ‘KeePad’ hand held devices. Workers on the site were gathered in a meeting room and distributed with the hand-held devices. Survey questions were projected onto a screen and read out by a researcher. Workers were required to press a number on the hand-held devices to indicate their responses to the statement in each survey question against a 5-point scale ranging from ‘1 = Strongly Disagree’ to ‘5 = Strongly Agree’.

The web-based survey was developed with Qualtrics, which is a recommended data collection tool by the Human Research Ethics Committee at RMIT University. Once the survey was built, a survey link and a QR code were generated for the distribution purpose. An invitation email containing the survey link and QR code were sent to relevant building and construction industry associations by the ACT Government. Participants could either click the survey link or scan the QR code to access the survey on electronic devices such as computers and smart phones.

Quantitative data analysis

The quantitative data collected through the survey was analysed using the Statistical Software Package for the Social Sciences (SPSS).

To demonstrate participants' overall perceptions of safety climate, mean scores were calculated for each cultural component across the survey sample at each level, i.e. organisational level, and workgroup level.

One-way analyses of variance (ANOVAs) were performed to identify the between-sample differences in safety climate in relation to participants' positions, trades, company sizes, and industry sectors. The Poc Hoc analyses were used to further identify which sample groups have responded differently.

The independent t-tests were used to test for significant differences in safety climate scores between the ACT survey and the validation survey.

Focus groups

Purpose of the focus groups

There is general consensus that safety climate surveys cannot reveal the basic assumptions underpinning an organisation's culture. Alternative methods are recommended to explore and understand culture at its deepest level. A deep understanding of the organisational or project culture (often arising from past events) are best exposed through using qualitative methods of research which provide rich information about the organisation's value system. Qualitative methods involve talking to workers and managers to develop a deep understanding of the way that their behaviours are influenced by cultural beliefs and values. This approach can also answer questions about why WHS is enacted in a particular way (Borys, 2012).

The purpose of focus groups was to provide qualitative data relating to:

- the state of the present-day culture for WHS in the ACT construction industry
- what a 'positive' or 'strong' WHS culture would look like in operational terms across the sector
- barriers to improving the industry's WHS culture, and
- the role of key stakeholders in driving sustainable cultural change and enhancing awareness of WHS issues across the sector, including opportunities for ongoing collaboration.

Participants

A total of four focus groups were conducted. The participants included a cross section of construction industry stakeholders, representing, industry associations, unions, government and construction industry employers.

Structure and process of the focus groups

The focus groups explored six key issues as follows:

ACT performance against goals

- how is the industry performing – are injury rates declining? How/why?
- how does the industry perform in workers' health, as well as safety?

Capability an*d* competence and its impact on culture

- what is the state of WHS capability/competence? (relative to clients, designers, principal contractors, subcontractors and others?)
- is WHS training effective? Why/why not?

Client leadership

- what client-led initiatives have improved WHS?
- can/should clients do more to drive WHS in the ACT construction industry?

Compliance and culture

- how important/effective are WHS systems currently in place ?
- are WHS systems focus too paper-based?
- how do organisational/project cultures impact on WHS?
- how are pressures between production and WHS handled?

Worker engagement and WHS management

- are workers genuinely engaged in WHS processes? why/why not?
- how well do consultative processes work?
- has this changed in recent years? If so, how/why?

Supply networks

- how is WHS risk managed in supply networks?
- are principal contractors managing subcontractors' WHS effectively? Why/why not?
- has the approach of principal contractors changed in recent years? If so how/why?

Qualitative data analysis

The qualitative data collected from focus groups was subject to content analysis to identify emergent themes. The analysis used a proprietary software (NVivo). A coding framework was developed and data analysed to identify emergent themes.

Part 4: Safety climate survey results

Sample size

A total of 360 participants attended 20 face-to-face data collection sessions, which were conducted across 13 construction sites in the Australian Capital Territory (ACT) between 6 April 2017 and 5 May 2017. Another 80 participants responded to an internet version of the same survey between 2 and 31 May 2017.

A data screening process indicated that eight respondents failed to answer more than half of the survey questions in the face-to-face survey, while fifteen respondents failed to answer more than half questions in the web-based survey. In order to ensure the reliability and validity of data, these responses were removed from the data set prior to analysis. A total of 417 valid responses were retained in the sample.

Demographic information

Table 4.1 shows demographic information collected from survey respondents.

Table 4.1: Demographic information of respondents

Position	N	%	Trade background	N	%
Project manager	28	6.7	Bricklaying, carpentry, or joinery	34	21.7
Construction/site manager/administrator	23	5.5	Floor finishing or painting	10	6.4
Construction/project engineer	7	1.7	Glazing, plastering or tiling	28	17.8
Foreman/supervisor	53	12.7	Plumbing	42	26.8
Skilled trade worker	156	37.4	Electrical	33	21.0
Apprentice	51	12.2	Others	10	6.4
Labourer	38	9.1	Total	157[1]	100
Machinery operator/driver	18	4.3	**Employment arrangement**	**N**	**%**
OHS professional	23	5.5	Employed directly by a principal contractor	71	44.4
Others	16	3.8	Self employed	27[2]	16.9
Not indicated	4	1.0	Employed directly by a subcontractor	56	35.0
Total	417	100.0	Engaged under a labour hire arrangement	6	3.8
			Total	160[3]	100
Company size	**N**	**%**	**Sector**	**N**	**%**
0 (i.e. non-employing[4])	7	1.7	Residential building	23	5.5
1-19	62	14.9	Commercial/industrial building	332	79.6
20-99	203	48.7	Civil engineering	59	14.1
100-199	83	19.9	Not indicated	3	.7
200 and over	55	13.2	Total	417	100.0
Not indicated	7	1.7			
Total	417	100.0			

Position

Skilled trade workers made up the largest group of respondents (n=156, 37.4%), followed by foremen/supervisors (n=53, 12.7%), and apprentices (n=51, 12.2%). 38 respondents (9.1%) indicated that they are employed as labourers, and 18 respondents (4.3%) indicated that they are machinery

1 Only respondents who specified themselves as skilled trade workers were asked to indicate their trade backgrounds. One respondent indicated their trade background but did not specify the position. Therefore the total number is 157 rather than 156.

2 Participants who reported their employment arrangements as self employed can be owners of businesses with employees or owners of non-employing businesses without employee.

3 The question of employment arrangement was added to the survey after a number of survey sessions were conducted. Therefore the total number is 160.

4 Non-employing business means sole proprietorships and partnerships without employee.

operators or drivers. A total of 81 respondents (19.4%) indicated they work as project management or construction professionals.

Trade/occupation

Those respondents who identified themselves as skilled trade workers were asked to indicate their trade. Figure 4.1 shows that 42 respondents (26.8%) indicated that they are plumbers, 34 respondents (21.7%) work in the bricklaying, carpentry or joinery trade and 33 respondents (21.0%) are electricians. A further 10 respondents (6.4%) indicated that they work in floor finishing or painting, while another 10 respondents (6.4%) indicated that their trades were not listed.

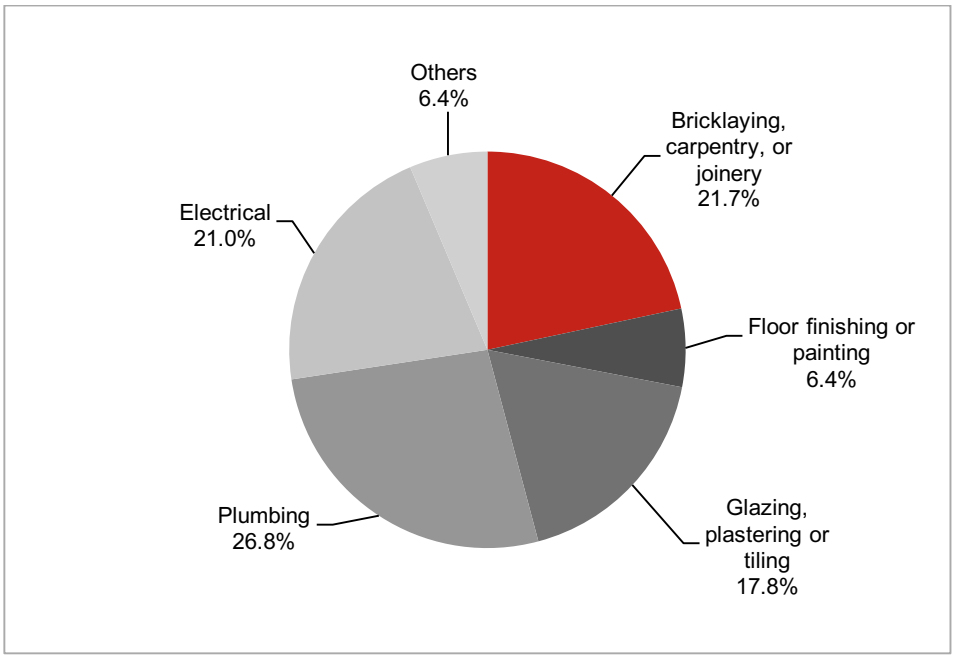


Figure 4.1: Occupation of respondents indicating they are skilled trade workers

Employment arrangements

A question relating to workers' employment arrangements was added to the survey after a number of survey sessions had already been conducted. A total of 160 respondents answered this question. Of these, the largest number of respondents (n=71, 44.4%) indicated that they are employed directly by a principal contractor at their present worksite. 56 respondents (35.0%) indicated they are employed directly by a subcontractor at their present worksite, 27 respondents (16.9%) indicated that they are self-employed, while only six respondents (3.8%) are engaged under a labour hire arrangement.

Company size

Nearly half of the respondents (n=203, 48.7%) reported that they work for a company with between 20 and 99 employees. 83 respondents (19.9%) indicated that they work for a company with between 100 and 199 employees. 62 respondents (14.9%) indicated they work for a company with between one and 19 employees, while another 55 respondents (13.2%) indicates they work for a company employing 200 or more people. Only 7 respondents indicated that their companies are non-employing businesses.

Industry sector

The majority of respondents (n=332, 79.6%) indicated that they work in the commercial/industrial building sector. A further 59 respondents (14.1%) indicated that they work in the civil engineering sector, while another 23 respondents (5.5%) indicated that they work in the residential building sector. Three respondents (0.7%) did not specify their industry sector.

Descriptive analysis

Organisational safety climate (OSC)

Organisational safety climate (OSC) was measured with 27 items reflecting nine OSC components. Participants were asked to score the items based on their experience of working for their employers. Items were scored using a five-point Likert scale ranging from “1 = strongly disagree” to “5 = strongly disagree”.

The mean scores for each item and organisational safety climate component are shown in Table 4.2.

Table 4.2: Mean scores of organisational safety climate

	Mean value	Std. Deviation
Leadership		
My employer acts quickly and decisively when a safety concern is raised	3.86	1.03
My employer prioritises health and safety in all business decisions	3.60	1.05
My employer really cares about the health and safety of their employees	3.95	1.02
Overall mean score	3.80	0.88
Organisational goals and values		
My employer sees health and safety as able to contribute to profitability	3.51	1.08
My employer shows commitment to health and safety as a core value	4.00	1.01
My employer would stop work due to safety concerns	3.75	1.17
Overall mean score	3.76	0.90
Communication		
When working for my employer, there is good communication about health and safety issues	3.61	1.10
When working for my employer, workers are always given feedback about accidents/incidents that have occurred	3.56	1.12
When working for my employer, workers’ views about safety issues are listened to	3.74	1.03

Overall mean score	3.64	0.95
Supportive environment		
When working for my employer, workers having time for family/social life is considered important	3.16	1.41
When working for my employer, management care about workers' job security	3.56	1.17
When working for my employer, workers have high levels of job satisfaction	3.41	1.14
Overall mean score	3.38	1.03
Responsibility, accountability, and authority		
My employer is always interested in safety	3.97	0.93
My employer has defined the safety objectives clearly	3.86	0.95
My employer provides adequate training to the workforce	3.73	1.06
Overall mean score	3.86	0.83
Learning		
My employer actively uses information about errors or problems to improve safety performance	3.76	1.03
My employer encourages open reporting of mistakes and errors that could affect health and safety	3.84	1.01
My employer is constantly seeking new ways to work more safely	3.71	1.08
Overall mean score	3.77	0.94
Trust in people and systems		
When working for my employer, incident investigations help to prevent accidents from reoccurring	3.69	1.04
Within my employer organisation, incidents are reported without fear	3.75	1.13
When working for my employer, procedures are there to keep workers safe	4.02	0.91
Overall mean score	3.82	0.88
Resilience		
My employer is able to monitor safety performance well	3.73	0.99
My employer is well prepared to respond to regular and irregular safety problems	3.84	0.97
My employer knows what affects safety performance	3.76	0.95
Overall mean score	3.78	0.82

Engagement		
My employer engages workers in health and safety inspections/audits etc.	3.61	1.13
My employer involves workers when making health and safety decisions	3.58	1.18
My employer actively seeks information from workers on how to improve health and safety	3.49	1.14
Overall mean score	3.56	1.01

Figure 4.2 presents the overall mean scores for each of the organisational safety climate (OSC) components. Overall, mean scores for all the OSC components were higher than the mid-point value of 3.00. The highest rated component was 'responsibility, accountability and authority' (3.86), followed by 'trust in people and systems' (3.82), and 'leadership' (3.80). The components of 'supportive environment' (3.38) and 'engagement' (3.56) were rated relatively lower than other components.

Figure 4.2: Overall mean scores for each organisational safety climate component

Workgroup safety climate (WSC)

Workgroup safety climate (WSC) was measured with 27 items reflecting nine WSC components. Participants were asked to score the items based on their experience in their current workgroups. Items were scored using a five-point Likert scale ranging from "1 = strongly disagree" to "5 = strongly disagree".

The mean scores for each item and workgroup safety climate (WSC) component are shown in Table 4.3.

Table 4.3: Mean scores of workgroup safety climate

	Mean value	Std. Deviation
Leadership		
In this workgroup, the supervisor(s) ignores some safety rules when work falls behind schedule	3.00	1.35
In this workgroup, the supervisor(s) suggests improved ways of doing the work safely	3.66	1.05
In this workgroup, the supervisor(s) talks regularly about the importance of safety	3.60	1.10
Overall mean score	3.42	0.66
Organisational goals and values		
In this workgroup, dangerous situations are always reported	3.63	1.11
In this workgroup, workers intervene when others are working unsafely	3.54	1.03
In this workgroup, workers stop if it is dangerous to continue	3.72	1.07
Overall mean score	3.63	0.87
Communication		
In this workgroup, workers remind each other to take precautions	3.75	0.90
In this workgroup, workers feel comfortable discussing safety issues with their supervisor(s)	3.91	0.97
In this workgroup, workers feel that their supervisor openly listens to ideas for improving safety	3.71	1.16
Overall mean score	3.79	0.84
Supportive environment		
In this workgroup, workers cooperate with each other to get the work done safely	3.96	0.84
In this workgroup, the supervisor(s) supports workers who need to temporarily reduce their working hours for family or personal reasons	3.52	1.33
In this workgroup, workers understand the health and safety risks associated with the job	4.00	0.87
Overall mean score	3.83	0.83
Responsibility, accountability, and authority		
In this workgroup, workers discuss changes that could improve safety	3.65	0.98
In this workgroup, workers avoid creating hazards for coworkers	3.80	0.96
In this workgroup, workers want to achieve high levels of safety	3.80	0.96

Overall mean score	3.75	0.80
Learning		
In this workgroup, errors made are shared so no one else makes the same mistake	3.68	0.95
In this workgroup, workers are given feedback about changes made based on incident reports	3.61	1.02
In this workgroup, workers discuss ways to prevent errors from happening again	3.83	0.97
Overall mean score	3.70	0.81
Trust in people and systems		
In this workgroup, the supervisor's judgement is trusted when it comes to safety	3.69	1.07
In this workgroup, there is a clear distinction between accidental errors and unacceptable actions	3.84	0.97
In this workgroup, workers are satisfied with follow up measures after accidents have taken place	3.63	1.02
Overall mean score	3.72	0.86
Resilience		
In this workgroup, workers are able to adjust to irregular safety problems	3.74	0.83
In this workgroup, workers are well prepared to respond to safety problems	3.70	1.00
In this workgroup, workers know what affects safety performance	3.78	0.84
Overall mean score	3.74	0.73
Engagement		
In this workgroup, there is a fair opportunity to influence managers' safety related decisions	3.53	1.10
In this workgroup, workers are involved in informing management of important safety issues	3.78	0.96
In this workgroup, workers are involved in the ongoing review of safety activities	3.55	0.99
Overall mean score	3.62	0.86

Figure 4.3 presents the overall mean scores for each of the workgroup safety climate (WSC) components. Overall mean scores for all the WSC components were higher than the mid-point value of 3.00. The highest rated component was 'supportive environment' (3.83), followed by 'communication' (3.79), and 'responsibility, accountability and authority' (3.75). The components of 'leadership' (3.42), 'engagement' (3.62) and 'organisational goals and values' (3.63) were rated relatively lower than other components.

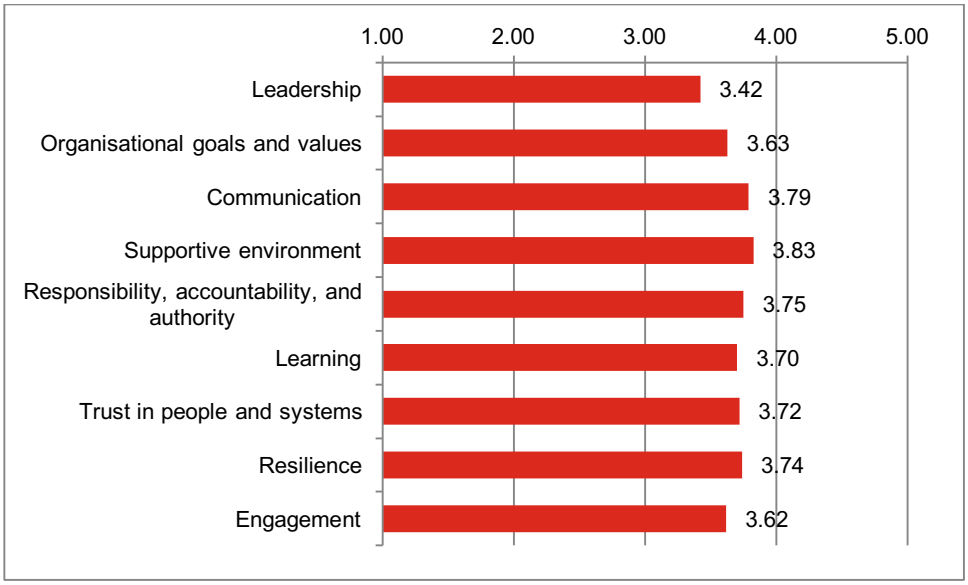


Figure 4.3: Mean scores for each workgroup safety climate component

Mean OSC comparison between respondents

One-way analyses of variance (ANOVAs) were performed to determine whether there was a significant difference between samples in organisational safety climate (OSC) and workgroup safety climate (WSC) in relation to the demographic variables of:

- position
- trade background
- employment arrangement
- company size, and
- working sector.

One-way ANOVAs produce an *F ratio* and an associated probability level (*p* value), which are used to determine whether a difference is statistically significant or not. A *p* value which is equal to or less than 0.05 was deemed to be significant for the purposes of this analysis.

Organisational safety climate (OSC)

Comparison of OSC by job role/position

The sample was divided into three groups according to the positions reported by respondents. These were:

- upper level management, which includes project managers, construction or site managers, contract administrators, construction or project engineers, and OHS professionals
- lower level management, which includes foremen and supervisors, and
- frontline workers, which include skilled trade workers, apprentices, labourers, and machinery operators, and drivers.

Figure 4.4 shows the mean scores for the nine components of organisational safety climate (OSC) for the three position/job role groups. Overall the results indicate that:

- respondents who indicated they occupy an upper level management role reported the highest scores for all OSC components. The mean OSC scores for this group exceeded 4 for all components.
- respondents who indicated they occupy a lower level management role reported mean scores higher than 3.50 for all the OSC components except for the component of supportive environment, and
- respondents who indicated they are frontline workers reported the lowest scores for all OSC components. The mean OSC scores for this group were still above the mid-point value of 3.00.

Figure 4.4 shows a consistent pattern of responses with positive perceptions of the OSC increasing with seniority of job role/position. This finding is consistent with previous studies reported in the literature (Fung et al. 2005; Gilkey et al. 2012; Gittleman et al. 2010).

Figure 4.4: Mean scores for OSC components by job role/position

Table 4.4 shows the comparison of means (one way ANOVA) results for respondents in different job roles/positions. The results show that the difference in OSC scores between respondents indicating they occupy different job roles/positions are significant for all OSC components. The *post hoc* analysis further revealed that:

- respondents indicating they occupy upper level management roles report significantly higher mean scores than the frontline workers in all OSC components
- respondents indicating they occupy upper level management report significantly higher mean scores than respondents in lower levels of management in the OSC components of:
  - communication
  - supportive environment
  - learning
  - trust in people and systems
  - resilience, and
  - engagement.
- respondents indicating they occupy lower level management positions report significantly higher score than those indicating they are frontline workers in the OSC component of 'organisational goals and values'.

Table 4.4: Mean OSC score comparison by job role/position

Organisational safety climate component	ANOVA		*Post hoc* analysis			
	F ratio	**Sig. *(p)***	**Sample 1**	**Sample 2**	**Mean diff.**	**Sig. *(p)***
Leadership	14.87	**.000**	Upper level management	Frontline workers	0.58	**.000**
Organisational goals and values	16.54	**.000**	Upper level management	Frontline workers	0.59	**.000**
			Lower level management	Frontline workers	0.43	**.003**
Communication	16.98	**.000**	Upper level management	Lower level management	0.50	**.007**
			Upper level management	Frontline workers	0.68	**.000**
Supportive environment	24.01	**.000**	Upper level management	Lower level management	0.51	**.009**
			Upper level management	Frontline workers	0.85	**.000**
Responsibility, accountability and authority	9.98	**.000**	Upper level management	Frontline workers	0.46	**.000**
Learning	19.48	**.000**	Upper level management	Lower level management	0.39	**.039**
			Upper level management	Frontline workers	0.71	**.000**
Trust in people and systems	17.24	**.000**	Upper level management	Lower level management	0.44	**.010**
			Upper level management	Frontline workers	0.63	**.000**
Resilience	18.93	**.000**	Upper level management	Lower level management	0.39	**.015**
			Upper level management	Frontline workers	0.62	**.000**
Engagement	19.19	**.000**	Upper level management	Lower level management	0.48	**.014**
			Upper level management	Frontline workers	0.76	**.000**

Comparison of OSC by trade

A total of 157 respondents indicated that that they are skilled trade workers and specified their trade backgrounds. Among the 157 respondents, 10 respondents indicated that their trades were not listed. To understand the trade related response difference in organisational safety climate (OSC), the remaining sample of 147 respondents was divided into five sub-sample groups according to their reported trade backgrounds, including:

- bricklaying, carpentry, or joinery
- floor finishing or painting
- glazing, plastering or tiling
- plumbing, and
- electrical.

Figure 4.5 shows the mean scores for the nine components of OSC for the five main trades. Overall, workers engaged in the trade of floor finishing or painting reported lower mean scores for all the OSC components compared to other skilled trade workers.

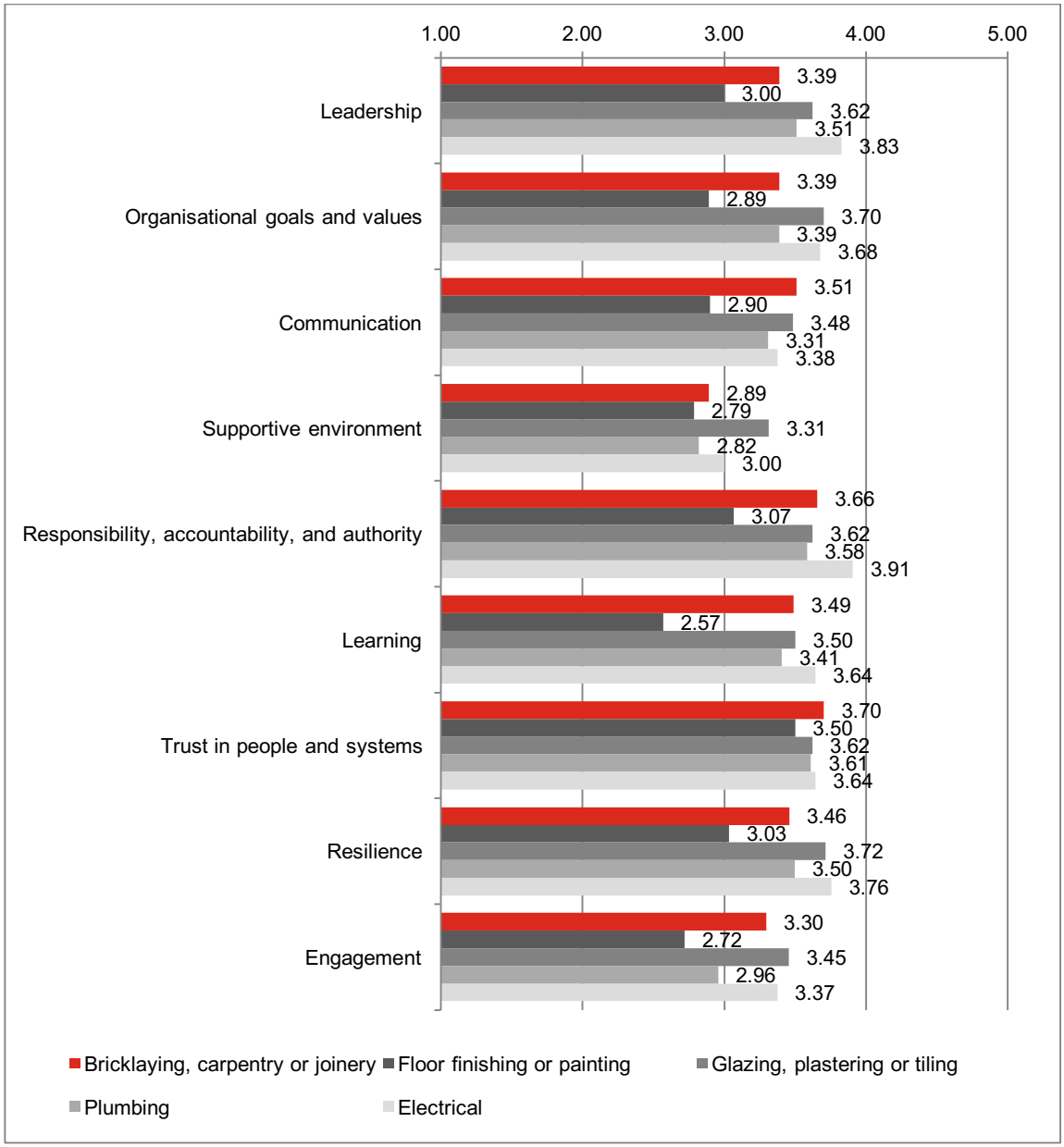


Figure 4.5: Mean scores for OSC by trade

Table 4.5 shows the comparison of means (one way ANOVA) results for respondents in different trades. The results show that the difference in OSC scores between respondents indicating they occupy different trades are statistically significant for the components of:

- leadership
- responsibility, accountability, and authority, and
- learning.

The *post hoc* analysis further shows that:

- workers engaged in the trade of floor finishing or painting reported significantly lower scores than workers engaged in the electrical trade in the OSC components of:

  - leadership
  - responsibility, accountability and authority, and
  - learning.

- workers engaged in the trade of floor finishing or painting reported significantly lower scores than workers engaged in the trades of bricklaying, carpentry or joinery, and glazing, plastering or tiling for the OSC component of 'learning'.

Table 4.5: Mean OSC comparison by trade (skilled trade workers only)

OSC component	ANOVA		*Post hoc* analysis			
	F ratio	Sig. *(p)*	Sample 1	Sample 2	Mean diff.	Sig. *(p)*
Leadership	2.47	**.047**	Floor finishing or painting	Electrical	-0.83	**.046**
Organisational goals and values	2.34	.058				
Communication	0.99	.416				
Supportive environment	1.29	.277				
Responsibility, accountability and authority	2.80	**.028**	Floor finishing or painting	Electrical	-0.84	**.013**
Learning	2.95	**.022**	Floor finishing or painting	Bricklaying, carpentry or joinery	-0.92	**.035**
			Floor finishing or painting	Glazing, plastering or tiling	-0.94	**.037**
			Floor finishing or painting	Electrical	-1.08	**.008**
Trust in people and systems	.15	.963				
Resilience	2.35	.057				
Engagement	2.20	.072				

Comparison of OSC by employment arrangement

A total of 160 respondents indicated their employment arrangements[5]. The sample was divided into four groups according to their reported employment arrangements. These were:

- employment directly by a principal contractor
- self-employed

5 This question was added to the survey after several data collection sessions had taken place.

- employed directly by a subcontractor, and
- engaged under a labour hire arrangement.

Figure 4.6 shows the mean scores for the nine components of OSC for the four groups. Generally, the results show that:

- respondents employed directly by a principal contractor reported the highest mean scores for the OSC components of:
  - organisational goals and values
  - communication, and
  - resilience.
- respondents who are self-employed reported mean scores higher than 3.50 for all the OSC components.
- respondents employed directly by a subcontractor reported the lowest mean scores for all the OSC components, except for the components of 'supportive environment', and 'responsibility, accountability, and authority'.
- respondents engaged under a labour hire arrangement[6] reported the highest mean scores for the OSC components of:
  - leadership
  - responsibility, accountability, and authority
  - learning
  - trust in people and systems, and
  - engagement.

They also reported the lowest mean score for the OSC component of 'supportive environment'.

However, the ANOVA analysis indicated that none of the differences in mean OSC scores between respondents indicating different employment arrangements was significant.

6 Only six respondents indicated that they were engaged under a labour hire arrangement. The low number of participants in this sample group may have impact on the results presented.

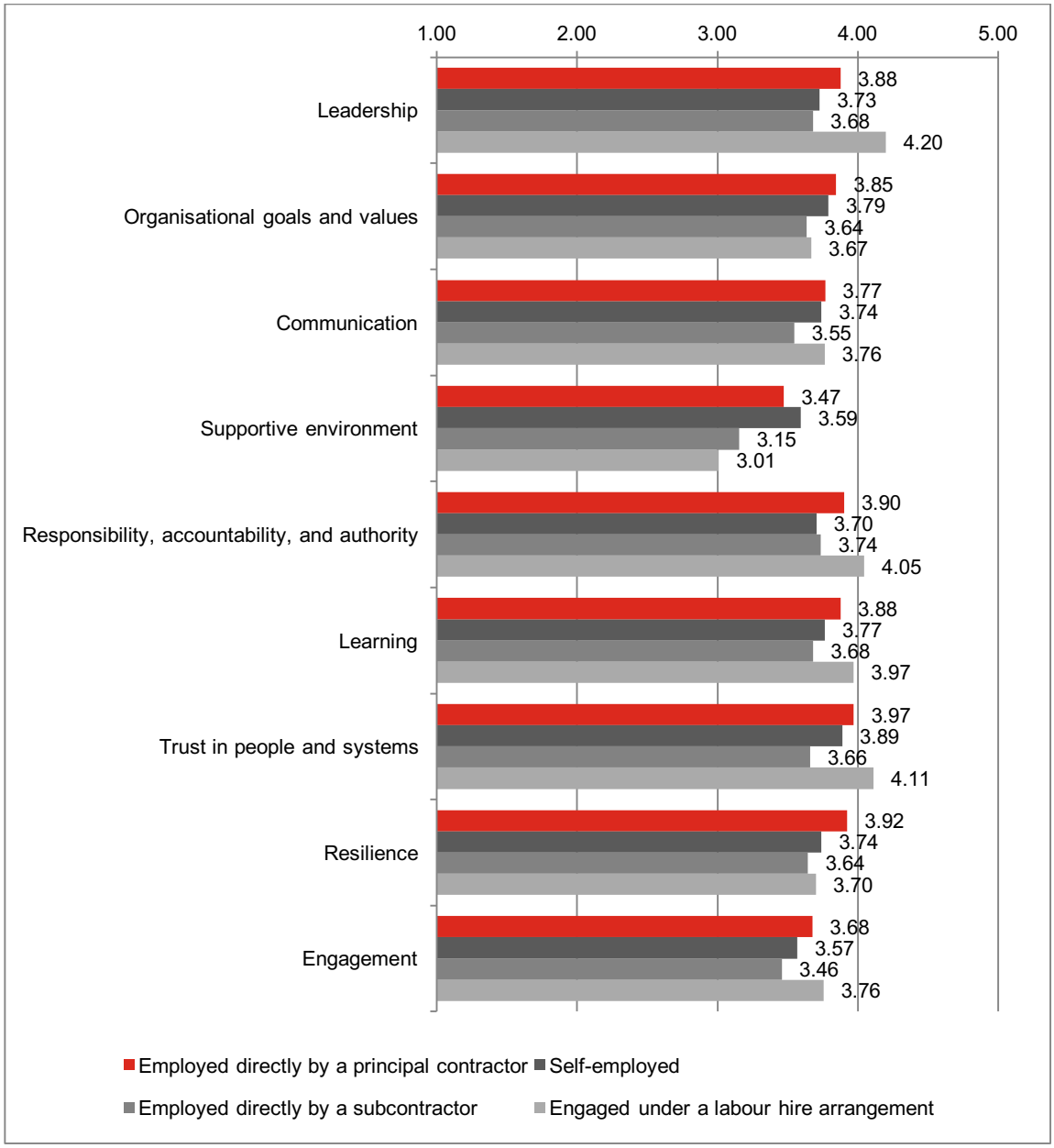


Figure 4.6: Mean OSC scores by employment arrangement

Comparison of OSC by company size

Respondents were divided into five groups based on the size of their employing organisation. These groups were:

- 0 (i.e. self-employed sole trader)
- 1-19
- 20-99
- 100-199, and
- 200 and over.

Figure 4.7 shows the mean scores for the nine components of OSC for the five groups. Overall, respondents engaged by companies of smaller sizes (i.e. self-employed, company size of 1-199, and company size of 20-99) reported higher mean scores than those engaged by companies of larger sizes (i.e. company size of 100-199 and over). The results show that:

- respondents engaged by companies with the size of 20-99 reported the highest mean scores for all OSC components, except for the components of ‘supportive environment’ and ‘trust in people and systems’. Mean scores for all OSC components among this group are above 3.50.
- respondents engaged by companies employing between 100 and 199 people reported the lowest mean scores for all OSC components, except for the components of ‘organisational goals and values’ and ‘responsibility, accountability, and authority’. All mean scores for this group were still above the mid-point value of 3.00.
- respondents who indicated they are self-employed or engaged by a company of between one and 99 workers reported mean scores higher than 3.50 for all the OSC components.
- respondents engaged by companies employing 200 or more reported mean scores higher than the mid-point value of 3.00 for all OSC components, but also reported the lowest mean scores for the components of ‘organisational goals and values’ and ‘responsibility, accountability, and authority’.

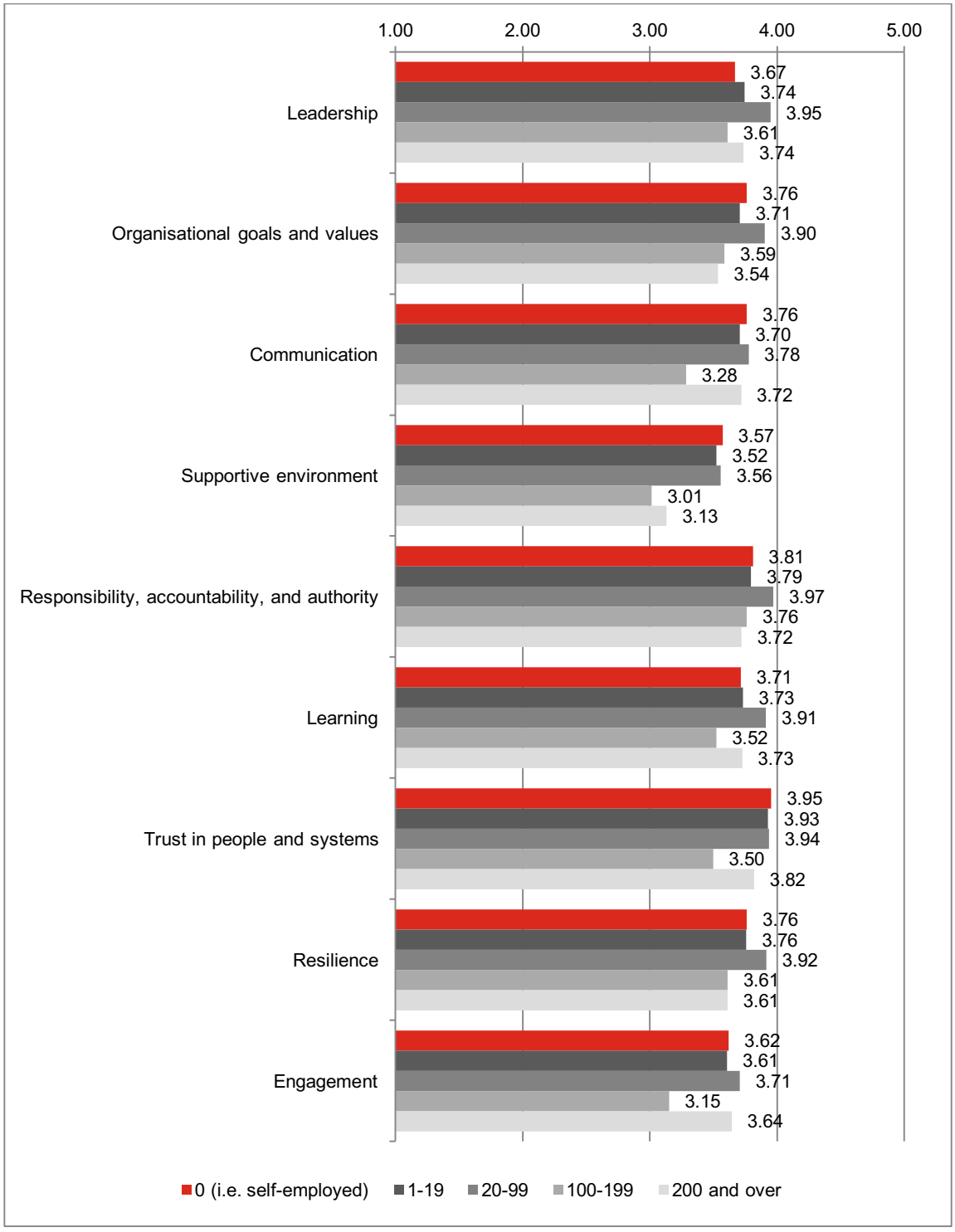


Figure 4.7: Mean OSC scores by company size

Table 4.6 shows that the difference in mean scores between respondents who are employed by different sized construction companies was statistically significant for all OSC components except 'responsibility, accountability and authority'. The *post hoc* analysis indicates that:

- respondents engaged by companies employing between 100 and 199 people reported significantly lower mean scores than respondents engaged by companies employing between

20 and 99 people for all the OSC components, except for the component of 'responsibility, accountability and authority'.

- respondents engaged by companies employing between 100 and 199 reported significantly lower mean scores than respondents engaged by companies employing between one and 19 people for the OSC components of:
  - supportive environment
  - trust in people and systems, and
  - engagement.
- respondents engaged by companies employing between 100 and 199 reported significantly lower mean scores than respondents engaged by companies with 200 or more employees for the OSC component of 'engagement'.

Table 4.6: Mean OSC comparison by company size

OSC component	ANOVA		*Post hoc* analysis			
	F ratio	Sig. *(p)*	Sample 1	Sample 2	Mean diff.	Sig. *(p)*
Leadership	2.616	**.035**	100-199	20-99	-0.34	**.024**
Organisational goals and values	3.077	**.016**	100-199	20-99	-0.34	**.047**
Communication	4.354	**.002**	100-199	20-99	-0.49	**.000**
Supportive environment	5.523	**.000**	100-199	1-19	-0.51	**.023**
			100-199	20-99	-0.54	**.000**
Responsibility, accountability and authority	1.702	.149				
Learning	2.739	**.028**	100-199	20-99	-0.39	**.012**
Trust in people and systems	4.123	**.003**	100-199	1-19	-0.43	**.024**
			100-199	20-99	-0.43	**.001**
Resilience	3.006	**.018**	100-199	20-99	-0.31	**.030**
Engagement	4.876	.001	100-199	1-19	-0.46	**.047**
			100-199	20-99	-0.56	**.000**
			100-199	200 and over	-0.49	**.033**

Comparison of OSC by industry sector

Respondents were divided into three groups reflecting the industry sector they indicated they work in. These were:

- residential building,
- commercial/industrial building, and
- civil engineering.

Figure 4.8 shows the mean scores for the nine components of OSC by industry sector. Overall the results show that:

- respondents from the commercial/industrial building sector reported relatively lower mean scores for all the OSC components compared to respondents from the residential building sector and civil engineering sector.
- respondents from the residential building sector reported means scores higher than 4.00 for all OSC components, except for the component of 'engagement'.
- respondents from the civil engineering sector reported mean scores higher than 4.00 for all OSC components, except for the component of 'supportive environment'.

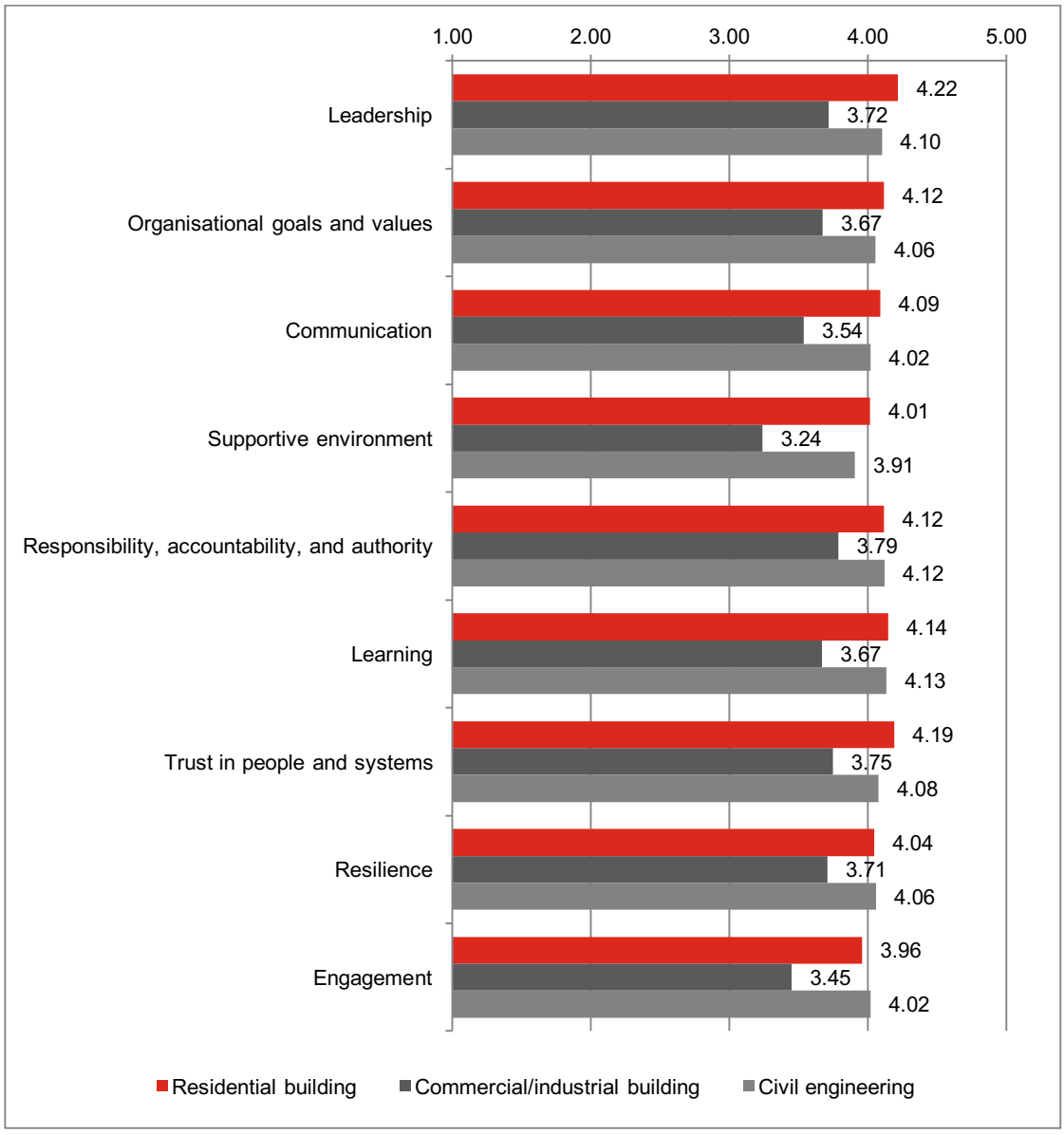


Figure 4.8: Mean OSC scores by industry sector

Table 4.7 shows that the difference in mean scores between respondents who report working in different industry sectors was statistically significant for all OSC components. The *post hoc* analysis revealed that:

- respondents from the commercial/industrial sector reported significantly lower mean scores than respondents from the civil engineering sector for all the OSC components.
- respondents from the commercial/industrial sector reported significantly lower mean scores than respondents from the residential sector for the OSC components of:
  - leadership
  - communication
  - supportive environment
  - learning
  - trust in people and systems, and
  - engagement.

Table 4.7: Mean OSC comparison by industry sector

OSC component	ANOVA		Post Hoc Analysis			
	F ratio	Sig. *(p)*	Sample 1	Sample 2	Mean diff.	Sig. *(p)*
Leadership	7.769	**.000**	Commercial/industrial	Residential	-0.50	**.020**
			Commercial/industrial	Civil engineering	-0.38	**.005**
Organisational goals and values	6.753	**.001**	Commercial/industrial	Civil engineering	-0.38	**.007**
Communication	9.525	**.000**	Commercial/industrial	Residential	-0.55	**.018**
			Commercial/industrial	Civil engineering	-0.48	**.001**
Supportive environment	15.998	**.000**	Commercial/industrial	Residential	-0.78	**.001**
			Commercial/industrial	Civil engineering	-0.67	**.000**
Responsibility, accountability and authority	5.339	**.005**	Commercial/industrial	Civil engineering	-0.33	**.012**
Learning	8.515	**.000**	Commercial/industrial	Residential	-0.48	**.044**
			Commercial/industrial	Civil engineering	-0.47	**.001**
Trust in people and systems	5.861	**.003**	Commercial/industrial	Residential	-0.44	**.049**
			Commercial/industrial	Civil engineering	-0.33	**.020**
Resilience	6.021	**.003**	Commercial/industrial	Civil engineering	-0.35	**.007**
Engagement	10.340	**.000**	Commercial/industrial	Residential	-0.51	**.045**
			Commercial/industrial	Civil engineering	-0.57	**.000**

Workgroup safety climate (WSC)

Comparison of WSC by job role/position

Figure 4.9 shows the mean scores for the nine components of organisational safety climate (OSC) for the three position/job role groups of:

- upper level management
- lower level management, and
- frontline workers.

Overall results show:

- respondents indicating that they occupy upper level management job roles/positions reported the highest mean scores for all the workgroup safety climate (WSC) components, except for the component of ‘communication’. All the mean WSC scores for this group were above 3.50.
- respondents indicating that they occupy lower level management job roles/positions reported mean scores higher than 3.50 for all WSC components, and also reported the highest mean score for the component of ‘communication’
- respondents indicating that they are frontline workers reported the lowest mean scores for all WSC components. All WSC mean scores in this group were above the mid-point value of 3.00.

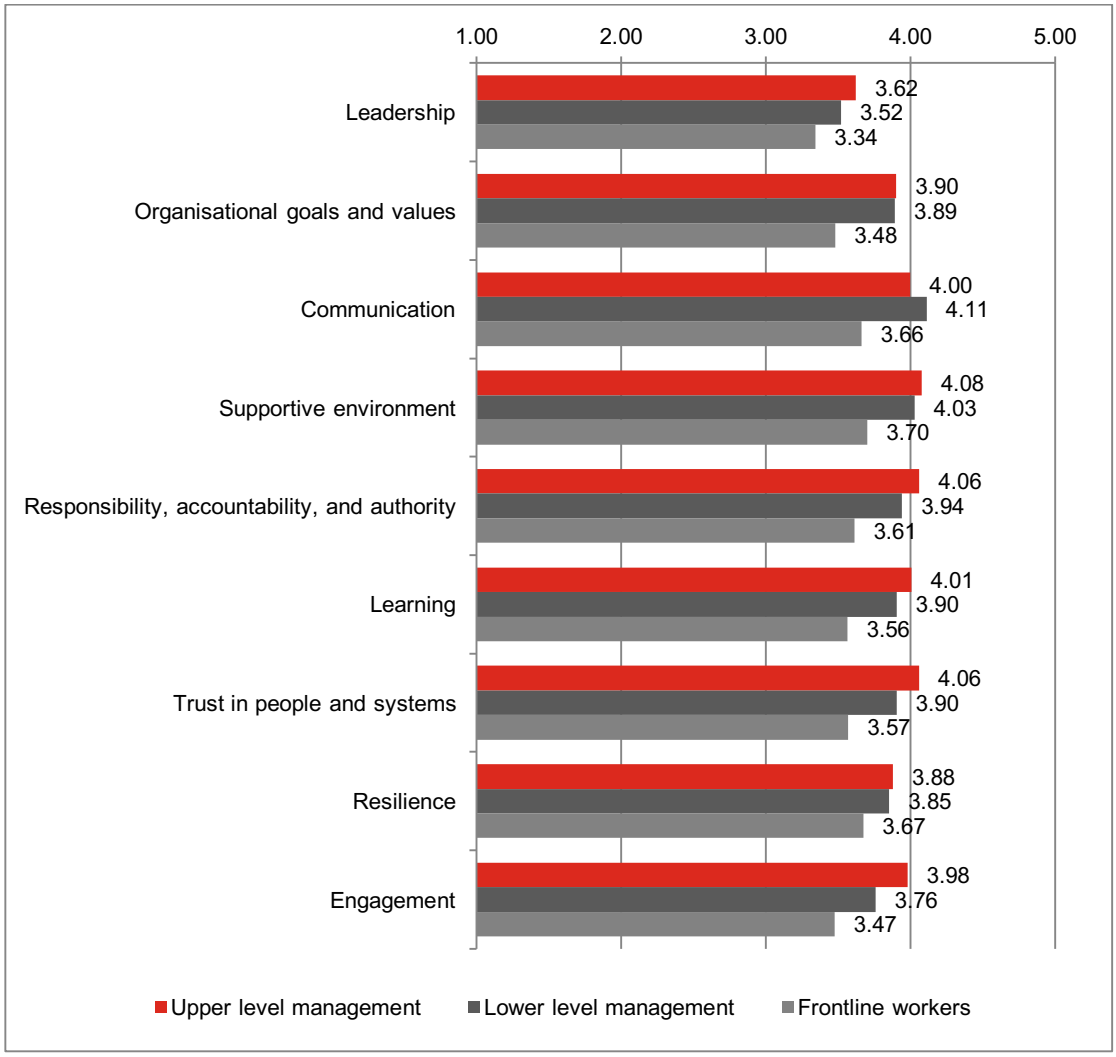


Figure 4.9: Mean WSC scores by job role/position

Table 4.8 shows that the difference on mean WSC scores between respondents in different job roles/positions was statistically significant for all WSC components. The *post hoc* analysis further indicates that:

- frontline workers reported significantly lower mean scores than the upper level management in all the WSC components, except for the component of 'resilience'.
- frontline workers reported significantly lower mean scores than lower level management in WSC components of:
  - organisational goals and values
  - communication
  - supportive environment
  - responsibility, accountability and authority
  - learning, and
  - trust in people and systems.

Table 4.8: Mean WSC comparison by job role/position

Workgroup safety climate component	ANOVA		*Post hoc* analysis			
	F ratio	Sig. *(p)*	Sample 1	Sample 2	Mean diff.	Sig. *(p)*
Leadership	6.350	**.002**	Frontline workers	Upper level management	-0.28	**.002**
Organisational goals and values	10.602	**.000**	Frontline workers	Upper level management	-0.42	**.000**
			Frontline workers	Lower level management	-0.41	**.004**
Communication	9.738	**.000**	Frontline workers	Upper level management	-0.34	**.004**
			Frontline workers	Lower level management	-0.45	**.001**
Supportive environment	8.684	**.000**	Frontline workers	Upper level management	-0.38	**.001**
			Frontline workers	Lower level management	-0.33	**.021**
Responsibility, accountability and authority	12.175	**.000**	Frontline workers	Upper level management	-0.45	**.000**
			Frontline workers	Lower level management	-0.33	**.014**
Learning	11.607	**.000**	Frontline workers	Upper level management	-0.44	**.000**
			Frontline workers	Lower level management	-0.34	**.013**
Trust in people and systems	12.119	**.000**	Frontline workers	Upper level management	-0.49	**.000**
			Frontline workers	Lower level management	-0.34	**.022**
Resilience	3.177	**.043**				
Engagement	12.019	**.000**	Frontline workers	Upper level management	-0.50	**.000**

Comparison of WSC by trade

Figure 4.10 shows the mean scores for the nine components of WSC for the five major trade groups of:

- bricklaying, carpentry, or joinery
- floor finishing or painting
- glazing, plastering or tiling
- plumbing, and
- electrical.

Overall results indicate that:

- workers engaged in the trade of floor finishing or painting reported relatively lower mean scores compared to other groups for all the WSC components, except for the components of 'supportive environment', and 'responsibility, accountability and authority'.
- Workers engaged in the trade of glazing, plastering or tiling reported the highest mean scores for the WSC components of:
  - organisational goals and values
  - communication
  - supportive environment
  - learning
  - resilience, and
  - engagement.

However, the one-way analyses of variance indicated that none of the differences in mean between trades groups was statistically significant.

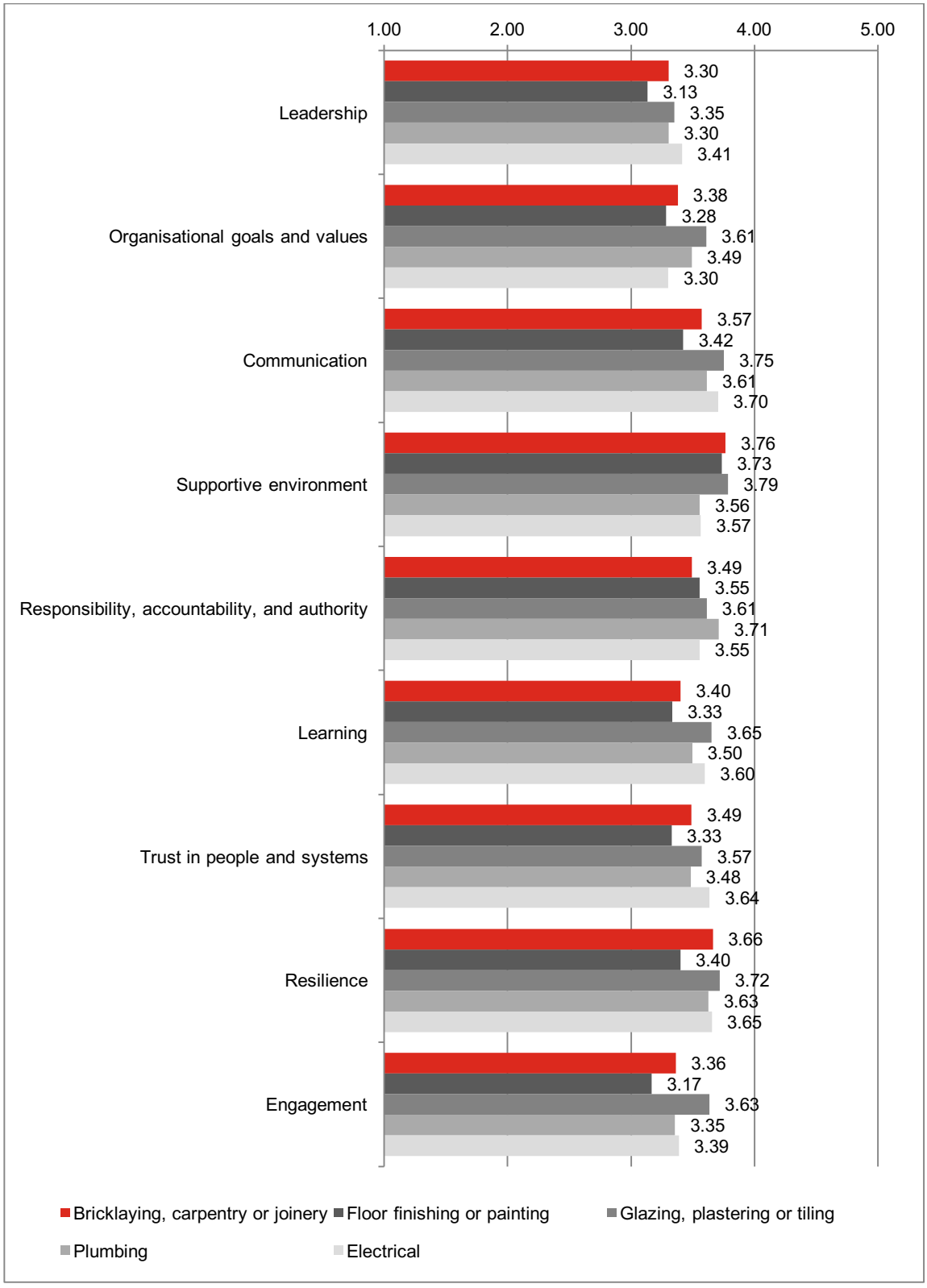


Figure 4.10: Mean WSC scores by trade

Comparison of WSC by employment arrangements

Figure 4.11 shows the mean scores for the nine components of WSC for four groups of respondents indicating they are employed under the following arrangements:

- employment directly by a principal contractor
- self-employed
- employed directly by a subcontractor, and
- engaged under a labour hire arrangement.

Generally, the results show that:

- respondents employed directly by a principal contractor reported mean scores higher than 3.50 for eight out of nine WSC components, and reported the highest mean scores for the WSC components of:
  - responsibility, accountability, and authority
  - learning, and
  - engagement.
- respondents who are self-employed reported mean scores higher than 3.50 for all the WSC components, and reported the highest means scores for the WSC components of:
  - leadership
  - communication
  - supportive environment
  - learning, and
  - trust in people and systems.
- respondents employed directly by a subcontractor reported mean scores higher than 3.00 for all the WSC components, but reported the lowest mean scores for the WSC components of:
  - organisational goals and values
  - responsibility, accountability, and authority, and
  - engagement.
- respondents engaged under a labour hire arrangement[7] reported mean scores higher than the mid-value point of 3.00 for eight out of nine WSC components, and reported the highest mean scores for the WSC components of:
  - organisational goals and values, and
  - resilience.

7 Only six respondents indicated that they were engaged under a labour hire arrangement. The low number of participants in this sample group may have impact on the results presented.

They also reported the lowest mean score for the WSC components of:

- leadership
- communication
- supportive environment
- learning, and
- trust in people and systems.

However, the analysis of variance results indicated that none of the overall differences between mean WSC scores reported by these different groups was statistically significant (see Table 4.9).

The *post hoc* analysis did show that respondents engaged under a labour hire arrangement reported significantly lower mean value than the respondents who are self-employed for the WSC component of leadership.

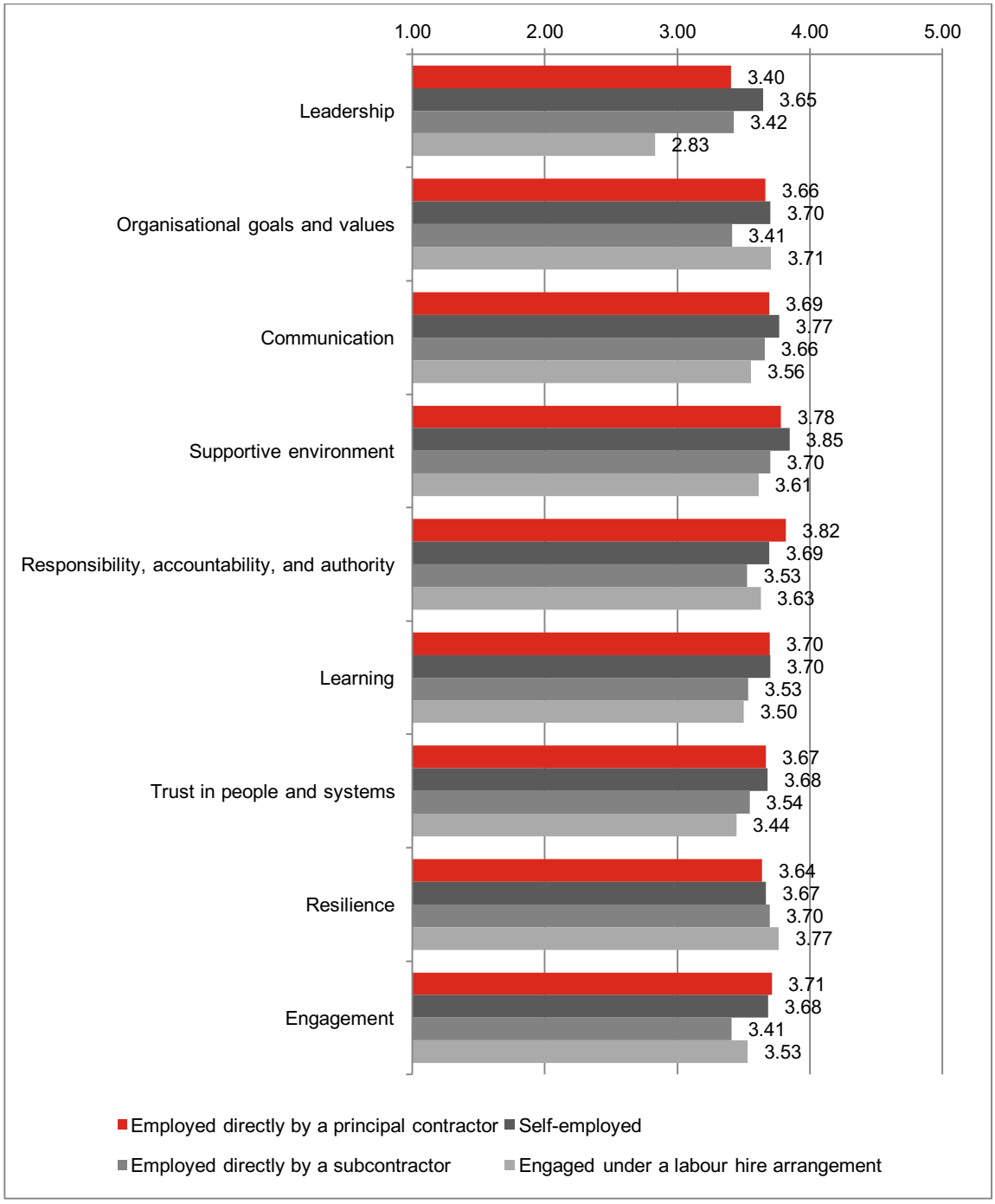


Figure 4.11: Mean WSC scores by employment arrangement

Table 4.9: Mean WSC comparison by employment arrangement

Workgroup safety climate component	ANOVA		*Post hoc* analysis			
	F ratio	Sig. *(p)*	Sample 1	Sample 2	Mean diff.	Sig. *(p)*
Leadership	2.393	.071	Engaged under a labour hire arrangement	Self-employed	-0.81	**0.050**
Organisational goals and values	.957	.415				
Communication	.153	.928				
Supportive environment	.255	.858				
Responsibility, accountability and authority	1.344	.262				
Learning	.525	.666				
Trust in people and systems	.303	.823				
Resilience	.087	.967				
Engagement	1.488	.220				

Comparison of WSC by company size

Figure 4.12 shows the mean scores for the nine components of WSC for the five groups of respondents indicating they work for organisations employing the following number of people:

- 0 (i.e. self-employed/sole trader)
- 1-19
- 20-99
- 100-199, and
- 200 and over.

Overall results show that:

- respondents who were self-employed reported mean scores higher than 3.50 for all the WSC components, and reported the highest mean score for the component of 'leadership'.
- respondents engaged by companies employing between one and 19 people reported mean scores higher than 3.50 for eight out of nine components, and reported the highest mean scores for the components of:

  - communication
  - supportive environment
  - learning, and
  - resilience.

- respondents engaged by companies employing between 20 and 99 people reported mean scores higher than 3.50 for eight out of nine components, and reported the highest mean scores for the WSC components of:

  - communication
  - trust in people and systems
  - resilience, and
  - engagement.

- respondents engaged by companies employing between 100 and 199 reported the lowest mean scores for all WSC components. All mean scores for this group were higher than the mid-point value of 3.00.
- respondents engaged by companies employing 200 or more people reported mean scores higher than 3.50 for eight out of nine components, and reported the highest mean scores for the WSC components of:

  - organisational goals and values, and
  - responsibility, accountability, and authority.

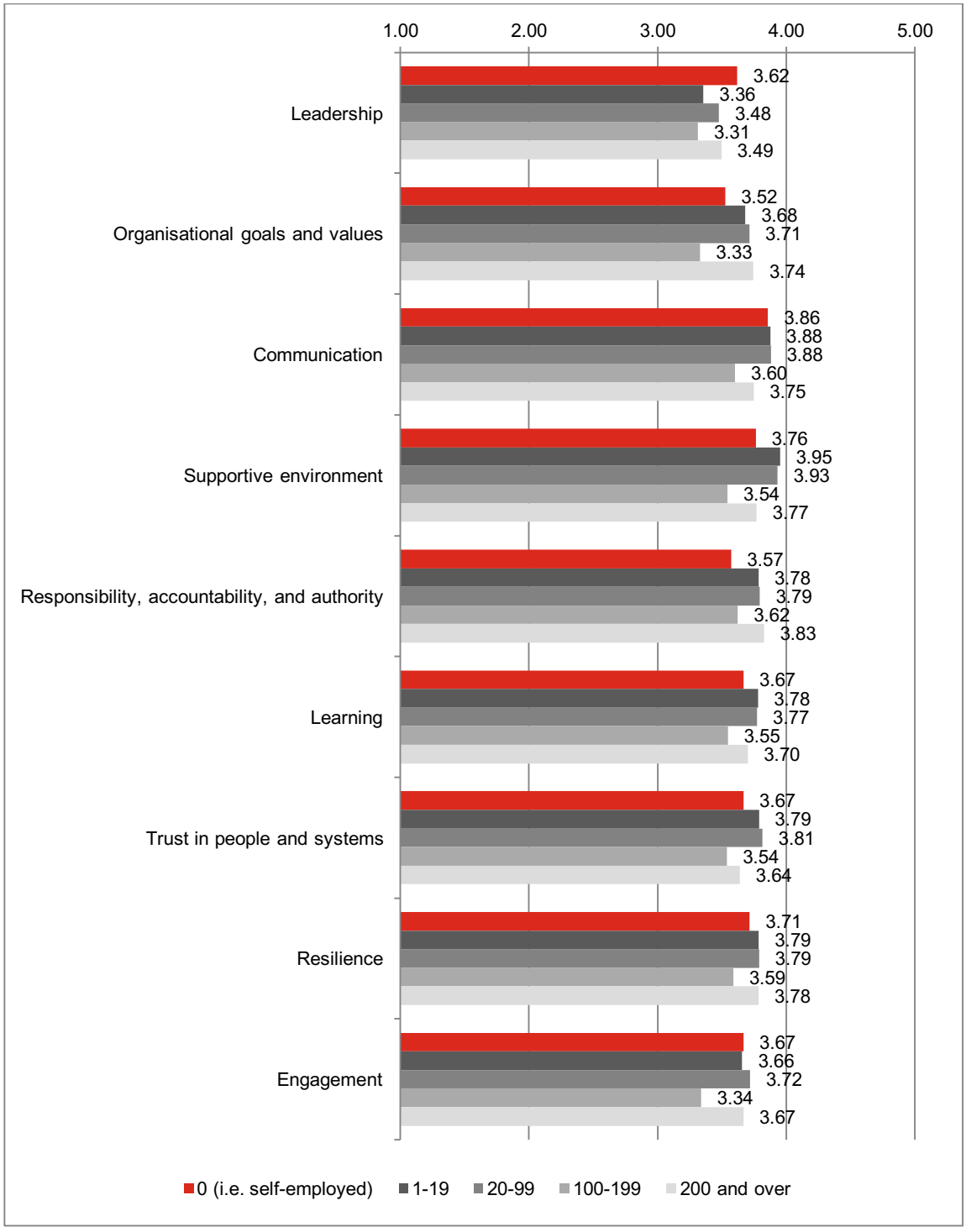


Figure 4.12: Mean WSC scores by company size

Table 4.10 shows that overall differences in mean WSC scores by company size (employment) were significant for the following components of WSC:

- organisational goals and values
- supportive environment, and
- engagement.

The *post hoc* analysis further revealed that:

- respondents working for companies employing between 100 and 199 people reported significantly lower mean scores than respondents engaged by companies employing between 20 and 99 people for the WSC components of ‘organisational goals and values’, and ‘supportive environment’.
- respondents engaged by companies employing between 100 and 199 people reported significantly lower mean score than respondents engaged by companies employing 200 or more people for the component of ‘organisational goals and values’.
- respondents engaged by companies employing between 100 and 199 people reported significantly lower mean score than respondents engaged by companies employing between one and 19 people for the component of ‘supportive environment’.

Table 4.10: Mean WSC comparison by company size

Workgroup safety climate component	**ANOVA**		***Post hoc* analysis**			
	F ratio	**Sig. *(p)***	**Sample 1**	**Sample 2**	**Mean diff.**	**Sig. *(p)***
Leadership	1.391	.236				
Organisational goals and values	3.263	**.012**	100-199	20-99	-0.38	**.007**
			100-199	200 and over	-0.41	**.049**
Communication	1.834	.121				
Supportive environment	3.840	**.004**	100-199	1-19	-0.41	**.024**
			100-199	20-99	-0.39	**.002**
Responsibility, accountability and authority	.924	.450				
Learning	1.282	.277				
Trust in people and systems	1.797	.129				
Resilience	1.278	.278				
Engagement	3.010	**.018**	100-199	20-99	-0.38	**.006**

Comparison of WSC by industry sector

Figure 4.13 shows the mean scores for the nine components of WSC by industry sector.

Overall the results show that:

- respondents indicating that they work in the residential sector reported mean scores higher than 3.50 for all the WSC components, with four components scored higher than 4.00.
- respondents indicating that they work in the commercial/industrial building sector reported the lowest mean scores for all the WSC component. All mean scores are still above the mid-point value of 3.00.
- respondents indicating that they work in the civil engineering sector reported mean scores higher than 3.50 for all the WSC components, with four components scored higher than 4.00.

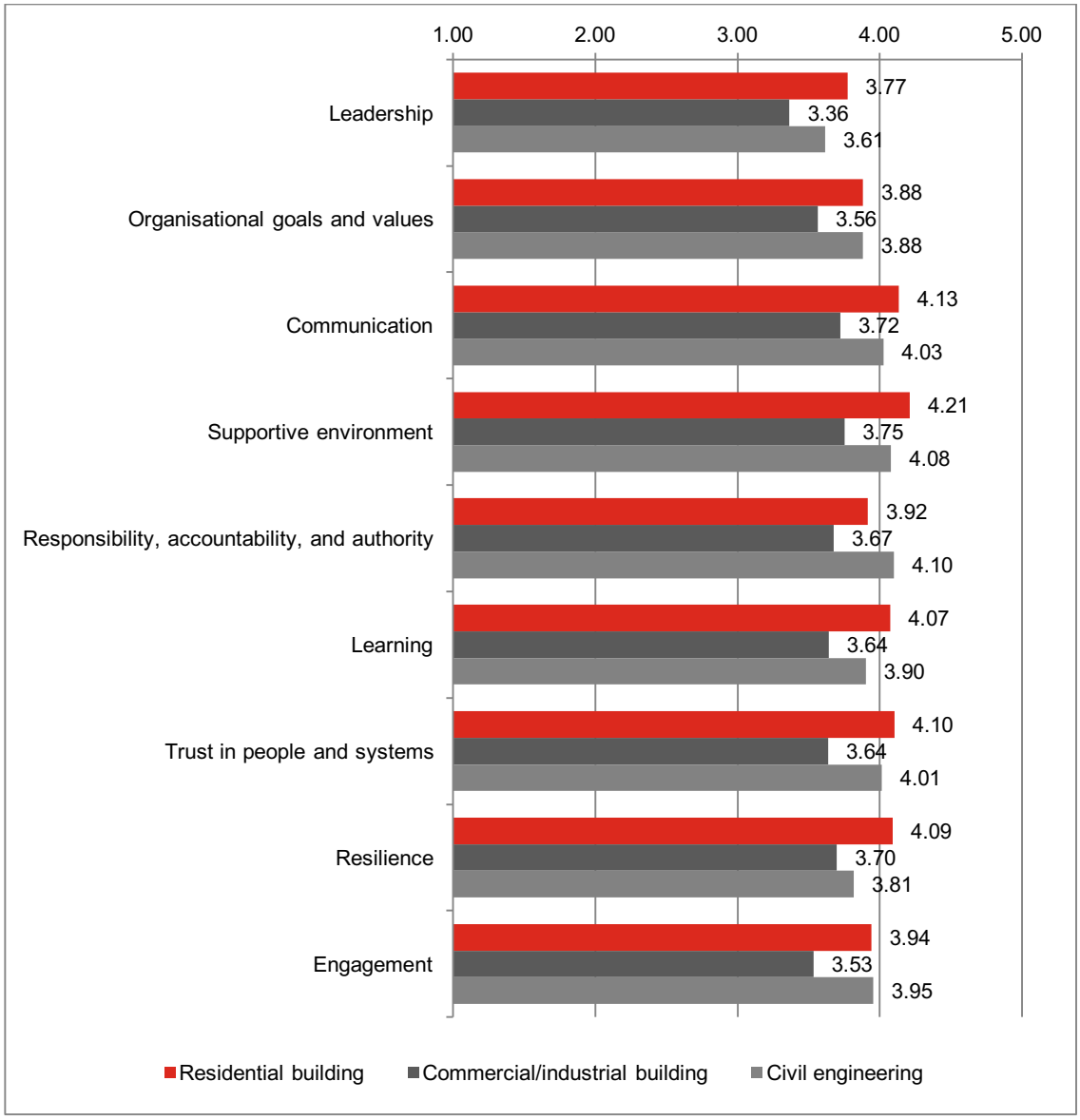


Figure 4.13: Mean WSC scores by industry sector

Table 4.11 shows that the difference in mean WSC scores by industry sector was statistically significant for all components of WSC. The *post hoc* analysis revealed that:

- respondents who indicated working in the commercial/industrial building sector reported significantly lower mean scores than respondents who indicated working in the civil engineering sector for all WSC components, except for the components of 'learning' and 'resilience', and
- respondents who indicated working in the commercial/industrial building sector reported significantly lower mean scores than respondents who indicated they work in the residential building sector for WSC components of:
  - leadership
  - supportive environment
  - learning
  - trust in people and systems, and
  - resilience.

Table 4.11: Comparison analysis of WSC by working sector

Workgroup safety climate component	ANOVA		*Post hoc* analysis			
	F ratio	Sig. *(p)*	Sample 1	Sample 2	Mean diff.	Sig. *(p)*
Leadership	7.162	**.001**	Commercial/industrial	Residential	-0.41	**.011**
			Commercial/industrial	Civil engineering	-0.25	**.019**
Organisational goals and values	4.440	**.012**	Commercial/industrial	Civil engineering	-0.32	**.026**
Communication	5.450	**.005**	Commercial/industrial	Civil engineering	-0.30	**.027**
Supportive environment	6.711	**.001**	Commercial/industrial	Residential	-0.46	**.027**
			Commercial/industrial	Civil engineering	-0.33	**.013**
Responsibility, accountability and authority	7.830	**.000**	Commercial/industrial	Civil engineering	-0.42	**.000**
Learning	5.162	**.006**	Commercial/industrial	Residential	-0.43	**.036**
Trust in people and systems	7.548	**.001**	Commercial/industrial	Residential	-0.47	**.030**
			Commercial/industrial	Civil engineering	-0.38	**.005**
Resilience	3.544	**.030**	Commercial/industrial	Residential	-0.39	**.034**
Engagement	7.962	**.000**	Commercial/industrial	Civil engineering	-0.42	**.001**

Benchmarking safety climate scores

A similar safety climate survey was conducted in 2014 to assess and validate the original health and safety climate measurement tool. The survey was administered to construction workers at 12 sites across Australia. A total of 235 valid responses were received for the organisational safety climate, and 241 valid responses were received for the workgroup safety climate. Those workers worked for different (mostly large) construction contractors and data was collected across the civil engineering and commercial/industrial building sectors of the construction industry. The residential building sector was not represented.

The validation survey provides an opportunity to benchmark and compare the Australian Capital Territory (ACT) safety climate survey results with data collected in the construction industries of New South Wales and Victoria.

Organisational safety climate

One limitation of this comparative analysis is that the original survey items were subject to some rewording and refinement after the validation survey. Most of these modifications (OSC item modifications are shown in Table 4.12) were relatively minor, but were made based on recommendations of people in the construction industry In relation to the OSC survey, items were re-framed to ask respondents to respond in relation to their employer, rather than the principal contractor at a given site.

Table 4.12: OSC survey items before and after the validation study

Before	After
Leadership	
Management of [principal contractor's name] acts quickly and decisively when a safety concern is raised	My employer acts quickly and decisively when a safety concern is raised
Management of [principal contractor's name] is strict about working safely when work falls behind schedule	My employer prioritises health and safety in all business decisions
Management of [principal contractor's name] really cares about the health and safety of the people who work here	My employer really cares about the health and safety of their employees
Organisational goals and values	
In [principal contractor's name], there is sometimes pressure to put production before safety	My employer sees health and safety as able to contribute to profitability
Management of [principal contractor's name] shows commitment to health and safety as a core value	My employer shows commitment to health and safety as a core value
[Principal contractor's name] would stop us working due to safety concerns, even if it means losing money	My employer would stop work due to safety concerns

Responsibility, accountability, and authority	
Management of [principal contractor's name] is only interested in safety after there is an accident	My employer is always interested in safety
Management of [principal contractor's name] has defined the safety objectives clearly	My employer has defined the safety objectives clearly
Management of [principal contractor's name] provides adequate training to the Workforce	My employer provides adequate training to the workforce
Learning	
[Principal contractor's name] actively uses information about errors or problems to improve safe work procedures	My employer actively uses information about errors or problems to improve safety performance
[Principal contractor's name] encourages open reporting of mistakes and errors that could affect health and safety	My employer encourages open reporting of mistakes and errors that could affect health and safety
[Principal contractor's name] is constantly seeking new ways to work more safely	My employer is constantly seeking new ways to work more safely
Engagement	
[Principal contractor's name] engages workers in health and safety inspections and audits	My employer engages workers in health and safety inspections/audits etc.
At [principal contractor's name] sites, I have a fair opportunity to influence managers' safety related decisions	My employer involves workers when making health and safety decisions
At [principal contractor's name] sites, I can influence health and safety performance	My employer actively seeks information from workers on how to improve health and safety
Resilience	
At [principal contractor's name] sites, early warning signs of safety problems are identified and addressed	My employer is able to monitor safety performance well
At [principal contractor's name] sites, resources are managed so we are always able to cope with a small amount of unexpected change	My employer is well prepared to respond to regular and irregular safety problems
People in [principal contractor's name] are encouraged to 'think outside of the box' to improve health and safety	My employer knows what affects safety performance
Communication	
There is good communication at [principal contractor's name] sites about health and safety issues which could affect me	When working for my employer, there is good communication about health and safety issues
Workers are always given feedback by [principal contractor's name] about accidents/incidents that occur	When working for my employer, workers are always given feedback about accidents/incidents that have occurred
Workers can express their views about safety policy at [principal contractor's name] sites	When working for my employer, workers' views about safety issues are listened to

Supportive environment	
At [principal contractor's name] sites it is considered important for workers to have sufficient time for family or social life	When working for my employer, workers having time for family/social life is considered important
Management of the [principal contractor's name] cares about the negative effect that job uncertainty has on workers' health and safety	When working for my employer, management care about workers' job security
Workers at [principal contractor's name] sites have high levels of job satisfaction	When working for my employer, workers have high levels of job satisfaction
Trust in people and systems	
At [principal contractor's name] sites, investigations help to prevent accidents from recurring	When working for my employer, incident investigations help to prevent accidents from reoccurring
At [principal contractor's name] sites, people are willing to report incidents	When working for my employer, incidents are reported without fear
At [principal contractor's name] sites, procedures are only there to 'cover managers' backs'	When working for my employer, procedures are there to keep workers safe

Figure 4.14 shows that the respondents to the ACT survey reported higher means scores for all the organisational safety climate (OSC) components than those reported in the validation survey.

A comparison of means analysis (t-test) indicated that the ACT OSC scores were significantly higher than obtained in the validation survey for the OSC components of:

- leadership (t = 4.614, p = 0.000)
- organisational goals and values (t = 6.919, p = 0.000
- supportive environment (t = 3.086, p = 0.002)
- responsibility, accountability and authority (t = 6.993, p = 0.000)
- trust in people and systems (t = 7.741, p = 0.000)
- resilience (t = 3.135, p = 0.002), and
- engagement (t = 1.990, p = 0.047).

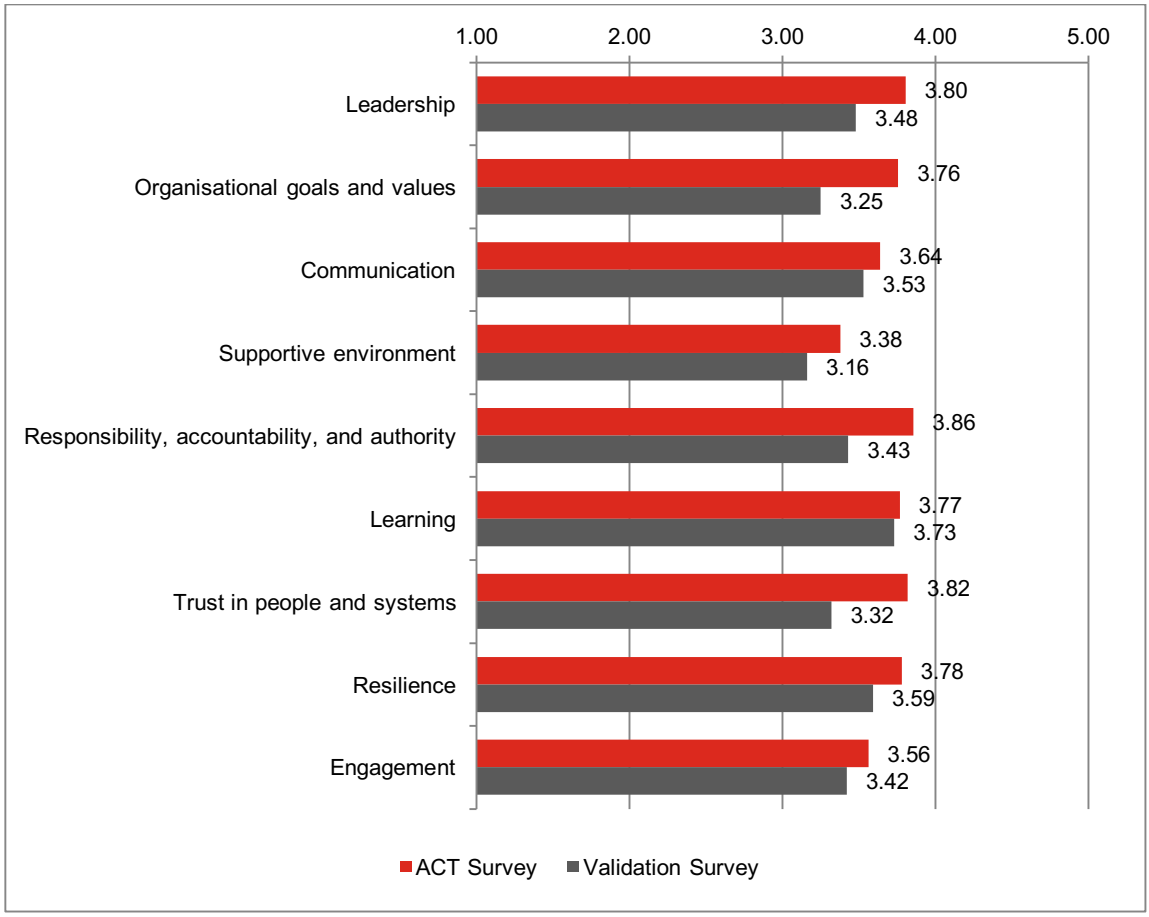


Figure 4.14: Comparison of OSC scores between the ACT and existing dataset

Workgroup safety climate

Table 4.13 shows the changes made to the WSC survey items following the validation study. Following the validation study all WSC items were structured such that they began with the words “In this workgroup…” and the use of the personal pronoun “I” was removed.

Table 4.13: WSC survey items before and after the validation study

Before	After
Leadership	
My supervisor refuses to ignore safety rules when work falls behind schedule	In this workgroup, the supervisor(s) ignores some safety rules when work falls behind schedule
My supervisor suggests new ways of doing our jobs more safely	In this workgroup, the supervisor(s) suggests improved ways of doing the work safely
My supervisor talks about his/her values and beliefs regarding the importance of safety	In this workgroup, the supervisor(s) talks regularly about the importance of safety
Organisational goals and values	

In this workgroup, I report dangerous situations when I see them	In this workgroup, dangerous situations are always reported
In this workgroup, I ask my colleagues to stop work when I think the job is being done in a risky manner	In this workgroup, workers intervene when others are working unsafely
In this workgroup, I stop working if I think it would be dangerous for me to continue	In this workgroup, workers stop if it is dangerous to continue
Responsibility, accountability and authority	
In this workgroup, coworkers discuss changes that could improve safety	In this workgroup, workers discuss changes that could improve safety
In this workgroup, workers avoid creating hazards for coworkers	In this workgroup, workers avoid creating hazards for coworkers
People in this workgroup want to achieve high levels of safety	In this workgroup, workers want to achieve high levels of safety
Communication	
In this workgroup, coworkers remind each other to take precautions	In this workgroup, workers remind each other to take precautions
In this workgroup, workers feel comfortable discussing safety issues with their supervisor	In this workgroup, workers feel comfortable discussing safety issues with their supervisor(s)
In this workgroup, workers feel that their supervisor openly accepts ideas for improving safety	In this workgroup, workers feel that their supervisor(s) openly listens to ideas for improving safety
Supportive environment	
My coworkers cooperate with each other to get the work done safely	In this workgroup, workers cooperate with each other to get the work done safely
My supervisor supports workers who need to temporarily reduce their working hours for family or personal reasons	In this workgroup, the supervisor(s) supports workers who need to temporarily reduce their working hours for family or personal reasons
I fully understand the health and safety risks associated with my work	In this workgroup, workers understand the health and safety risks associated with the job
Learning	
When someone in the workgroup makes an error, they share it with the rest of us so no-one else makes the same mistake	In this workgroup, errors made are shared so no-one else makes the same mistake
In this workgroup, workers are given feedback about changes made based on incident reports	In this workgroup, workers are given feedback about changes made based on incident reports
In this workgroup, workers discuss ways to prevent errors from happening again	In this workgroup, workers discuss ways to prevent errors from happening again
Trust in people and systems	
In my workgroup, I trust my supervisor's judgement when it comes to safety	In this workgroup, the supervisor's judgement is trusted when it comes to safety

There is a clear distinction between unavoidable errors and unacceptable actions in this workgroup	In this workgroup, there is a clear distinction between accidental errors and unacceptable actions
In my workgroup, workers are satisfied with follow-up measures after accidents have taken place	In this workgroup, workers are satisfied with follow-up measures after accidents have taken place
Engagement	
I am given a fair opportunity to influence the decisions made by supervisors	In this workgroup, there is a fair opportunity to influence managers' safety related decisions
I am involved in informing supervisors of important safety issues in this workgroup	In this workgroup, workers are involved in informing management of important safety issues
I am never involved in the ongoing review of safety in my workgroup	In this workgroup, workers are involved in the ongoing review of safety activities
Resilience	
Supervisors proactively monitor what is happening in the workgroup to have an early warning of emerging issues	In this workgroup, workers are able to adjust to irregular safety problems
In my workgroup, if something out of the ordinary happens, people know who has the knowledge and experience to respond	In this workgroup, workers are well prepared to respond to safety problems
It is generally easy to obtain assistance from coworkers or supervisors when something comes up that I don't know how to handle	In this workgroup, workers know what affects safety performance

Figure 4.15 shows the comparison of workgroup safety climate (WSC) mean scores between the ACT survey and the validation survey. Overall the results indicate that:

- the ACT survey achieved higher mean scores than the validation survey for the WSC components of 'learning', and 'engagement'.
- the ACT survey recorded lower scores than the validation survey for the WSC components of:
  - leadership
  - organisational goals and values
  - supportive environment
  - responsibility, accountability, and authority, and
  - resilience.

The t-test analysis indicates that the mean score difference between the ACT survey and the validation survey was statistically significant for the WSC components of:

- organisational goals and values ($t = -6.016$, $p = 0.000$)
- responsibility, accountability, and authority ($t = -2.975$, $p = 0.003$)
- resilience ($t = -2.327$, $p = 0.020$), and
- engagement ($t = 2.616$, $p = 0.009$).

Figure 4.15: Comparison of WSC scores between ACT and existing data set

Part 5: Focus group results

Focus groups

Purpose of focus groups

The purpose of focus groups was to provide qualitative data relating to:

- the state of the present-day culture for WHS in the ACT construction industry
- what a 'positive' or 'strong' WHS culture would look like in operational terms across the sector
- barriers to improving the industry's WHS culture, and
- the role of key stakeholders in driving sustainable cultural change and enhancing awareness of WHS issues across the sector, including opportunities for ongoing collaboration.

Participants

Four focus groups were conducted in Canberra during May 2017. Participants were recruited by the ACT Government and included a cross section of construction industry stakeholders, representing, industry associations, unions, government and construction industry employers.

Structure and process of the focus groups

Participants were encouraged to respond to a series of questions displayed on a PowerPoint presentation. The focus group session started with an introduction from the ACT Government and then presented a series of slides for discussion. In order to provide a backdrop to the discussions, the RMIT researchers provided a high-level overview of the results of the safety climate survey sessions carried out in April / May 2017, prior to the focus groups (Appendix 8.2). The slide pack for the focus group discussion included six key sections to be discussed, with ten minutes allotted to each (see Appendix 8.3).

The six key areas explored were:

1. ACT construction industry WHS performance against goals
2. The industry’s WHS capability and competence and its impact on culture and performance
3. Client WHS leadership in the ACT
4. WHS compliance and culture in the ACT construction industry
5. Worker engagement and WHS management, and
6. The impact of industry supply networks on WHS.

This approach is consistent with the outline proposed in RMIT’s response to the ACT Government’s tender documents (see Table 5.1).

Table 5.1: Focus group structure and questions

Area to explore (from the ACT Government's tender response)	Focus group section	Indicative questions
The ACT construction industry's WHS performance - particularly in relation to the goals established in the *Australian Work Health and Safety Strategy 2012-22* and the targeted reduction of 35% in serious injury claim rate by 2016 (Recommendations 3&4).	ACT performance against goals	how is the industry performing – are injury rates declining? How/why? how does the industry perform in workers' health, as well as safety?
The development of WHS capability at all levels in construction workforce and the impacts of capability on culture and WHS (Recommendations, 7,8,11, 12, 13, 14, 15, 16, 17, 18).	Capability and competence and its impact on culture	what is the state of WHS capability/competence? (relative to clients, designers, principal contractors, subcontractors and others?) is WHS training effective? Why/why not?
Proactive client WHS leadership and impact on driving cultural change in the procurement of construction projects (Recommendations 25, 26).	Client leadership	what client-led initiatives have improved WHS? can/should clients do more to drive WHS in the ACT construction industry?
The achievement of a positive, inclusive safety culture on ACT worksites, with a shift in focus from systems, compliance and reaction to a genuine focus on culture and people (Recommendation 5)	Compliance and culture	how important/effective are WHS systems currently in place? are WHS systems focus too paper-based? how do organisational/project cultures impact on WHS? how are pressures between production and WHS handled?
The relative emphasis on paper work and systems in relation to worker engagement and practical initiatives which have meaning and value to employees (Recommendation 6)	Worker engagement and WHS management	are workers genuinely engaged in WHS processes? why/why not? how well do consultative processes work? has this changed in recent years? If so, how/why?
Principal contractors' acceptance of responsibility for subcontractors' WHS, inclusion of subcontractors in WHS initiatives and ability to drive WHS cultural maturity in the supply chain (Recommendation 9)	Supply networks	how is WHS risk managed in supply networks? are principal contractors managing subcontractors' WHS effectively? Why/why not? has the approach of principal contractors changed in recent years? If so how/why?

Focus group data analysis

The qualitative data collected from focus groups was subjected to thematic content analysis based on the structure of sections/issues in Table 5.1. The following section addresses each of the six areas individually, drawing out key themes and highlighting these with quotes.

ACT construction industry performance against goals

How is the industry performing – are injury rates declining? How/why?

Across the four focus groups, some participants expressed the opinion that injury rates have not declined significantly since 2012, while others suggested they may even be rising.

> "Unfortunately, I reckon the injury rates are still going up."

> "We've been trying for years and people, unfortunately, are still getting injured and killed."

They noted a number of contributing factors that they believed were responsible for this. In particular, they identified the pressure under which projects are delivered and the work intensity that this creates in the industry. One participant explained:

"*I don't think injuries are actually declining at all. And the reason why is because, we just all talked about the push. Like, you push someone to the brink, they're going to injure themselves. Simple as that*."

However, other participants suggested that an apparent increase in reported WHS incidents was, in fact, indicative of a cultural shift and an improvement in levels of reporting in the ACT construction industry. Given a stronger focus on reporting these participants believed that it was only natural that reporting of incidents would increase and this, in turn, may be contributing to a more accurate indicator of WHS performance in the territory's construction industry. One participant suggested: "*Possibly people are starting to report a lot more injuries. So possibly they could be coming down. But I think, for a long period of time, people were in a situation where they wouldn't come forward and declare an injury. Whereas now, I think most people are actually putting it out there. So, you might see some stats come back down shortly, but at the moment, definitely in Canberra, they're going up pretty quick."*

Another explained that increased reporting of minor injuries and near miss incidents have created an increase in incident rates: *"I have to totally agree … our company, our injury rate, on paper, has gone through the roof in the last 12 months. It's because of what we're now reporting. The guys are going to the first aid officers and it is being reported. We've had an increase in our workforce as well. But the big thing is the actual reporting. We're trying to sort that out. Are we comparing apples with apples with our numbers? And we're not, because the guys weren't reporting significant injuries in the past. When I say past, in the last 12 months.*"

Effects of reporting

Participants noted that reporting was a contributing factor to how the industry's WHS performance is understood. Participants identified a need to use more reliable and appropriate measures of WHS than lagging indicators (e.g. injury frequency rates) in order to determine whether the industry is

improving in its WHS performance. One participant explained: "*Because the injury rate is always going to be false…you know what I mean? It is a false stat. We probably need as a whole industry to look at how we measure safety better. We tend to work post instead of pre. Alright? And we're still doing it."*

Under-reporting of WHS incidents was considered to be prevalent in the industry. One participant commented: "*There are some good practitioners out there … but under reporting is still rife in the industry. It's amazing what you hear down the pub."* Another also noted the connection between under reporting and the impact this may have on the regular auditing regime (Active Certification) and the subsequent ability to secure future work, adding: "*I think there's a lot of underreporting. There's a lot of playing with figures I guess in the industry. Because at the end of the day it does affect your ability to get the work. Which is sad because that's not how we should be looking at safety in the industry. We should be looking at your lead indicators rather than your LTIs and that…"*

Some noted that under-reporting is the result of an industry culture in which people are afraid to identify problems or to report unsafe situations, a benchmark being set too high, or in some instances a program that could justify ambivalent reporting. One participant explained: "*…your things like zero tolerance you know. They're the type of systems that don't help that reporting because they want to hang onto that zero tolerance program. It's no good … people should be feeling free to come forward and report. And they don't. I mean that's the constant theme from our membership is, 'If I report safety I won't have a job'".*

One large employer organisation was commended for implementing a system in which workers could report WHS issues and unsafe behaviours without risk of repercussions. A participant described how: "*If you know they're not going to get in trouble their colleagues will dob them in. But they're not going to drop their mates in if they know that they're going to get into trouble*." The behaviour of looking out for your mates was identified as being an important feature of construction industry culture that has a positive WHS impact. Focus group participants favoured the implementation of systems that encourage and enable this behaviour.

Workers' increasing willingness to report incidents and injuries was seen as a positive indicator that the culture of reporting within the ACT construction industry has improved. One participant explained: "*I think a lot of people, when they hurt themselves, were afraid to say that they'd hurt themselves because they felt something was going to happen. Where now, they coming forward and saying, 'Look, I've done this'. I get blokes coming in saying, 'I've hurt myself. I've done this. I'm just reporting it just to let you know'…they're feeling more comfortable coming to you and telling you about it."*

The change in reporting culture was suggested as the reason why the ACT industry's performance did not appear to be improving according to traditional performance metrics (e.g. lagging indicators): "*You're talking about changing culture. People are actually, that's one factor that they're picking up. They realise that that small injury that they deemed small 12 months ago is a reportable, not reportable to WorkSafe, but reportable to your management. So yeah, it's hard to say that it has improved since 2012, but the way the figures are going now, whether it's taken that long for the education process to catch up so people are now reporting and it looks bad on the ACT because the figures are going through the roof. It's hard to say whether we were having those same injuries in 2012*."

The use of leading indicators was recommended as a way to better understand the WHS performance of the ACT construction industry, as expressed by one participant: "*In assessing how the industry is performing since the Getting Home Safely; there's no lead indicators out there. There's no*

recordkeeping of the injuries and the dangerous incidents that were prevented. You know, the near misses that were prevented because there was a good safety system in place or there was a good culture in place that actually identified and stopped it before something happened. I think to get a true indication on how the industry is performing and if the industry is improving, you need to have those lead indicators, not just a reduction in the lag indicators."

However, participants also expressed the view that the mechanisms by which construction workers are injured are persistent and predictable. One participant commented that construction workers are: "*…still getting hit by moving objects. They're still tripping over on a site. There's, you know, there's still the standard ones that have always happened. And we never really pose that question…and start talking mechanisms of injury and stuff like that, the stats to that are frightening."*

Others noted that workers also need to be mindful of their responsibility to other workers and how their actions can lead to the harm of others, "*So we've got a lot of factors out there that are causing … if you don't take the job seriously or you're treated casually, you'll treat the [*risk*] casually. And your fellow workers casually*". There was a sense from some participants that there are instances where workers are still treated in an unsatisfactory way, which may also cause H&S concerns, or impact on the sustainability of the workforce: "*So a lot of stuff is covered up. A lot of it is due to people don't care. There are some very good people in the industry here in Canberra. I've met a lot of them and worked with, we've got some of them in the room here. But I'm saying a lot of them don't care. Workers are disposable commodities.*" Others saw the increase in interstate workers also creating a tension that highlights the variation of performance across different sectors, which will result in a masking of how the industry is performing as a whole: "*You've got interstaters coming in. Now you've got the light rail and you've got all this government infrastructure about to take off again; you have an influx of numbers. So, an increase in participations in the industry is going to result in an increase in incidents and an increase in lead indicators on how the industry is dealing with that. How you capture that, I don't know. But until you do, you're not going to get a true indication on how the industry is performing. In my personal opinion.*
Participant 2: You're right. I agree with that."

Some participants indicated a level of complacency in the construction industry, which they perceived to be driven by a bureaucratic approach to WHS management. One participant (a construction employer) explained how current methods of documenting WHS in procedures and safe work method statements are currently not effective. He commented:

"*I'd love to do a little bit of an … experiment…I'd love to be able to walk on one site, one of my sites, get 25 of my workers and say, 'Right. See this document here? That's our work health and safety plan. This is our SWMS. Everyone know this? You've signed into it. Did you know, I'm going to put this here and anyone that injures themselves on this site, and we can prove that we have actually told you not to do it, you get nothing.' I reckon the actual cogs will change. I reckon everyone would read that document like it's going out of fashion. Everyone would understand that document. And it would be implemented out in the workforce."*

Difference across sectors – residential is still seen as 'unknown' or difficult-to-document segment.

The residential sector of the ACT construction industry was referred to by some participants as a "cottage" industry that was regarded as presenting a more significant WHS challenge than the commercial/industrial or civil construction sectors.

"Unfortunately, in my view, it's probably more to do with the cottage industry and that type, and even civil to a degree. However, that's not saying commercial get away with it either."

While construction firms operating in the commercial/industrial and civil sectors were perceived to have mature WHS management systems, in the residential sector participants perceived smaller companies are not resourced to keep up to date with WHS legislation and/or have effective WHS management systems in place. These organisations were deemed to have a low level of WHS awareness. One participant explained: "*Those that are big businesses like where we come from ... We have the systems. We have the people. Where the smaller guy doesn't have that and, therefore, he struggles with what he's supposed to do…They struggle with what they're supposed to do and, therefore, perhaps they feel comfortable that everything is okay. They haven't hurt anybody, haven't had any serious injury. We might have had a band aid treatment a couple of times a day but, essentially, they think it's okay*."

When asked why workers employed by small builders in the residential sector should perceive a more positive safety climate compared to employees of medium sized organisations in the commercial/industrial sector (see survey results), participants explained that these workers may believe that their WHS is being managed effectively because they have low expectations and awareness of what an effective WHS management approach involves: "[In the] *commercial industry you've got people in the organisations that study the Regulations and study the policies and put processes and procedures in place so workers don't have to think about it; they just do. Then there's that perception of having a system in place that the organisation is dealing with it really well.* [In] *your cottage industries, they just go on what they've been doing, they don't have the resources to do the background studies and keep up to date with rules. So, they just keep going the way they're going until someone tells them they have to do it differently. They probably have that perception too, because they don't know what they don't know. That we're all safe. We very rarely get hurt. We're doing okay. We work for a nice company. The boss looks after us. Yeah, so it's that perception."*

Participants describe how the transient nature of the construction workforce causes 'knock-on' WHS problems as tradespeople move from one site to another. A lack of consistency in expectations and WHS standards across sites run by different construction contractors was observed to be a problem. One participant suggested a more consistent industry-wide approach to setting WHS standards and expectations would be helpful: "*As a larger commercial builder, not a problem. You manage the safety. But as a smaller commercial builder, everyone comes to my site from your site and they feel that they don't have to follow the same rules. It's that consistency. When you induct somebody on a site, don't induct them on a site. Reinforce the industry-wide induction."*

The difference amongst the sectors was also identified in relation to workers' in training and capability development and approach to managing apprenticeships. In these areas small organisations were thought (by some participants) to perform better than the larger construction organisations. Reasons

for this related to closer personal relationships between managers and workers that enable more direct communication about daily work issues and a heightened awareness of workers' health and wellbeing.

Workers' compensation

Some participants identified structural features of the workers' compensation scheme (and the implications this has for injury recording) were to blame for a persistently high rate of serious injury claims in the territory. One participant commented: "*So, at the moment, it's gone down from 12.5 to 12.4, whereas the national average is 10.35. There are members of the Canberra Business Chamber who are concerned that one of the reasons why we aren't seeing a decrease in line with the national averages on serious injury claims is because there is almost an incentive for workers to stay out of work longer, given that we are one of the only remaining jurisdictions with common law entitlements underneath the Workers' Compensation Act."*

The above comment was not supported by all participants in the group, however it did highlight challenges associated with relying on national workers' compensation data to compare industry WHS performance across jurisdictions. One union representative explained: "…*stats have a relevance because they lead to workers' compensation. And from a union's point of view…we cannot get that out of our head. We work, double book, double entry book keeping for us is always work health and safety, worker's compensation. That's just how our brain works. So, when you see injury rates, you see worker's compensation. There's always two sets of numbers.*"

How does the industry perform in workers' health, as well as safety?

Participants acknowledged that workers' health is important and identified fatigue and mental health issues as presenting challenges for the industry. In particular, these issues were seen as contributing to incidents and injuries: "*You've got to look after the health of the workers because it's fatigue, it's stress, it's depression. It's all that sort of stuff that adds to their absentmindedness and their complacency and them getting hurt."*

Participants noted that health is not receiving the same amount of industry attention as safety and there is considerable room for improvement. One participant commented: "*Well as opposed to safety there's not much change from 2012 …in health and safety yeah."* Another explained a disparity between management of health versus safety in the industry:

"*In terms of my perception of health as well as safety, is that health is not keeping up … I interface with a lot of people and I don't see any improvement in the health of the overall thing. To me, it's all been fairly static. But everyone's a lot safer*."

Participants also acknowledged that workers' health and wellbeing (and especially mental health) can be a major contributor to issues occurring on-site. Factors, such as work-family balance, relationship problems and family pressures, were all identified as contributing to workers' approach to their work and ability to function effectively in the dangerous construction environment. One participant commented that there is an increasing holistic understanding of workers' health: *"I think that's a new one that's coming now, to be honest with you. Like, mental health and all that sort of stuff…a lot more people are learning that you don't have to see blood and, you know, your eyeball fall out, before someone's hurt…, engaging people like AusHealth and stuff like, the unions another one, that actually go, 'Look, I've got a drug problem.' 'Why do you have a drug problem?' Not to go, 'Oh, he's a*

druggo'…'Why do you have a drug problem?' 'The Mrs is a nightmare. The kids hate me, you know' We're actually all taking that into account now."

Some participants explained the importance of peer and supervisor support in managing workers' mental health. One participant explained: "*You know, you can actually start talking to your mate. I got a perfect example. I actually take our yard foreman swimming every morning at 5:30 because he's got a mental health problem. I Googled best sport for mental health. And it's swimming. He's a lot better now because I swim with him, and say, 'Oh, how you going today?' We just have that 15-minute conversation and go to work at 6:30."*

Some participants believed that smaller construction companies are able to provide personalised support to their workers, due to the size and proximity of workers to company management. For example, one participant described how: "*When you're a smaller builder, you engage more with the workers. I engaged a lot with the workers. I'm always conscious of their mental health and conscious of their understanding of the job. I'm talking to them, so when we're talking to someone, I'm not just talking to them about their health. I'm talking about what they're doing. And in that, I'm able to weave in a couple of questions to just see how they're feeling. 'How you going mate?' That sort of stuff. Particularly if there's a change from one day to another or something like that. But I see with the workforces, they're all following the safety procedures. They're wearing their gear and things. But I'm not sure whether they're taking that home and it's reflecting in their health…"*

Other companies have started to implement health intervention program like 'Tradie Tune-up' through which companies provide health checks for their construction workers. One participant explained: "*It was actually doing a quick health assessment. It was amazing … we had steel fixers and so forth. They're all going, '…no, not us. Are you going to go? No, not us!' In the end, they went. And they came back and said, 'I'm going to be dead in five minutes!' You know, it was that bad. But it was amazing. Quite a large number of that site went to get their Tradie Tune-up and that gave them a really quick message that a triple battered sav at 6 o'clock in the morning probably wasn't the way to go for their future*."

Capability and competence and its impact on culture

What is the state of WHS capability/competence in the ACT construction industry?

Participants described construction workers' good judgement and problem-solving capability. One union representative explained: "*…there's a lot of good judgement out there. What's not always there is the confidence to back your judgement in. Because it's a problem-solving industry. There's a lot of knowledge there, there's a lot of skill. There's a lot, people just need to back themselves a little bit more. I mean, when people ring us, you're saying, 'Why didn't you do something?' And they're going, 'Oh, I wasn't sure.' 'So, you were sure enough to ring me. That's a good start. Next time, just take that step. Go to your delegate. Or go to the HSR and say, I think this is wrong. They're not doing this right.' Just keep it on the job. And that way, everyone's part of the deal and you're not getting singled out."*

Another commented on the importance of construction workers to the delivery of projects*: "They [*construction workers*] need to be empowered a lot more in WHS. Because it's their life…. they're the ones are being injured. They have to be more empowered. With that comes your senior management. They have their needs as well, but their needs will be met if the worker does the right thing. How do you build a 12 storey building? You get construction workers."*

However, participants also commented on the duties ascribed to principal contractors under WHS legislation and suggested that professional capability relating to planning and coordinating construction work to ensure WHS performance could be improved. One commented: "*We've principal contractors and safety, I would suggest that there's not enough planning and I think OHS or WHS guys need to have a little bit more, I suppose a little bit more foresight. They need to say, 'Look, this is what we need, this is how we're going to, this is what we're going to do.' And that's it*."

Participants indicated that efforts made to improve WHS in the ACT construction industry may not be as effective as managers think. In particular, participants explained that senior managers within construction firms invest in formal WHS systems and documentation and assume that this investment is producing cultural and/or WHS performance improvements. One participant explained: "*…senior management…they believe they are investing that much money from their business into safety that, of course, culture's got to be great. But it, the money they're spending, and the money that they're investing into all these people, what's the problem? Go down the line. Does the worker that's actually laying the form ply, putting up a scaffold, whatever, do they actually get to see any of that? No. For them it's documentation that we're getting workers to sign. Do they understand it? Not sure. I'm being truthful here. Not sure. But what it is, is when you injure yourself, what's the first thing we go back to? A piece of paper saying you weren't supposed to do this.*"

Some participants suggested there is a 'disconnect' between efforts made to communicate information in WHS documentation and workers' engagement with these documents. The effectiveness of formal documents as a method of communicating WHS information and instructing workers was questioned. One participant explained: "*I think your disconnect, too, between your upper management believing that they've got a good work health and safety culture or system and the workforce is that your upper management, in some cases, are looking at the paperwork, looking at the system that they've paid for and the paperwork and believe that, by having that in place, it's filtered all the way down and there is that good culture. Where the workers at the bottom are probably thinking that, 'No, we need more training, communication. We need better programs. We need less pressure.'*"

Participants also identified low levels of WHS commitment and engagement from construction industry clients as being a problem. One commented: "*There's some private clients out there that work closely with the principal contractor about managing safety and do a really good job. And unfortunately, there's some poor clients out there and I think, even though there's the FSC accreditation, I think the federal government's probably a client that looks at liquidated damages before it looks at anything else…we need to educate our clients into what their responsibility in safety is. And we won't even start to get designers…*"

Participants also noted that WHS knowledge imparted by supervisors and co-workers in daily interactions is very valuable in ensuring workers know how to work safely and without risk to their health. One participant explained: "*You learn from your fellow worker. You learn other things from others. But your fellow worker is the one that's going to keep you alive and keep you uninjured. You learn all the other stuff that's going to make you better up here [*points to head*] in terms of the technology and all the rest of it. But it's from your fellow worker you learn. And that's what I think we've lost. And that's what we've got to get back. Your fellow worker looks after you, your fellow worker mentors you, trains you. You help each other and you stay uninjured and you stay alive."* Another participant agreed*: "And then you become two of the best in your industry…So you grow together. And all of a sudden, these are the two top dogs. You were the bottom dogs. And then now you're the top dog and people are moving up through the ranks."*

Participants were sceptical about the value of the construction industry induction process, particularly courses that are provided on-line. One participant noted: "*For more than one apprentice, when I've questioned them about that [*white*] card and their knowledge on SWMSs and things like that: 'Did you do that?' You work out that it was actually online. 'Did you do it?' 'No, Mum did.'*" There was a sense that participants wanted to see a more demonstrable or practical way to determine if a worker, especially one new to the industry, has sufficient awareness (that is provided by the introductory white card course) of the construction site, relevant WHS hazards and risk control requirements. As indicated by this exchange, "*Participant 1: White card training should not be online ever, ever.*
Participant 2: and … someone who is computer illiterate can get a white card online…
Participant 3: there's work happening in the space
Participant 4: But that's something that the big companies… have got to realise because our subbies, every subbie needs an online induction. …How do I know that person's done it when they probably can't even read or write? That's why a big focus I'm fighting with at the moment." One other participant noted that he sent his staff for a refresher course of the white card as a means to ensure that people are constantly aware and mindful of WHS hazards on site.

Is WHS training effective? Why/why not?

Participants expressed a variety of views related to the effectiveness of different forms of WHS training and capability development in the ACT construction industry.

Apprenticeships

Participants expressed strong views about the value of apprenticeships, but also identified concerns that apprentices are currently receiving insufficient supervision in the ACT construction industry. Participants believed inadequate supervision has a direct effect on the value of apprenticeships and the attainment of skills by young workers in the ACT. One explained: "*When you have an apprentice, you don't let him work by himself. If any of us have got sons, you don't let your son do anything by himself. But we'll stick that young bloke out on site and expect him to be brilliant. And expect him to run. And not teach him."*

Another commented: "*I canvassed two apprentices…in the last week or so. I wanted to know what training they got out on the sites and what they got during their trade. Both of them said, near to none and it's ad hoc. From the site perspective, it depends on who you are, because apprentices get put out with hosts and stuff. They said, it depends on who it's with. He said, they might give you a toolbox talk in the morning. That will be the start of the job. You'll never see them ever again and you're left to your own devices*."

Another participant expressed similar concerns about the supervision of apprentices: "*I personally don't think much at all happens…Some of the stories that they tell you, off the record, are pretty scary. Yep. It's back to that situation; you're given a task to do and you go and do it. I'm not sure on what part it comes up, but out of those guys, they were first and third year apprentices consistently working by themselves. That's a big issue again in the ACT. Apprentices are supposed to be supervised to a certain level, depending on their skill set. It's not happening*." Another participant agreed: "*It's not happening. Even on the big sites, there's still a long way to go on the supervision of apprentices."*

Participants expressed the view that the development of consistent training approaches for apprentices across the ACT construction industry would be of benefit. They saw industry groups and larger construction companies operating in the commercial sector of the industry as potentially playing a key role in the development of these approaches. One participant suggested: "*So maybe more can*

be done around that area there with the MBAs, the HIAs and whatever other organisations that look after apprentices. So again, my view is maybe apprentices shouldn't go out to the cottage industry first; they should go with the commercial builders, learn what's right and wrong, then go back out into the cottage industry and say, 'Why they want to do it that way, mate, because that's unsafe.'"

Another participant expressed similar concerns about apprentices' experiences in small construction firms, particularly those working in the residential sector of the industry: "*I've had a lot to do with training of apprentices in the last 12 months. I sat down with an apprentice group of first years and third years and, out of that whole group, there was just under 30 in that group, one of those people had seen a safe work method statement. One! And the majority, I would say the majority… there was only one that worked in commercial construction. All the rest were out the back blocks*."

A representative of a Group Training Organisation described how she engages with construction companies and apprentices to ensure that they know about the structures and processes required to protect their WHS: "*I'm trying to use a lot of safety conversations. I try and have their supervisors in front of the conversations. Every site visit might be 'let's do a mini SWMS, what are you doing, what are the risks? What SWMS did you get inducted to in this site? What is meaningful about those SWMS to what you're actually doing?' Then the supervisor will just go out and get the SWMS out and they'll talk about a little bit more as well. So, when I come on site the apprentices know I'm going to ask those specifics, I want to know do they know their direct subbie's SWMS and safe work method systems. And also what have they inducted on that site. So, I try and use lots of safety conversations just to raise that to the next level. I work with a lot of ressie* [residential] *builders as well so I try and help, encourage them to bring their safety systems to the next level. It might be that they don't have tool box talks, so it might be you need to formalise your tool box talk instead of sitting in the ute on the way to the job. You need to say 'This is a tool box talk, this is a risk on this site for example, this is how we're going to control them'. So, they might have had these unofficial conversations in the truck on the way to the site. But now I'm trying to get them to actually think about why are we talking about it and they're expecting those conversations. They know I'll be checking out what's happening in the SWMS. So really low level stuff but just trying to keep those conversations live."*

Methods of communication and engaging the workforce were identified as being critical to the effectiveness of WHS communication. The quality of site-based inductions, pre-start meetings and toolbox talks was identified as being a problem in some instances. One participant described how the length and complexity of inductions can be detrimental to effective communication and comprehension: "*If you look at* [company name] *their training, we used to switch people onto a site and say this is serious. What they did for an induction, every morning in the prestart meeting was 178 slides. Every person had to sit there and go through it every day…It's death by slides."*

Participants indicated a preference for visual communication, particularly in light of the varying levels of literacy, numeracy and English language proficiency in the ACT construction industry workforce: "*… apart from the fact that they can't understand, it's how the message is conveyed. So it's got to be very visual. It's got to be, you've got to understand that people have got literacy, numeracy and language problems. So it is got to be visual…you've got to be comfortable that people are, that are working on the job have actually taken that in."*

The quality of training and credibility of training programs and trainers was also identified as being important to the effectiveness of construction WHS training. Classroom training was believed to be less effective than practical training as there is a difference between 'know what' knowledge and 'know how' knowledge. However, critical to being able to impact 'know how' knowledge is the experience of a trainer and whether they have actually undertaken the tasks in which they are training

people. One participant explained: "*If you get someone in a training room and put them in front of a slide show and say, 'Right, this is how you're going to lift a bearer, right.' They will all just sit there and go, 'You done it, mate?' and he goes, 'No I haven't done it'. He goes, 'Go lift one and then tell us how to lift it.' And then everyone just switches off, bang, gone, finished. First sentence, don't even. But then you walk in and you grab a guy, like Fabio* [not his real name]. *I'll use Fabio as an example, you get him. He would go, 'Listen here. You f******, you got to do this and that!' Every guy's sitting there going like this* [studiously watching]*."*

Self-confidence and engagement

Participants also identified workers' unwillingness to voice WHS concerns or to ask questions about WHS as being an impediment to WHS improvement in the ACT construction industry. A participant described a conversation he had with a worker in which he asked the worker: "'*How do you communicate to your supervisor or your bosses or whatever'? You know. And they say 'Well we don't say much' and that's where the issue lies. And I say 'Why don't you say that?'… because they're scared… And that's not just in apprentices that's in ordinary workers."* Other participants in this focus group affirmed that this is a cultural problem for the ACT construction industry. One responded: *"That's spot on that's exactly right."*

Although the willingness to voice WHS concerns was not confined to apprentices, young workers were regarded as a particularly vulnerable worker group. One participant explained: "*With your apprentices, we're training them… we fixed the training system so that work health and safety is incorporated into the skills that they're learning. That's all well and good. But when they go out there to an employer, are you going to have the balls to stand up to your boss and say, 'No, I'm not doing that because that's not safe'…It doesn't work that way. 'Well if you want your job, you'll do it the way I tell you to do it.' So there's that. Then there becomes that barrier."*

One construction company representative acknowledged this problem and advocated the benefits of an anonymous reporting hotline. He explained: "*We're saying 'we're giving you an opportunity to let us know and put things in place'. One thing I said to my guys is I'd never ever want to hear you say 'Oh we knew about it but we didn't let you know'. No, we need to know and if it's anonymously through the near miss report then it's up to us to fix it."*

Client leadership

What client-led initiatives have improved WHS?

Good relationships between clients and principal contractors were seen as being important for the improvement of WHS in the ACT construction industry, particularly where these related to resolving problems that could impact project schedules and put workers under pressure. One participant explained: "*I think that there's that two-way communication between the client and principal contractor. So, where problems are identified and there may be delays in timing and all of that, they can sit down and work together to come up with new schedules based on what's happened. And I think that's an important thing, whereby you might be, this is the finish date. But a good client/principal contractor relationship, where the problems do occur, they can shift that whole schedule out to allow, to make those safety improvements or things that you don't see coming.*"

Hours of work, driven by tight project schedules were identified as a problem, particularly towards the end of the construction phase of a project: "*Hours of work is a big thing which led to a lot of accidents*

in the past… I don't know how many times you hold your breath at that handover stage that you've got people on top of each other."

Clients awarding projects on the basis of intense price competition was also regarded as a problem as contractors would sometimes price work unrealistically to win projects, later forcing them to cut corners with regard to WHS spending: "*Whereas the government, if we keep on saying, 'Build this building for whatever', everyone knows you can't build that building for that. It's our fault.*"

A number of participants identified provisions in standard form contracts used in the ACT construction industry as creating undue time pressure for contractors and having a negative impact on WHS. These contracts allow for ten days of inclement weather. Participants argued that this number is insufficient in the Canberra environment and the risk of financial penalties imposed for schedule over-runs in the face of wet weather put contractors (and their workers) under undue cost and time pressures that have negative WHS impacts. One participant commented: "*We're not in a drought. It's going to rain. It's that simple. But they* [the clients] *forget that."* Another participant observed*: "The other thing within that procurement there's very little leeway on the penalties for completion on time. When you have a month of wet weather, so you can imagine people working around the clock 24 hours, what that does to work health and safety. So, there's a lot of issues in procurement itself that really can be addressed. And part of the ACT government should be taking more proactive role in leading that, particularly for their projects."*

Other participants echoed the sentiment that clients can play a larger role in altering their tender documents to make them reflect the frequency of rain in Canberra*, "We get wet weather a lot. Yeah. Then as soon as it stops raining, we're hammered by the builders. Yeah. So, there is room for improvement there.*
Interviewer: Client can't do too much about the weather though, can they?
*Participant 1: No, but it can - they can think about it when they're [*making*] the tender."*

Another participant, a developer, expressed the view that WHS is sometimes treated as an 'optional extra' in the pricing of construction work: "*It's got to be integral, an everyday work activity. Unfortunately, people see it as a bolt-on. Safety needs to be integral to every day work activities. You get in your car and drive to work in the morning; you put your seatbelt on. You stop at the stop signs. It's not. A lot of people out there don't do it*."

Participants also expressed the view that clients should establish high expectations for WHS and ensure that work is priced and awarded appropriately to ensure this level of WHS is provided: *"As a client … I ask the question and I expect an answer. I don't say, 'Well, if you want to pay extra, we'll increase the safety.' I say 'Why? Why would I have to pay extra to have a safer site?' It's just got to be safe. So my opinion is there's no range of safety. It's just a safe site. So, when you're a client, you've got to apply that and ask the question and expect the answer that the site is managed as a safe site."*

Can/should clients do more to drive WHS in the ACT construction industry?

The *Getting Home Safely* report recommended the implementation of a new "Active Certification" program for construction procurement. Under this scheme, the ACT Government would employ auditors who would conduct regular and *ad hoc* audits on government-procured construction projects. These audits would include field-based assessments to check that work practices measured up to standards of performance documented in construction companies' WHS policies and procedures. Also, deficiencies identified through these audits would attract demerit points, with accumulation of 100 points resulting in immediate pre-qualification suspension, with a review after three months.

Significant deficiencies could also be referred to WorkSafe ACT for investigation and enforcement action as appropriate, and/or to the client Government Directorate for consideration as to whether the contractor should be served with a 'show cause' notice for possible termination of their current contract.

The Active Certification program was seen by some focus group participants as a "necessary evil." Some suggested that a 13-week interval between audits placed considerable burden on construction companies, especially when a company had several projects running concurrently. However, many still perceived that the audits helped them to improve their WHS processes. For example, one participant explained: *"For instance, in our industry, when we're busy, we're going through one external audit every two weeks. So, it's pretty full on. A lot of companies see it as rather onerous and an imposition. We've taken the reverse tack. The best way to improve the system is to have external input. If you're getting constant revision and review of your product, it's only going to improve."*

Another participant described how Active Certification has had a positive impact but observed that the audits do not always capture construction projects when relevant work activities are taking place: *"Yes Active Certification has made very good progress over time. Okay one the superintendents are actually doing a bit of work. I don't know what they did beforehand but we never saw them on site very much or anywhere else. But that aside, the actual audits okay every 13 weeks I think over, we've probably only done 4-5 ACT government works but somewhere up in their programming [*the*] timing of those audits is an issue. One job, yeah well if you come tomorrow we're still sweeping up the dust and putting the leaves in the bin. Construction work had finished and that's not just one project that's probably half the projects we do, the audits are done at the wrong time. Sure there might be an alright week 13 or week 10 or whatever but what's the use of spending that money on something that, when you're out on site, so the bloody paperwork is all picked up and kicked off and everything, the process is in place for that. But what's happening on site?"*

Other participants were sceptical about the practical benefits of the Active Certification program, describing how the Active Certification program focuses heavily on project WHS documentation: "[Active Certification] *has an impact to make sure you've got the right paperwork and you've ticked the right box to make sure it's in place 100%. But like …what happens in that paperwork does not normally translate down onto the site…but the overall objective is what happens and how many people go to hospital and how many people go on workers' comp and it hasn't done any of that."* Another participant agreed, commenting: *"Whether there's problems with the auditing process is that they audit the documentation and not the outcomes. That's exactly for registered training organisations.* [They] *audit the documentation not the outcomes."*

Another participant in this focus group commented that the Active Certification program has improved the ACT Government's engagement with WHS in the construction projects they procure: *"I think it's been beneficial to help the project managers. You know either … in between principal contractors and site workers and ACT government client they put in someone that knows what happens. It's those people that have lifted their games quite a lot and they needed to. And a lot of them got lazy and all the rest of it. They probably knew they should be doing it anyway so that's been beneficial…But that comes back to good client/bad client type thing."*

However, it was also observed that the quality of Active Certification audits varies as a result of the approach of the individual auditors. One participant described how some auditors have a 'negative culture': "*I would much rather that we didn't audit, but that's the tool we've got and that's the one we've got to use. So, you make it work. But then you got issues of good and bad auditors, too. I think*

I've gone through probably 50 in two years that just can't get out of a negative culture into a positive culture about auditing."

Participants also noted the importance of the client to be informed, knowledgeable and experienced in the work being undertaken for them. This was seen as an important role for the client, to be an active in the monitoring of the site conditions and project schedule and to be complicit in overseeing the way that work is performed. Participants referred to the ability of the client to be able to listen to problems emerging from site and to intervene if necessary to ensure that work is done safely, as this exchange indicates, "*… one thing that has happened with the government is we have now got people … who are informed. Now we're getting a bit more problem solving because our people are able to read a job and can intervene in it with a positive spirit.*"

Compliance and culture

How important/effective are WHS systems currently in place?

Participants identified the important role played by WHS systems in managing workplace health and safety in the ACT construction context. One participant explained how systems keep people safe: "*If you have a worker that has the knowledge and has the concept of our systems. So, I'm going to actually go with the systems. Because everyone knows we have systems. You've just got to abide by them and you'll be safe. If you don't abide by them, you'll hurt yourself.*"

However, the industry's 'can do' culture was identified as an impediment to WHS compliance in some instances. One participant explained: "*These guys can come in and go, 'Stop.' That's where it is. But again, does the worker see that? No. You know, if, the supervisor says 'Go and do this.' They have to get it done. Will there be one person on that site will go, 'I'll do it.?' Yeah. What's the opinion of that guy? Does it grow? Or does the supervisor go, 'You got it done for me but you done it unsafe.' Look, should we just get rid of him? I'd say it's the first one. He's a go-getter. He gets the job done. Good on him. You know? Even though he put his life at risk, his family at risk, everything like that. He got it done.*"

The importance of effective project planning and preparing for work before construction work commences was emphasised. One participant explained:

"So, really, from our point of view, right at the beginning before the first sod's turned, the safety systems have to be part of the planning system so that when everyone gets to where they're supposed to be, everyone knows not only what they're supposed to be doing in terms of their form work or whatever, but they know their function within a site wide safety system…"

Participants reported that time pressures sometimes prevent them from engaging workers in pre-construction planning: "*you can't, it's one of those things that you talk about engagement. How do you engage? You get a tender a month prior to starting. You got to get all this documentation to the contractor ready. It takes me two, three weeks just to build the safety management plan for a job. How the hell am I going to get 10 workers in to discuss it with them? I've got to do it on the fly. And the only problem is I've come from working. So, I know what these guys want, really. To be honest,*

I'm not going to lie about that. I've worked, I've done it. I've been there. What happens if you haven't? Then you have no understanding. That's when these systems fail and the workers get disgruntled."

Participants believed that people in the ACT construction industry has introduced WHS management systems and that managers and workers are compliant with and understand the importance of these systems. However, participants suggested that there is scope to simplify systems to make them more effective: "*It's getting better understanding. The worker is actually getting more educated. So, you're talking about systems and compliance, that was our job, well, senior management, to comply with everything that everyone wanted. Culture and people are now understanding why we do it. So, it's now, it is coming closer, but again, systems and compliance, I believe, need to be simplified…"*

The factors driving the implementation of WHS systems in the ACT construction industry were regarded as being problematic by some participants. Participants saw a heavy emphasis on paperwork as being driven by the need to make WHS visible and auditable in response to legal and market demands: "*I think too many organisations brought in a system to try and comply with the legislation, not to improve their safety. And that, and it was, it, and there's still organisations out there that are very legalistic about it. And unfortunately, they're generally the ones who have lawyers right next to them because there's a real tendency for them to want everything in writing and everything in paper. And, you know, as I was saying, we're working with a workforce that they're out there working with their hands because they don't want to be writing things down and doing paperwork*."

This type of approach has been criticised for creating 'tick and flick' processes that focus on observable elements of WHS at the expense of more important cultural determinants of performance.

Another participant described how the contents of formal WHS systems (often developed by consultants) sometimes fail to reflect the way work is performed in practice: "*I'm heavily involved in that in my former life, but also with the ACT Government. What we want to see is safety systems that are actually practical. If we're going [*to*] document it, it's documented in a structured, systematic way that everybody can understand. It's not just a whole bunch of words. There are contractors in this town, sorry, consultants in this town who will give you a beautiful document that high and all these wonderful words, but nobody will ever actually apply any of it. So, it has to be very, very practical in what we see. … [*we see*] these beautiful documents. But the question is, are they being used? How are they being used? What are the documents you've got?"*

Are WHS systems too paper-based?

Following on from the comments above, participants noted that the formal, bureaucratic and inflexible way that WHS information is shared and communicated was regarded as being problematic in an industry in which many people prefer verbal to written communication. One participant reflected: "*The key is this stuff is quite often presented in a great bureaucratic way that you need this massive exchange of paperwork to see it happening. It's about really simple digestible relationships between people who work with each other. It's that simple."* Another participant commented: "*I'm not a big paperwork, throw a piece of paper at everyone. I hate it. So I try not to. And I work with form workers. They're uneducated. Why do you think they're lifting sheets of plywood around?.... they're not IT gurus."*

In some cases, documentation was perceived to distract managers' attention away from more important aspects of WHS including reducing supervisors' availability for hands on supervision of work. One participant commented: "*The supervisor has probably worked up to that level now, then you've got the supervisor and the foreman but the supervisor has got so much paperwork to do nowadays that they're hardly on the job site. Not only that they may not have the skill set to do the*

paperwork and he might be very good at a job, but they don't have the skill set to require what the company requires."

Participants were particularly criticism of Safe Work Method Statements (SWMSs). Most expressed the belief that SWMSs have become unnecessarily large and complex. One participant explained: "*I think the other thing when it comes to a lot of the documentation we've got an industry that started up an industry now that's writing particularly SWMSs, it's an industry … I've seen 140 page SWMSs."* Another participant replied (in apparent jest) *"Was it for bricklaying?"* The original first participant noted that*: "the* [example SWMS] *on the Work Safe website is three pages. Now that's an issue and people are getting bogged down with paperwork but not the relevant paperwork or your favourite paperwork. So, if you do the appropriate, and that's an educational issue because people don't know."*

Participants advocated a return to a short three-page document. However, they also noted that this could only be possible if PCBUs and clients (who vet and approve these documents) accept reduced content. One commented: *"We are getting is a lot of inconsistency between the clients of what they will actually accept on a so-called SWMS. We might have 14 different projects at the moment and there's 14 different versions of SWMS. A proper SWMS, you can get them down to, and they should be just the high-risk activities. You're looking about two or three pages. Whereas some projects, the builder won't accept anything less than 19 pages*."

Participants also noted that SWMSs are required for High Risk Construction Work but are being produced for a broad range of activities. One participant recalled an experience: "*I was actually extremely surprised yesterday. I had a tier two company coming on site. I asked for their SWMSs. They said, 'We've got 20. Is it all right if we cull it down to three or four?' 'Go ahead.' Twenty SWMSs covering that one job*!"

Participants also raised concerns about consultants providing companies with unnecessary and complicated WHS documentation and argued that WHS documents are "*drafted by people who actually do the work*" to ensure they reflect the practicalities of performing a task in a construction site context. It was observed that the WHS 'industry' referred to by participants sometimes creates WHS-rules and procedures that are divorced from the reality of situated work practices.

How do organisational/project cultures impact on WHS?

The focus groups expressed a desire for clients to be mature and responsive to the dynamic and ever changing nature of the industry, and not simply checking lost time injury figures, or when, as one participant noted: "*Clients just want the job done*."

Sharing knowledge was seen as an effective way to improve WHS: "*It strikes me that information sharing is really important in work health and safety*" as was the process of sharing safe work practices and best practices either through formal award nights, or similar. Participants cited the ACT WorkSafe Construction Industry Awards, where "*people got up and shared that in a public forum, saying this is what we've done*" as an effective forum.

Cultures in which workers feel able to raise WHS concerns, ask questions and make suggestions about WHS improvements have a positive impact on WHS engagement, worker participation and performance. Participants recognised the importance of open and honest bottom-up, as well as top-down communication, but perceived that this is an area in which the ACT construction industry could improve: *"… now what happens when that worker goes to say, 'We shouldn't be doing this because of…' And then senior management, now this is where I believe we have down force. But the up force isn't working as well as possible because what happens there? Then it goes back to site supervisors,*

your principal contractors and your clients and all that going back up? Saying, 'Well, no one thought that, of this. Now how do we build it? What do we do?'"

Another participant differentiated between formal WHS management systems that he saw as being top-down in their operation and peer-to-peer processes that occur within workgroups that encourage safe working in the construction industry: "*In a way,* [the WHS] *system comes down from the top but the relationship comes up from the bottom. It's one worker, working with another, saying, whether in words or just in attitude, 'we're going to work safely together.'"* These positive workgroup-level interactions are acknowledged to be important cultural drivers of WHS as social processes establish norms and expectations about ways of working in workgroups.

A just culture in which errors, incidents and issues can be reported freely and openly without blame or repercussion was identified as being of critical importance to the ACT construction industry embracing a learning culture. Participants believed that free, open and honest reporting of concerns (anonymously if necessary) was very important to identify and resolve issues and continuously improve WHS performance.

Participants were universally positive about a 'freecall' phone service established by one construction organisation. One participant explained: "*There are some smart things that are happening. There's one company I would not mention... They've got a 1300 number. So, you can ring that anonymously and say, 'Look, there's an issue. There's been an incident, an issue'* [and] *each day, the management sit in the building, in Canberra, with all the state people coming in, and they have the list and they go through, in priority order, the list. They go for, what, an hour or an hour and, they go through, religiously, every single item. They trend that information. Then that lesson is then learnt by the whole of Australia. So, simple stuff*." Other participants familiar with this service described how it is underpinned by *"a culture of no punishment."*

The discussion turned to the privacy issues inherent in such a system and participants described a culture shift in the way this reporting tool is viewed: *"So, one person calls it 'dob in a mate' and the other one calls it 'look after your mate'. It's the same call."* Another participant explained that the purpose of the service is to resolve problems not to blame individuals: "*You don't want to be vindictive…it's all anonymous. So, you don't talk about the people necessarily unless the person is intrinsically the problem. But an action. For example, there's an action, I saw something. So, then they go around and they change their system just ever so slightly so that, and everyone knows that this is happening. Also, it's not the fear of failure, but the fear of getting hurt. The fear of getting caught for doing something wrong, it just focuses for a while, until the culture catches up."*

Participants described how, in some organisational environments WHS is seen as an intrinsic way of performing work. In these organisations work was well planned at pre-start meetings and WHS was not treated as a separate item, but part of the way all work is carried out. One participant explained: *"You've got to go back to what are you doing today and what do you have to have done today…So they've got to go hand in hand. So, don't say, 'We're having a safety briefing today'* [instead] *'We're having a what we're doing today and safety is just integral to it.'"*

This participant also explained the importance of regular, frequent conversation about how work is being carried out: *"…and that's a cultural thing. But to stop people, and to remind people, on a daily basis, why you're doing what you're doing. So, forget about safety. Say 'Why do you want to put the ceiling in today and not tomorrow?' Because if you don't put it in today, you're going to put it in tomorrow, the guy that was supposed to be here tomorrow is going to be right behind you. That's going to happen. So, talk about that and remind people why it is that you're talking about it…But it's*

working and doing the job. You don't actually have to isolate safety. You have to isolate the work and just make sure the culture says, and when the union comes in for a safety check, you probably should be more involved with the health, you're working for, you're looking after the workers. You're just making sure that even what they're doing is realistic in the program. What are you doing? How long have you got to do this?"

How are pressures between production and WHS handled?

"Time is definitely a factor in the industry especially the push for getting things done."

Time pressures were cited regularly by participants as a factor that placed pressure on workers and WHS. In particular, a tension between hands-on management/supervision and time spent producing WHS-related paperwork was observed: *" ...it's needed so you've got to put that six hours out on the site. I can't help that they've got to do another six hours and there's got to be paperwork. He needs to manage, it's outside the work hours you know what I mean?*"

Another participant commented that time pressures manifest not just in terms of scheduling, but also in training and logistics, where even delivering inductions can translate to schedule pressure, as indicated by this comment, "*Their inductions take two hours. Okay, we got to get another 25 inductions done. That's 50 hours of work time that everyone's missing. Not just the principal contractor. So, you can see it just evolves. If you're not prepared for that, that's where industry struggles.*"

However there seemed to be a sense that as the sector matures and more companies see WHS as an investment companies will become more agile and application of the systems will not create time pressure, as noted by one participant, "*Safety is your investment of your company's reputation. Once the systems are in place and you get used to working them they'll become quicker and easier for you. So eventually it will develop into a point where it's not this time factor thing.*"

Worker engagement and WHS management

Are workers genuinely engaged in WHS processes? why/why not?

Participants observed that construction workers possess valuable WHS-related knowledge that can be used to improve processes and performance if it can be accessed. However engaging workers in a conversation about WHS can be difficult, and relies heavily on good relationships between supervisors and workers and trust. One participant observed: "*You can have a beer with them. You can sit down and talk to them. They know you're on the same level. That's the thing. They don't, they have a lot of knowledge but as I said that's the one thing that stops workers. Is the, 'S*** I don't want to be deemed a troublemaker. I like this job, I like working on this job. I like the guys that I'm working with.'"* When workers perceive they will be penalised if they raise WHS concerns they will not engage in such conversations.

The importance of engaging workers in the development of WHS guidance material and addressing them in language that they are comfortable with is very important for messages to be understood and accepted.

One participant explained: *"Language is hugely underestimated. It really is. It's the big key, without we don't get in."* When asked to explain this remark, this participant continued: *"Well, we've done some safety videos. We've got 25 out there. They're not perfect. But the first cuts of them, they did a number of them. There was a committee and some people around the state would have been on it. And the first thing that people picked up apart from the fact it was very interesting watching, having filmed the various jobs. And the first thing everyone did was pick the job apart. Going, 'S***, look at that.' But it was clear that the language was, not to be rude about it, it was administrative. It was bureaucratic. It wasn't stuff that people use on the ground. It wasn't language that people would use over a beer after work. So, took it all out, went out, got a bunch of apprentices together, a bunch of workers on various construction sites and tested out some scenarios. And that language, in particular, was what came back into the scripts. They also then used actual workers and apprentices and labourers and trainees and so on, actual live people. Because in the first cut, everyone had clean high vizs on. And you're going, 'That's not a construction site. People had clean shirts!"*

Engagement was also seen as the result of managers giving workers the ability to participate in the development of procedures and protocols, as evidenced by one participant who saw this as a perfect opportunity to draft SWMS with the input from workers. "*If a new SWMS needs to be drafted, then we'll have a wet day, bring everybody in. We'll give everybody a WorkSafe ACT, a generic SWMS form and we'll go through the task. Everybody will draft their own. They'll pick up three hazards each and draft controls on the work process for those. It's all compiled into one and everybody agrees it's one document."*

One union participant observed that the engagement of workers in WHS processes was often dependent upon the effectiveness and WHS commitment of the supervisor at a particular worksite*: "It's also giving ownership to the guys to do it as well. Because I know if I show up to before I start work yeah they'll all get together. If a manager shows up they'll all get together, but do they do that if I'm not there or the manager is not there? I don't know. All I know is that they've got a risk assessment they sign on to. Do I know they've all got together? And it's also the ownership and also the supervisor how he believes in, or she how they really strongly believe in the WHS process yeah*?"

How well do consultative processes work? Has this changed in recent years? If so, how/why?

Union representatives particularly noted the change in the environment over the years, where increased consultation has led to improved engagement of the workforce and development of H&S procedures, for example, "*We didn't have…consultant processes, not much great involvement … of workers in consultative committees or safety committees*". However, they also warn that consultation has to be meaningful as, at times, the exchange is "*not necessarily consultation, either, because they've already predetermined what's going to happen*."

Participants observed that engaging workers in consultation can sometimes be challenging but gaining their respect and trust is important. In particular, managers who have practical construction experience are sometimes better able to gain the acceptance of workers than those who are lacking in such experience: *"When you're consulting with workers too, it helps if you can walk the talk with them. There's nothing worse, I used to, basically, I don't wear a suit when I go to work, but I used to wear business attire. When I'm talking to people, they look at me as if to say, and I've said it. 'How the hell would you know, mate? Have you ever done a day's work?' But at the end of the day though, it's as simple as breaking the ice and saying, 'Well mate, I've done rigging, I've done scaffolding and all that.' And all of a sudden, it just seems to change. 'So, the blisters have gone mate, been there, done that.' It's just walking the talk with them."*

However, irrespective of whether managers have practical construction site experience ensuring that consultation involves a two-way dialogue and that they receive as well as give WHS-related information is important. One participant observed: *"Being talked at doesn't work."*

Participants observed that effective consultation is dependent on social processes and relationships rather than the provision of consultative mechanisms prescribed in WHS legislation. Consultation should also involve an ongoing dialogue between managers and workers: *"That's why, in your management systems that you build for safety, it shouldn't be about what's in the Act or the Regulations, which are very precise. Thou shalt have ... If you want to have a wonderful work group, thou shalt have a committee. It's the way in which you form that relationship and that consultation so it becomes an intricate part of what you're doing every day, not just I attend a construction safety meeting, which I used to do with you, and we'd walk away going, 'Okay, that's fine.'"* And another: *"But you've got to find a balance on each side. You've got to go to the site, and that's where the consultation is really important."*

The need for WHS consultation to involve frequent, regular interaction was highlighted in a discussion of SWMSs and the need to review and refresh these as work progresses and the construction context changes. One participant explained: "*Construction's dynamic. It's not static. Every day is different. Nine o'clock in the morning is different to 10 o'clock in the morning. Depending on what the work activity is."*

Another commented that: "*Different things change. A SWMS will sit in the, there it is at the start of the job. Go and find some of them. Then not all of them, they'll be the same for the duration of the job. Where so many things have changed on the job."*

This participant observed that, although the intent of the legislation is to have these documents reviewed with workers' involvement: "*It doesn't happen. We have lost the plot when it comes to, with our SWMSs in general. It is typed up. The small guys will actually buy one offline or it's typed up by the safety manager. He negotiates with the builder and they work out what's going to go in it. Then the guys have to sign on. When the guys are getting inducted, that's the time for consulting in that situation and that's not always going to happen."*

Another participant observed that this process is: *"not necessarily consultation, either, because they've already predetermined what's going to happen. And that's, on the tier two and the tier one projects, that's what's happened. That's what happens."*

Participants also comment on how the transient nature of the construction industry affects engagement and consultation, especially as trades move from site to site. One participant commented: "*It's a very transient employer, employment. People move. They move trades. They move employers. They move job sites. They don't* [stay in] *the same workplace."* And another, "*When I was in manufacturing, we had, as a union, the timber industry, we had far better consultative processes because they were static workplaces and [*they*] developed over years. So, you're at the same place, you're in, you're out. Trouble is what we mentioned earlier, the transient nature of the industry. People are coming and going all the time."*

A number of participants expressed a belief that consultative processes were improving within the ACT construction industry. One participant explained: "*But I think the consultation on the sites has improved a hell of a lot. I think that's got better. The tradies are talking up more than what they have in the past. That's all got to do with the relationship building, you know, the project, the people managing the site and the workers and that repeat service … and familiarity. I think it works in the ACT because we're a small demographic."*

However, other participants did not share this view and felt that consultative processes were not universally effective or improving*: "It depends on where you are. Depends where you are."* This opinion was shared by another participant who commented on the need for consultation to be meaningful and involve two-way exchange of information for it to be effective: "*… in a general sense and there's obviously specific areas that are better than others, but generally* [consultation is] *not good enough. And it's not about consultation it's about effective consultation. Consultation is not me saying to you 'You're going to do this, you're going to do that, you're going to do that - right sign this piece of paper get going!' That is…and I mean it's a generality … yet there are some people who do it better I'm not going to disagree with that. These guys do it better* [pointing to another focus group member], *I've been to their tool box and safety meetings and we call there quite a lot. There are better ones out there, in a general sense it needs to be improved."*

Participants also commented that effective consultation comes down to relationships and mutually respectful interactions between workers (and their representatives) and managers: *"There's two words to make the consultation work. Mutual respect at the people. That's a personality trait. The people engaged have to mutually respect. You know we're union builders, we're bosses, etcetera. If you're going to get somewhere, you have to mutually respect each other. Otherwise, you're not going to get any good relationship. If you have a mutually respective consultation place, you will go miles to get what your mutual goals are."*

Supply networks

How is WHS risk managed in supply networks?

Participants identified challenges inherent in the construction industry's supply arrangements that can impact construction workers' WHS, as well as that of end users of structures/facilities. One such problem relates to the specification and procurement of construction materials, often from overseas. Participants reported instances in which imported materials or components were not compliant with requirements for the Australian building/construction industry. One participant explained, "*We're just expecting things to come out and be as we asked. A lot of it is not happening…And that's coming back to haunt on bigger companies with quite a few misses with, say windows. Brought into the country, installed, but didn't meet the standard requirements. They were found out and everything had to be pulled out. That was a structural part of the building, so it virtually destroyed the building."* Another participant agreed with this statement, noting: *"And you've got the asbestos issue over the hospital in Western Australia. The asbestos actually got into the country and into the new building before it was actually picked up."* These supply issues highlight the need to ensure that materials and components that are specified need to be checked for compliance with relevant Australian Standards and building regulations and that designers and constructors work closely with material and component manufacturers and suppliers to ensure that people are not put at risk as a result of building products.

Participants saw the effectiveness of WHS risk management as directly related to the maturity of a particular construction organisation and the ACT construction industry as a whole. In particular, the participants indicated that working in the ACT construction industry is getting more intense and complex, requiring higher level of management capability and imposing new pressures on WHS: "*Because we go quicker now. Like, we are under pressure. Standing here, I've probably got 44 emails of what we need to do right, just in this room now alone. I'm getting hammered. I know that out there. But the thing is we are evolving as a, we are moving faster, there is more pressure. And everything. We used to say, okay, scaffolder comes in and builds a scaffold. Form worker comes in, builds the*

deck. Steel fixer, stressors, all that, come in. They have their little times. Now it's not. We're all bolted together. So, as the scaffolder building his scaffold, there's form workers are moving. As the form workers are moving, we put a barricade up, steel fixers, stressors, all that becoming involved behind it…If you are not prepared for that, you are already dropping the ball. You are already finished. Your job is not going to be safe. And as you say, the supply. It's like, where are you going to set the boom up? When, you're not working under a boom. Don't expect to be pouring concrete and all the form workers gone because we can't afford to do that. You got 25 form workers, you want 25 form workers on your job, keep 25 form workers on the job. As soon as they go, getting them back is going to be tough."

The WHS management capability and resources available in a company is related to its size but effective pre-job planning, management of contractors and being agile and able to respond to change were all identified as important factors for project and WHS success. One participant explained: "*But that's, as I said, planning's the biggest thing for us…That's the lesson. It's 80/20. 80% planning. 20% doing. Usually it's zero margin of error planning and 90% doing and 10% stuff up, disaster, ruin, crisis management. Even today*." Another added: *"And why do we get astounded when you're working in an industry that's so volatile, changes every 30 seconds, when something changes?"*

However, in spite of the importance of effective planning and management of WHS, participants indicated these processes are often lacking in the residential construction sector: "*The housing industry is, not being disrespectful. It's just rife. No one has safe work management systems. Talk to apprentices that go through different sporting teams and stuff like that…it just doesn't exist*."

Another participant expressed the similar observation: "*They're all just individuals in, like they're not, I don't think the builder would necessarily say this is how I want my job run. Plumbers, electricians, 'I want this, this and this from you.' A commercial or civil site would say 'This is my expectations.' For a* [residential] *builder, it's more about the services and, here, you're on site to do this. I would highly doubt that they would check whether they even have insurances, let alone work health and safety systems."*

Are principal contractors managing subcontractors' WHS effectively? Why/why not?

The extent to which principal contractors actively manage the WHS of their sub-contractors was questioned by some participants. One commented: "*I don't believe the principal contractors manage subcontractors very well. I think a lot of subcontractors are left to their own devices because the guys are too busy doing something else."*

This feeling was echoed by other participants who commented that workers are often left to work with minimal supervision: "*Unless WorkSafe* [or the] *union, come in, right, no one's dictating to me what's happening except for my bosses. Right, but if I'm not on site, then it goes down to my site supervisor, down to my leading hands, down to my HSRs, down to the worker. Who is dictating to that worker? What do you do? Really, there's no one. They're taking, they're doing what they want, when they want, how they want it."*

In particular, participants described how WHS risk is passed down to subcontractors with minimal support from principal contractors who only get involved with sub-contractors WHS processes if something goes wrong. One participant explained: "*Even when the subbie does all that work with his or her workforce, they're still really on their own when they get onto a big site, because the big site's not saying, 'Okay, well, this is how your safety system bolts into mine. This is what I want to see. We've got Jack or Jill over here to help you smooth yourself into that for the duration that you're here.*

We'll do anything we can to help you.' What happens? An accident happens. Then a ton of bricks comes down. And paperwork starts to flow all over the place."

Participants drew a distinction between principal contractors' legal duties (i.e., the way things should work) and the way things are managed in practice. One participant explained: *"Can I just say the structure between the principal contractor and client and the subcontractors, from a legal point of view, is pretty clear? It's how that is actually managed is what* [we're] *saying. Principal contractors have got better at doing that, but still there's a way to go. And subbies; we need to bring the little subbies along for the ride. So for example, where they might have to have a mirror safety management system, what is the poor little subby doing? So little things like what's called the subby pack that was created by the MBA a few years ago. Those little things are really helpful. A checklist to help them to actually do it and improve themselves over time, rather than being slapped."*

Has the approach of principal contractors changed in recent years? If so how/why?

Participants noted that the large construction companies tend to have an arrogant approach to WHS. One observed: "*We tend to be arrogant in our position as an industry. And whether that's a confidence thing that you need to have in the industry that gets taken the wrong way. If you are a tier one company, you will listen to no one. And you are taught to listen to no one and there is no way you will listen."*

However, other participants described improving principal contractor-subcontractor relationships. For example, one participant commented: "*I think it's* [the state of the relationships] *definitely improved, yep. I do. Again, it's a mixed bag. Occasionally, a problem with a particular builder or a particular team from a particular builder, they'll still try to bully and harass. That works both ways, too. But generally speaking, a big improvement."*

Another participant indicated a sectoral difference with improved principal-subcontractor relationships in the commercial building and civil engineering sectors, but not to the same extent in residential construction: *"Possibly more so this would affect commercial and civil. I think you'd find relationships have probably improved across the ACT. However, I do think there's still a disengagement on residential. They just, the client, the person, the principal contractor may have several subcontractors and they're all just there to do their own thing. I don't know that they're project managed so well, whether it's in relation to the build or the work health and safety elements.*"

Part 6: Discussion, conclusions and suggestions

The state of the present day culture within the ACT construction industry

WHS performance

Participants in the focus groups were asked about their perceptions of the work health and safety (WHS) performance of the ACT construction industry since the publication of the *Getting Home Safely* report in 2012. The Inquiry Panel that produced the *Getting Home Safely* report proposed a target of a 35% improvement in the serious injury rate within three years and further targets thereafter.

Participants reported mixed impressions of the industry's WHS performance in recent years. Some believed the frequency of safety incidents has not declined significantly and may even have increased. However, a number of participants explained that, since 2012, the extent of under-reporting of incidents and injuries has declined. These industry participants suggested that incidents and injuries that may not have previously been reported are now being reported and therefore a simple comparison of statistics over time may be misleading. The reliance on lag indicators of WHS performance was also criticised by participants who perceived that these lag indicators did not adequately capture the state of WHS in the industry. These participants identified the need for appropriate lead indicators to better understand and track the performance of the ACT construction industry.

Although some focus group participants perceived the industry culture has become more supportive of workers' safety than it was previously, participants also suggested that the industry culture in relation to the protection of workers' health has not kept pace with this improvement. In particular, issues of work-family balance and mental health were identified as being a significant problem for construction workers. Participants linked these issues to the occurrence of safety incidents and injuries. Participants also discussed how construction work in the ACT has become more intense in recent years. They identified how competitive pressures, tight project deadlines, with significant penalties for late completion as being responsible for this pressure. These participants suggested that this intensification of work is client-driven and has negative WHS impacts.

Safety climate

The *Getting Home Safely* report acknowledged that the ACT construction industry is not homogeneous and the existence of different sub-sectors and employment arrangements have allowed "unsafe and unethical companies" to operate alongside those with a good corporate ethos in relation to WHS.

The safety climate survey results may reflect this observation, suggesting that the maturity of organisational and workgroup cultures in the ACT construction industry remains 'patchy'. The results revealed differences by:

- company size
- industry sector
- employment arrangement

- trade, and
- managerial level.

These are discussed below.

Company size

Workers employed by companies employing between 100 and 199 workers have significantly less positive perceptions in relation to several dimensions of climate at both organisational and workgroup levels. The perceptions of workers employed by companies of between 100 and 199 employees reported the lowest workgroup safety climate perceptions for all dimensions except 'responsibility, accountability and authority.' Workers employed by companies of between 100 and 199 employees also reported the lowest organisational safety climate perceptions for 'leadership', 'communication', 'supportive environment', 'learning', 'trust in people and systems', and 'engagement.' Many of the differences between the safety climate perceptions of workers engaged by organisations of between 100 and 199 employees with both larger and smaller organisations were statistically significant.

The focus group participants explained that, in larger construction companies, robust WHS management systems are typically in place. It is also likely that in smaller organisations, less formal and more personalised management processes may also be perceived to be effective. Focus group participants identified particular challenges for commercial building companies that could be classed as 'tier two' or 'tier three' companies. These companies were believed not to have the same level of influence over sub-contracted workers as the large 'tier one' contractors. A representative of a smaller commercial building firm explained that subcontracted workers who move from site to site may not comply with the WHS requirements of individual builders. Participants suggested that this problem is exacerbated by a lack of consistency in WHS management systems and approaches in the ACT construction industry, which is perceived to be inefficient and create confusion.

Industry sector

Safety climate scores in the commercial/industrial building sector of the industry were lower than other sectors for all dimensions of the organisational and workgroup safety climate. Reasons for this are unclear. However, issues relating to the intensification of work and challenges inherent in the management of subcontractors by principal contractors were identified in the focus groups in relation to commercial building work.

The *Getting Home Safely* report also identified "a blatant disregard for the value of safety by many in the residential construction sector" as a barrier to the development of an industry culture than enables WHS. In our analysis, average safety climate scores for the residential sector were generally higher than the commercial/industrial building sector. A number of focus group participants suggested that this unexpected finding could reflect the fact that people in the residential construction sector in the ACT have a low level of appreciation of WHS and perceive they are managing WHS more effectively than they actually are. Participants described this as: "you don't know what you don't know" and explained that, in many cases, residential building companies do not have robust WHS management systems and workers in this sector generally have a low level of awareness of WHS. It is noteworthy that the number of survey respondents indicating they worked in the residential sector was relatively low and therefore the safety climate data collected in this sector cannot be treated as statistically representative.

Employment arrangements

The *Getting Home Safely* report identified the construction industry's 'command and control' culture and predominance of subcontracting as barriers to the development of a culture that enables WHS in the ACT construction industry.

The safety climate survey results revealed respondents who indicated they are employed by a subcontractor organisation reported less positive perceptions of their organisational and workgroup safety climates than respondents in other employment categories. The focus group participants suggested that principal contractors' management of subcontractors is an area for potential improvement. Principal contractors were regarded as being either too 'laissez-faire' in their management of subcontractors, effectively leaving them to their own devices. This was perceived to be the case until a safety incident happens, in which case the principal contractor would seek to blame the subcontractor. This approach as perceived to be unhelpful, particularly because subcontractors were acknowledged to have fewer WHS resources and less mature WHS systems. Given that this is the case, participants expressed the view that principal contractors should be more supportive of subcontractors and proactively help them to improve their WHS management processes and practices. The engagement of subcontractors in the planning and design of work was also acknowledged to be important, although participants noted structural impediments to achieving this. In particular, client pressures to commence construction work before subcontractors are identified and engaged often precluded the involvement of subcontractors in the planning and design of construction work. This is also a missed opportunity because important construction/WHS knowledge resides with specialty subcontractors (Franz et al. 2013) and research shows that engaging people who will perform work in the design of work processes improves the quality of risk control and WHS outcomes (Lingard et al., 2014). This is potentially an aspect of industry performance that clients could help to address.

Trade

Safety climate scores also varied by workers' trade. In particular, floor finishing and painting workers reported the lowest safety climate scores. It is unclear why safety climate perceptions of floor finishing and painting workers were lower than other trades. However, finishing trades often come onto a site close to the end of works. This work can be undertaken under considerable time pressure.

Managerial level

There were also significant differences in safety climate perceptions by the managerial level of participants. In all cases, upper level managers had more positive perceptions of the safety climate than lower level managers, and lower level managers had more positive perceptions of the safety climate than frontline workers. These results suggest that there is a 'disconnect' between the way that workers at different levels perceive the emphasis placed on WHS and the quality of various aspects of WHS management. The *Getting Home Safely* report stated that: "*Everyone—senior managers, middle managers, leading hands, foremen and the workers themselves—must all recognise and value the benefits of a safe worksite and accept their role in achieving that end*." The lack of a common inter-level understanding of the importance of WHS within an organisation can act as an impediment to the development of a culture for WHS.

While it is unclear why senior managers have more positive perceptions of the safety climate than lower level managers and frontline workers, participants in the focus groups did identify communication between workers and managers as an area for improvement within the ACT construction industry. In particular, WHS management approaches were often seen to involve 'top-

down' communication and instruction in relation to WHS systems and procedures, while engagement of workers in 'bottom-up' communication of WHS issues and concerns was perceived to be less effective. Participants noted that meaningful consultation of workers on matters relating to WHS does not always occur in the ACT construction industry. Participants observed that some construction organisations ask workers to sign WHS procedures and SWMSs, but seek little worker input into the development of these documents. Participants saw this as a missed opportunity because seeking worker input into the development of procedures and SWMSs is perceived to increase 'ownership' and improve the effectiveness of these documents.

Perceived improvements to the industry's culture

Participants in the industry focus groups identified several areas in which they perceived the culture and/or WHS performance of the ACT construction industry has improved since the publication of the *Getting Home Safely* report. These are:

- an increase in reporting of WHS incidents and injuries
- greater client attention paid to WHS, and
- improved relationships between clients and contractors.

Increased reporting

Focus group participants expressed the view that WHS incidents and injuries are more likely to be reported now than in 2012. Participants noted that the industry has an improved culture of reporting. This is important because the reporting of incidents has been identified as an important part of organisational culture that enables learning and improvement in relation to WHS. Workers' comfort in reporting incidents, injuries and errors is also linked to managerial leadership and, in organisations with a poor safety climate, workers tend to under-report incidents and injuries (Probst 2015). In particular, one organisation was identified as developing an anonymous freecall service, whereby WHS issues and concerns could be reported. Issues reported are collated and regularly reviewed by the organisation's leadership team. Notwithstanding the perceived improvement in the industry's reporting practices, some participants indicated that under-reporting is still a problem in some areas of the ACT construction industry. These participants linked this under-reporting to pressures to win work in an environment in which the award of contracts is linked to lagging indicators of WHS performance.

Client engagement in WHS

Participants also suggested that, since the publication of the *Getting Home Safely* report, clients of the ACT construction industry have become more proactive in their management of WHS. A number of participants described a change in public sector client behaviour from having an 'arms-length' relationship with contractors, to being more informed about WHS and willing to engage in joint problem-solving with contractors. This was perceived to be a positive shift in attitude and approach. The Active Certification Program was also acknowledged by focus group participants to have made "good progress," although some participants suggested that audits undertaken as part of this program sometimes focus too heavily on paper-based systems. The timing of these audits was also identified as a factor in their effectiveness. Some participants noted that audits are scheduled to occur at regular intervals which does not always capture periods of peak construction activity.

Perceived barriers to the development of an enabling WHS culture

A number of the issues identified in the *Getting Home Safely* report as areas in need of improvement were identified by focus group participants as still being areas of concern. These are:

- the quality, effectiveness and consistency of WHS training
- the effectiveness of WHS management systems, and
- the effectiveness with which principal contractors manage subcontractors' WHS.

Training and competency development

Workforce competence at all levels is important to developing a culture that enables WHS. The *Getting Home Safely* report made recommendations about reviewing and assessing the effectiveness and quality of 'White Card' WHS induction training and the Inquiry Panel also raised concerns about the experiences of apprentices. Participants in the focus groups identified that the quality of training and the experience of apprentices in the ACT construction industry remain areas for concern. In particular, participants expressed concern about the quality of 'White Card' induction training. Participants were particularly critical of online industry induction training, raising concerns about the integrity of such online training systems in terms of ensuring that the person to whom a card is issued may not have been the person who completed the training or was an assessment of competency online. Participants also commented that site-specific WHS inductions are typically very long and not engaging. One participant described such inductions as 'death by Powerpoint." Participants observed that, because construction workers often have low levels of literacy and may not be proficient in English, more visual means of communicating important WHS information may be more effective than written materials.

Participants indicated that the experience of apprentices in the ACT construction industry is variable. Participants described situations of apprentices working with minimal supervision and suggested this could occur, even on big sites. Apprentices are a vulnerable worker group. The majority of construction apprentices are young males and research shows that young and/or relatively inexperienced workers are at risk for work-related injury (Breslin & Smith, 2005; Walters et al. 2010). Research also shows that workers in the first few months of a job are at increased risk of injury, even after controlling for occupation (Morassaei et al., 2013). Another study found the majority of construction apprentices report symptoms of a work-related musculoskeletal disorder (WMSD) in their apprenticeship, suggesting the practices that give rise to WMSDs begin when workers are young and new to the industry (Merlino et al. 2003). Construction apprentices are also reported to engage in risk-taking practices to a greater extent than other social groups. Construction apprentices are reported to have higher rates of smoking (Barbeau et al. 2006), potentially harmful alcohol consumption and alcohol related violence (du Plessis et al. 2013), and illicit substance use (du Plessis & Corney, 2011).

A representative of a Group Training Organisation described her practice of visiting worksites and engaging with employers and apprentices to ensure that appropriate work planning systems are in place, and apprentices understand relevant WHS procedures and safe and healthy work methods. Participants in the focus groups also suggested that industry employer associations could potentially do more to ensure that apprentices are appropriately supervised to ensure their health, safety and wellbeing.

WHS management systems

The *Getting Home Safely* report described the way that WHS management systems in the ACT construction industry have become overly paper-based and also discussed prevailing confusion about the requirements for Safe Work Method Statements (SWMSs). The focus group participants suggested that these issues remain problems in the ACT construction industry. Participants affirmed that WHS management systems are extremely important for the planning, providing and maintaining healthy and safe worksites. However, they also identified challenges associated with paper-based systems that may not always reflect 'work as done'. Participants explained that WHS consultants are partly responsible for such systems as they write generic WHS documentation with little or no input from people who perform the work. Participants also described what they perceive to be an excessive amount of WHS-related paperwork that is seen to distract managers and supervisors from engaging in 'hands-on' supervision of work. This problem is also reported in international research (Lamvik et al. 2009).

Management of subcontractors

The *Getting Home Safely* report stated that "principal contractors must use their supply-chain purchasing power to enforce adherence to safety on their sites by their sub-contractors." The report also cautioned against an over-reliance on the imposition of rules and paperwork to achieve this, but recommended principal contractors actively engage subcontractors in their WHS planning and management processes. While some focus group participants suggested that, in some sectors, principal contractors' management of subcontractors WHS has improved, some considered that principal contractors, particularly large 'tier one' contractors, are "arrogant" in their approach to WHS. Participants also perceived that principal contractors manage subcontractors differently across industry sectors. In the civil engineering and commercial building sector, principal contractors were perceived to communicate WHS expectations to subcontractors, while in the residential sector participants reported that principal contractors are more focused on the quality of service and subcontractors' ability to 'get the job done' irrespective of WHS.

Suggestions

The research found that:

1. There was a perceived need for more reliable and valid lead indicators of WHS to measure and monitor the performance of the ACT construction industry. Incident/injury rates were not believed to adequately reflect the changes to WHS culture over time, partly because cultural improvements produce an increase in reporting behaviour. There is an opportunity for industry stakeholders represented on the Construction Safety Advisory Committee to develop a set of meaningful, sensitive and reliable indicators to monitor changes in the industry's WHS performance in the future.

2. While industry participants perceive some improvements in culture relating to the workplace safety in the ACT construction industry, the status of construction workers' health is a concern and the industry is perceived to be far less actively engaged in the protection against work-related health risks. There is an opportunity to identify the factors impacting on construction workers' health in order to develop evidence-informed risk reduction programs for occupational health risks. It is recommended that a systems-based model of health is used to understand such analysis because factors identified by participants during the focus groups highlighted some industry, structural factors contributing to poor health in construction

workforce. In particular, factors impacting work-life balance and relating to the intensification of work were identified as being of concern. Industry stakeholders also commented on the prevalence of and need to address the issue of poor mental health among construction workers. To address this issue, it is important that interventions and programs are informed by an understanding of the causes, experiences and impacts of depression, anxiety conditions and suicidality in construction workers.

3. The research confirmed that workers play an important role in driving WHS improvements and examples of good practices with regard to engaging workers in reporting WHS issues and making suggestions for WHS improvement were identified. However, the quality and effectiveness of formal consultation mechanisms was considered to be variable. In some instances, consultation was perceived to be a one-way communication of information heavily focused on getting workers to 'sign off' on safe work method statements and procedure documents. There are opportunities to review the ways in which workers are engaged and able to raise concerns about WHS in their workplaces and/or provide meaningful input into the design of safe and healthy ways of working. Case studies and examples could be developed to document and share good practices. Investigation into the positive benefits (other than improved WHS) of engaging workers in the design of work should also be captured to reflect the broader performance benefits associated with drawing on construction workers' knowledge and experience in planning and designing work processes.

4. The research identified particular challenges in mid-sized construction firms. These firms are believed to have lost the close working relationships and interpersonal connections between business owners and workers in smaller firms, yet do not have the developed systematic approaches to managing WHS that are seen in larger firms. Firms in this mid-size range are likely to require particular supports and resources to help them to address these challenges. The development of specific resources for mid-sized construction firms is potentially beneficial.

5. Participants in the focus groups were sceptical about the relatively high safety climate scores in the residential sector, though it is also acknowledged that the sample size for this sector did not reach the targeted number. Industry representatives expressed the belief that the residential sector has the least well developed culture relating to WHS of all the industry sectors. They explained the relatively positive perceptions of safety climate in this sector in terms of residential sector respondents' lack of WHS awareness and overly optimistic view of their WHS performance (i.e., "you dont know what you don't know"). Given this apparent disconnect, further work may need to be undertaken to better understand the status, performance and culture in the residential sector. As with mid-sized organisations, specific guidance targeting residential building companies may be helpful to help workers and employers engaged in the residential constructions sector understand good WHS practice and be able to implement appropriate and effective management practices for the sub-sector. Good practice case studies and practical examples could support this.

6. Principal contractors' management of contractors was perceived to create challenges for WHS across the industry. In particular principal contractors were perceived to be arrogant in their approach and heavily focused on paper-based WHS systems. The requirement for long and complicated WHS documentation was perceived to be unhelpful, particularly in light of levels of literacy within the construction workforce. Principal contractors were perceived to take an arms-length approach to the management of subcontractors' WHS unless an incident occurred in which case they would attempt to shift the blame to the subcontractor. Industry

participants perceived that principal contractors could do more to help subcontractors to improve their WHS capability and drive performance improvements in their supply networks. It was also suggested that more integrated procurement approaches could provide opportunities for early engagement of sub- contractors (in project planning) which would lead to improved risk control and WHS outcomes.

7. The reason for differences between safety climate perceptions reported by trades is not clear. Qualitative follow up (interviews) could be conducted to explore these differences and determine if there are any specific structural, organisational or cultural reasons for these differences, for example, some finishing trades may work under intense time pressure close to the completion of a project. Analysis of injury data by trade may also reveal whether there is a correlation between the low safety climate perceptions of workers in particular trades and the incidence of injuries.

8. The safety climate scores revealed significantly different perceptions between senior managers, middle managers and frontline workers, with senior managers reporting the most positive perceptions and frontline workers reporting the least positive perceptions of the prevailing safety climate in their organisations. This finding is consistent with previous research in other industries. However, reasons for these differences are worth exploring and improved communication and consultative processes may help to uncover areas in which managers are overly optimistic about the effectiveness of WHS management approaches. For example, participants in the focus groups described how managers often engaged consultants and implemented generic WHS management systems, assuming that these would naturally produce a culture that enables WHS and good performance. Yet, these systems were not favourably viewed by workers who felt disengaged by such top down management processes.

9. WHS training in the ACT construction industry was identified as being an area in which improvements could be made. In particular, the effectiveness and impact of online training processes was questioned and focus group participants strongly favoured face-to-face training with a practical component. Apprenticeships were regarded as being of great importance and value in developing trade-based skills and a knowledge and awareness of WHS. It was pointed out that WHS should not be treated as a stand-alone competence but is an integral part of learning to perform a work task competently. However, participants expressed serious concerns that apprentices do not always receive the level of supervision and instruction that they need. This was perceived to be the case in both the residential construction sector and in larger commercial projects being delivered by large contractors. Some participants perceived that apprentices were better supervised in smaller construction firms where they have a close relationship with the owner/manager. The inadequate supervision of apprentices is important because it places young, inexperienced workers at risk of serious injury but also reduces the long term benefits associated with apprenticeship programs. More work is recommended to better understand the experiences of apprentices and to work with training providers, managers of apprenticeship programs and employers to identify and disseminate good practice recommendations for the management and supervision of apprentices.

10. WHS management processes in the ACT construction industry were perceived to have become overly paper-based and bureaucratic. In particular, clients' and principal contractors' expectations relating to long and complicated procedures and Safe Work Method Statements were identified as a problem. Focus group participants pointed to the fact that this has led to

the development of an ‘entire industry’ selling ready-made procedure documents. Participants believed this to be counterproductive as these documents may be applied in an unthinking manner to satisfy contractual requirements, yet they thwart the intent of these requirements that is to engage in project-specific analysis and planning of work. This problem suggests the need to clarify expectations regarding documentation to ensure that it is proportionate to the requirements of a situation. In particular, the development of documents that are easily understood by workers (including visual content) and that reflect the constraints and characteristics of a particular worksite is important.

Concluding remarks

This report provides quantitative (safety climate) and qualitative analysis that can be used as a baseline measure against which to gauge improvements in the ACT construction industry’s culture in relation to WHS over time. Tools, such as the Organisational Culture Maturity Continuum, presented at Appendix 8.1 can be used by ACT construction organisations to assess the maturity of their organisational cultures and plot a course for the development of cultural maturity and progression towards being an enabling culture for WHS.

Part 7: Appendix

Appendix 8.1 Maturity Continuum

Appendix 8.1 Maturity Continuum

Leadership
Scope: The ability of managers at all levels to promote transformational thinking and change through positive engagement and actions with the workforce.

Impeding  **Enabling**				
Managers are more concerned with operational issues than health and safety matters.	Managers are only interested in health and safety matters when something goes wrong.	Managers seek to manage health and safety matters to avoid prosecution rather than protect workers/contractors.	Managers seek information about health and safety matters, performance and incidents to help manage improvement.	Managers at all levels actively integrate health and safety matters into business operations, and participate in and act on conversations and improvement plans.
Managers respond negatively to all feedback about health and safety.	Managers are interested in health and safety when something goes wrong, but do not follow up on actions.	Managers attend formal health and safety activities to simply meet their required quota.	Managers are visible in the workplace and demonstrate active interest in the health and safety of people.	Managers demonstrate genuine concern for people and a desire for continual improvement in all health and safety matters.
Managers and workers/contractors are suspicious of each other and don't talk about health and safety matters.	Managers occasionally talk to workers/contractors on some health and safety matters, but don't seek their opinions.	Managers discourage health and safety reporting by actively blaming workers/contractors when things go wrong.	Manage actively converse with workers/contractors on health and safety matters, and listen to concerns.	Managers consistently involve themselves in health and safety matters and improvements, and respond to concerns.
Managers change their messaging based on health and safety circumstances.	Managers only involve themselves in health and safety messaging to promote their position or self-interests.	Managers sometimes involve themselves in health and safety to understand if matters may affect them.	Managers are actively involved in health and safety matters and messaging to better understand matters and sometimes support outcomes.	Managers encourage open, blame free reporting by workers/contractors on all health and safety matters to encourage learning and support continual improvement.

Organisational goals and values
Scope: The organisational attitude towards the role of health and safety in its operations, and its place within the priorities of the organisation.

Impeding  **Enabling**				
Managers consistently prioritise cost minimisation at the expense of health and safety.	Health and safety expenditure is minimal and considered only when incidents and/or client pressure is applied.	Managers make public statements about the importance of health and safety, but expenditure on health and safety is regarded as discretionary.	Health and safety and profitability are juggled, but some project delays and costs are borne to improve health and safety.	The organisation invests in innovation to find ways to make work safer and healthier.
Health and safety is seen as a cost to the organisation and an impediment to production.	Health and safety issues only become relevant if they affect project schedule and production.	There is an understanding that minimum health and safety standards must be maintained so that production is not affected.	Health and safety resources are regarded as important to the business and can influence business decisions to improve production.	Health and safety is an integrated component of the organisation's strategy, business activity and decision making.
Profitability is the only concern of managers.	Health and safety is regarded as a bureaucratic impediment to work and profitability.	Health and safety and profitability are juggled (as opposed to being balanced).	Health and safety is regarded as important because it is recognised it can contribute to financial success.	Health and safety is seen as able to contribute to profitability.

Communication
Scope: How an organisation consults and communicates in the delivery of health and safety messages.

Impeding  **Enabling**				
Health and safety information is not communicated to workers/contractors.	Limited and intermittent health and safety information is communicated to workers/contractors.	Managers share limited health and safety information with workers/contractors.	Health and safety information is routinely and regularly communicated to workers/contractors.	The organisation actively and openly shares health and safety information with workers/contractors.
Communication is one way and directive.	Ad hoc communications and generic slogans are visible but do not match workplace management values, and any positive impact associated with these soon diminishes.	Health and safety information is provided on an 'as needs' basis.	Two-way communication is actively encouraged.	Strategic health and safety information is openly shared.
Conflicting messages about the importance of health and safety are conveyed.	Safety messages, when given, are sometimes unclear.	Communication tends to focus on day-to-day operational issues.	Suggestions and ideas provided by workers/contractors regarding health and safety improvements are taken seriously and implemented where possible.	Health and safety communication is frequent and effective.
Communication is mainly top down, usually occurring to resolve an issue.	There is little or no opportunity for bottom up communication from workers/contractors to management about health and safety concerns.	Workers/contractors communicate their health and safety concerns and ideas to managers, but their suggestions for improvements have little impact.	Health and safety communication is a strong and consistent two-way process.	Managers receive as much health and safety information as they give, and act on the information they receive.

Supportive Environment
Scope: How corporate structure supports onsite culture surrounding health and safety.

Impeding ⟷ **Enabling**				
Work is designed and scheduled in a way that creates excessive time pressure, workload, stress and fatigue.	Managers and workers deal with stress and workload problems as they arise.	An effort is made to improve workers' health and wellbeing, but work schedules still demand excessive hours.	Work is restructured so far as possible to support health, wellbeing and work-life balance.	Jobs and work conditions are specifically designed to positively promote health, wellbeing and work-life balance.
Obstructive and uncooperative relationships exist between groups and functional areas, such as health and safety and project management teams.	There are low levels of cooperation and poor information flows between workgroups and functional areas.	Cooperation and communication between work groups and functional areas is sufficient to get work done.	Workgroups and functional teams work hard at sharing information and cooperating to improve workers' health, safety and wellbeing.	Cross functional cooperation and team work are effective and focused on finding ways to support workers in working healthily and productively.
People feel overwhelmed and unable to perform work in a healthy and safe manner.	Health and safety are treated as an individuals' responsibility.	Management and workers are provided with basic knowledge, skills and competency in health and safety.	Workers at all levels have the knowledge, skills, and ability to work in a healthy and safe way.	People are empowered to resolve health and safety issues, and feel confident reporting errors and violations so that better systems of work can be designed.
No effort is applied to managing the hazards in the physical environment (for example, no housekeeping, no guarding).	The physical workplace, amenities and equipment reflect minimum standards and improvements made only when externally influenced.	The physical workplace, amenities and equipment are at basic industry standard.	The physical workplace, equipment and facilities reflect above average industry practice.	The organisation actively invests and experiments with ways to provide a healthy and safe work environment for all workers/contractors.
Organisational structure does not include health and safety support or integration.	There is little to no understanding of how health and safety is applied and integrated within the organisation.	Organisational structure supports health and safety compliance to minimum requirements.	Health and safety is considered in project design and planning prior to and during construction activities.	Organisational structure supports health and safety innovation, information sharing and change management.

Information and knowledge is seen as power, and withheld within the organisation.	Information and knowledge is shared reluctantly and only when instructed within the organisation.	Information and knowledge sharing is based on compliance and protecting the organisation from litigation.	Health and safety information and knowledge is readily shared.	Health and safety information and knowledge is used to improve systems of work across the organisation.

Responsibility, authority and accountability
Scope: How managers, workers and contractors view their responsibility, authority and accountability surrounding health and safety within an organisation.

Impeding  **Enabling**				
At all levels of the organisation – management, workers and contractors – they believe health and safety is someone else's responsibility.	Health and safety responsibilities and accountabilities are poorly communicated and understood, change frequently depending on circumstance, and outcomes are uncertain when held to account.	People think it is the job of the health and safety professionals to 'police' the workplace.	Health and safety is treated as everyone's responsibility.	At every level, there is a willingness to take personal responsibility for health and safety.
Health and safety responsibilities and accountabilities are not communicated and understood.	People only think about their health and safety responsibility when things go wrong.	Unsafe practices are sometimes reported, but personal responsibility is avoided.	Line managers take responsibility for health and safety in their work areas, and the role of health and safety professionals is understood as one that provides technical input.	When incidents and issues arise, managers look inwards as well as outwards to identify causes. When people work in ways that are unacceptable, the organisation treats them in a fair and appropriate way.

People turn a blind eye if they observe an unsafe practice, or do not report for fear of retribution.	People are concerned about health and safety, but do not intervene when they see something wrong. People are never held to account for their health and safety responsibilities.	People are not equally held to account to their health and safety responsibilities. People rarely think of their moral responsibility towards health and safety.	People actively stop unsafe practices when they are observed.	All personnel actively demonstrate care and concern in looking after both their health and safety and that of others. Positive health and safety behaviours are driven by strongly held collective norms and expectation. People feel confident reporting errors and violations so that better systems of work can be designed.
People do not feel they have authority to act in a way that is equal with their role and responsibilities.	People feel that they have the authority to act only when a breach of the law is being committed.	People do not feel they have total authority to act in a way that is equal with their role and responsibilities.	People will stop work when encouraged by managers. Managers reward people who stop work.	People have no hesitation in stopping work practices if they have health and safety concerns. Managers actively support people who stop work.
Health and safety responsibility and accountability is avoided for fear of being blamed when things go wrong. When incidents happen, it's the injured person who is held responsible for fault.	When incidents happen, people look to assign personal blame.	When incidents happen, investigations focus on identifying and rectifying immediate causes, and human error is often the focus.	When incidents happen, investigators consider organisational factors that contribute to human errors.	There is a strong understanding that people who undertake work have a right to contribute to the design of work.

Learning
Scope: How learnings from health and safety incidents are utilised, actioned and communicated in an organisation.

Impeding  **Enabling**				
Health and safety performance data is not systematically collected and analysed.	Health and safety performance is measured using only the incidence of serious/reportable injury (that is, lost time injury).	Health and safety performance is measured using 'lagging' indicators, such as the occurrence of incidents, injuries and illnesses.	Health and safety performance is measured using mainly lagging indicators, but some positive performance (lead) indicators are also used.	Health and safety performance is measured using a balanced mix of lagging indicators and positive performance (lead) indicators.
The causes of incidents, errors and deviations from procedures are not analysed.	Incident investigations focus on identifying immediate causes. No attempt is made to identify the systemic causes of incidents.	Incident investigations consider broader workplace conditions and work processes as possible causes.	Incident investigations attempt to identify systemic causes of incidents, including those relating to organisational culture, risk management processes, design of projects and project management practices.	Incident investigations are rigorous and focused on uncovering systemic causes of incidents.
The analysis of incidents, errors or deviations from procedures focuses on identifying someone to blame.	Recommended preventive actions are mainly 'behavioural'.	Recommended preventive actions address workplace and work process improvements.	Recommended preventive actions address organisational issues.	Recommended preventive actions address 'upstream' issues, including safety in design and project planning.
Feedback is not sought from workers/contractors and others about the effectiveness of health and safety policies and processes.	Feedback is sought from workers/contractors and others about the effectiveness of health and safety policies and processes, but feedback is never acted upon.	Feedback is sought from workers/contractors and others about the effectiveness of health and safety policies and processes.	Feedback from workers/contractors and others about the effectiveness of health and safety policies and processes is sought and informally used to inform health and safety improvement actions.	Feedback from workers/contractors and others about the effectiveness of health and safety policies and processes is systematically analysed and considered in formal health and safety planning processes.

Health and safety training provides basic minimum requirements only.	Health and safety training is generic and compliance-focused.	The organisation provides structured health and safety training programs to workers/contractors and stakeholders.	Health and safety training is reflective and allows for intelligent application.	Health and safety training is engaging, relevant and effective in transferring knowledge to workers.
No actions are proposed for ongoing health and safety improvement.	There is no attempt to transfer health and safety lessons from project to project.	Health and safety improvement is usually driven by outcomes after a serious incident has occurred.	Post-project reviews capture valuable health and safety information that is carried forward to improve performance in subsequent projects.	Workers'/contractors' perceptions and views of the organisation's health and safety processes and performance are actively sought.

Resilience
Scope: The ability of an organisation to adapt to change and promote innovative practices that lead health and safety.

Impeding  **Enabling**				
Health and safety policies and procedures are rigid and cover most eventualities.	Health and safety policies and procedures comply with minimum legislative requirements.	Health and safety policies and procedures are developed to prevent incidents from occurring.	Health and safety policies and procedures comprehensively cover the organisation's activities and some opportunity exists for change.	Health and safety policies and procedures are open to continual improvement and a process exists for consultation, review and improvement.
Managers endorse health and safety policies and procedures as a failsafe way to avoid incidents.	Managers give no consideration to whether health and safety policies and procedures can be complied with.	Managers regulate intended health and safety behaviours through policies and procedures that relate to known hazards/risks.	Managers sometimes consult on health and safety policies and procedures, and they are extensively integrated into training provided to workers/contractors.	Managers actively consult with workers/contractors, and seek feedback and changes on health and safety policies and procedures to ensure they remain applicable.
Health and safety policies and procedures only exist to respond to litigation and protect managers.	Health and safety policies and procedures are written to prevent the last incidents that happened from recurring.	The number of health and safety policies and procedures keeps growing in response to incidents and identified hazards.	Health and safety policies and procedures exist for the purpose of promoting good practices across the organisation	Health and safety supports creative thinking about risk management to encourage leading practices.
The success of health and safety policies and procedures relies solely on worker behaviours.	Health and safety policies and procedures can be achieved only if workers'/contractors' behaviours are strictly controlled.	Minimum standards for health and safety policies and procedures are dictated to workers/contractors to follow, regardless of their practicality and ability to be implemented.	Health and safety policies and procedures have some worker/contractor input, and some flexibility within the boundaries of acceptable practices.	Leading practices are actively endorsed in health and safety policies and procedures. Engineering controls or better are sought for high risk activities to protect workers/contractors against inadvertent or unintended behaviours.

Engagement
Scope: How managers engage workers/contractors in health and safety matters and the influence and outcomes that arise from these engagements.

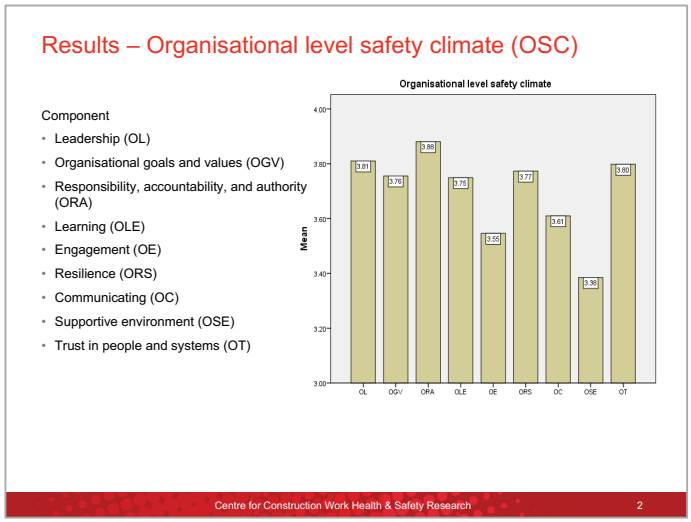
Impeding  **Enabling**				
Workers/contractors are not engaged in organisational or project level health and safety activities.	Workers/contractors are invited to participate in health and safety activities only after a serious incident has occurred.	Some workers/contractors are involved in health and safety related activities. "Carrot & stick" reward and punishment is used to influence engagement.	Workers/contractors are generally encouraged to participate in the organisation's health and safety activities. Engagement programs are utilised to influence workforce engagement in health and safety.	All workers/contractors have input into decision-making as it relates to health and safety.
Managers have no interest in engaging workers/contractors in health and safety activities.	Managers will only ask for worker/contractor input into health and safety activities when required to do so.	Formal consultation mechanisms are in place but not fully embraced or understood by management and/or workers/contractors.	Managers actively seek input from workers/contractors relating to operational aspects of health and safety, including work planning and the development of procedures/rules.	Workers/contractors feel they are able to influence health and safety activities in the organisation/project.

Workers/contractors are not asked to provide health and safety input.	Minimal effort is put into consultation activities. Worker/contractor opinions are often dismissed.	Workers/contractors are asked to provide input on basic health and safety issues like training, safety equipment and housekeeping.	Workers/contractors are regularly consulted on health and safety as standard practice. Health and safety issues raised are acted on and feedback provided.	Managers actively seek input from workers/contractors concerning strategic aspects of health and safety in the organisation/project, including issues of work design and the operation of the health and safety management system. Management is visible in the workplace and seeks information from workers on how to improve health and safety.
Work procedures/rules/processes are imposed and mandated by the client.	Management reacts to worker/contractor poor health and safety performance.	Management holds regular worker/contractor reviews and discusses health and safety improvements. Workers/contractors are included in health and safety meetings and have input into basic health and safety issues.	Management programs include formal worker/contractor engagement forums. Workers/contractors health and safety issues are acted on and feedback provided.	Active health and safety engagement and participation is the norm.

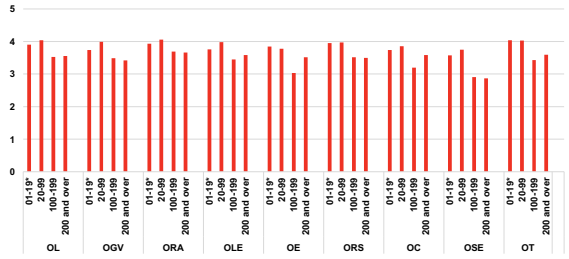
Trust in people and systems
Scope: How comfortable workers and contractors are with the health and safety reporting system in place in an organisation, and their confidence and trust in the system achieving health and safety improvements.

Impeding  **Enabling**				
Health and safety systems are designed and implemented solely to protect the company and its profits.	Health and safety systems are compliance-focused and creating a paper trail seems to be the most important outcome.	The organisation relies heavily on procedures and rules to ensure health and safety compliance.	Health and safety processes and initiatives are meaningful and workers/contractors perceive them to be well-motivated and beneficial.	There is systematic follow up to ensure that newly implemented health and safety initiatives are having the desired effect.
Health and safety systems are unstructured and poorly documented.	The health and safety system is never reviewed or evaluated – even when multiple incidents happen.	A well-structured and thorough health and safety reporting system is in place, but this system is very rarely subjected to review.	Auditing inside and outside the organisation provides an opportunity to review and improve the quality and effectiveness of organisational health and safety activities.	Innovative solutions to identified health and safety challenges are pursued, implemented and rigorously evaluated.
There is no reporting culture.	Workers/Contractors do not report health and safety issues because they believe nothing will be done to resolve them.	Workers/Contractors feel uncomfortable and are reluctant to report health and safety issues	Workers/Contractors are somewhat uncomfortable reporting errors or deviations from procedures, but are willing to do so because they hope that this will result in health and safety improvement.	Workers/Contractors feel very comfortable reporting errors or deviations from procedures and firmly believe that this will result in health and safety improvements.
Incidents are denied and investigations are undertaken in secrecy.	Investigations identify who is to blame after an incident and prevention strategies focus on behavioural control.	Incident investigation collects a lot of data and produces lots of action items, but opportunities to address real issues are often missed.	Most incidents, errors and deviations from procedures are reported and investigated.	Incident investigations are open, transparent and search for a deep level of understanding of how incidents happen.

Appendix 8.2 Survey results



Differences by company size



For all aspects of the WHS culture people working for companies employing fewer than 100 workers had a more positive view of the culture of the ACT construction industry.

People who work for companies employing between 100 and 199 people generally had the least positive view.

What might explain these differences?

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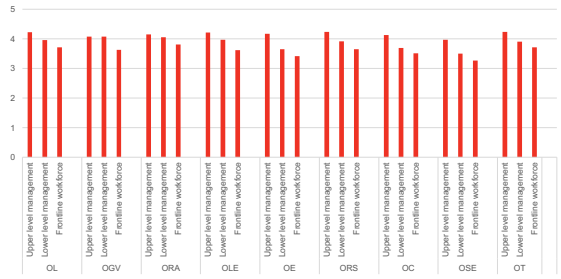
Differences by position



For all aspects of the WHS culture upper level management has a more positive view of the ACT construction industry and frontline workforce has the least positive view.

What could explain this difference of viewpoint?

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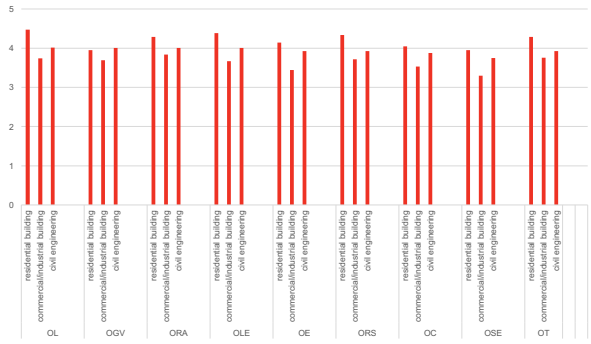
Differences across sectors



For all aspects of the WHS culture people working in the residential and civil engineering sectors had more positive views of the culture of the ACT construction industry.

People working in the commercial/industrial sector had the least positive views.

What might explain these differences?

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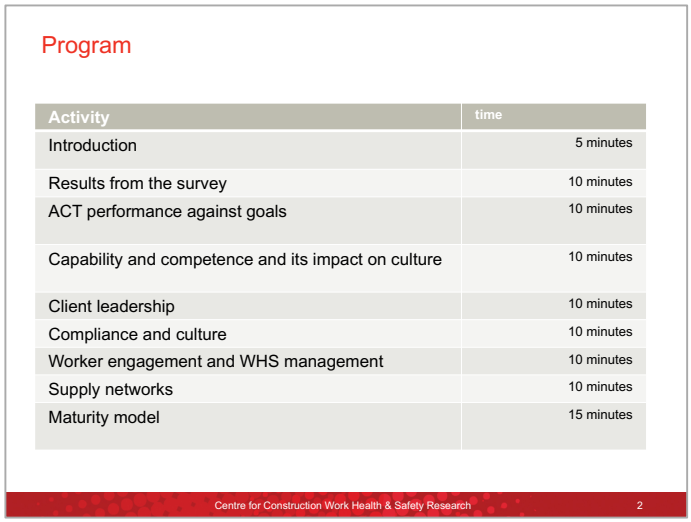
Appendix 8.3 Focus group agenda and discussion guide



Presentation of results
{10 mins}

ACT performance against goals
{10 mins}

- how is the industry performing – are injury rates declining? How/why?
- how does the industry perform in workers' health, as well as safety?

Capability and competence and its impact on culture
{10 mins}

- what is the state of WHS capability/competence? (relative to clients, designers, principal contractors, subcontractors and others?)
- is WHS training effective? Why/why not?

Client leadership
{10 mins}

- what client-led initiatives have improved WHS?
- can/should clients do more to drive WHS in the ACT construction industry?

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Compliance and culture
{10 mins}

- how important/effective are WHS systems currently in place ?
- are WHS systems focus too paper-based?
- how do organisational/project cultures impact on WHS?
- how are pressures between production and WHS handled?

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Worker engagement and WHS management
{10 mins}

- are workers genuinely engaged in WHS processes? why/why not?
- how well do consultative processes work?
- has this changed in recent years? If so, how/why?

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Supply networks
{10 mins}

- how is WHS risk managed in supply networks?
- are principal contractors managing subcontractors' WHS effectively? Why/why not?
- has the approach of principal contractors changed in recent years? If so how/why?

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Maturity Model – discussion of maturity in the ACT industry {10 mins}

- For each component of WHS culture, how mature do you think the ACT construction industry was in 2012 and is now?

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