‘What elements are required to achieve sustainable business change using health and safety as a lens?’

A project submitted to Middlesex University

in partial fulfilment of the requirements for the degree of

Doctor of Professional Studies

Submitted jointly by

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ii. Abstract

Business change continues to be an ongoing challenge. New consultancy models are required to suit the changing financial landscape, which requires businesses to outperform their competitors in order to survive; minimising overheads and removing waste in processes. Whilst business change is a broad topic area, the use of health and safety as a lens through which change can be made is less widely-discussed. This model for change has been utilised successfully in this business with great success. This D Prof project analyses that change programme to establish which elements of it can be applicable to other businesses undertaking change in a first-generation family business, but is applicable to any business.

The starting point for the business was to facilitate a cultural shift by approaching the change through a behavioural programme that made safety personal to each employee. It focused on behavioural safety as the lens for change within the business over two iterations/interventions. This D Prof Project is the third iteration.

The co-researchers have been immersed in the transformation programme, as insider researchers with the defined objectives of lowering the Accident Frequency Rate (AFR), preventing a fatality, increasing turnover and profitability as well as getting the business fit for rail and nuclear projects.

The business has a proven ‘balanced’ safety culture, with much work having been done on Systems, People, and Culture to therefore establishing balance in all areas. The researchers had undertaken *Iteration One* and *Iteration Two* of the transformation change programme over a period of five years using health and safety as the focal lens for change, the work represented here in the D Prof project is *Iteration Three*, providing a new and fresh perspective.We found that to make improvement to safety culture it is essential to already have a ‘balanced safety culture’.

Our project work uncovered key issues relating to the cultural differences between different nationalities when working together in close proximity and in a polymorphic society such as London, where our company is based.

National identities possess varied power distance and uncertainty avoidance types and when people from diverse cultural mixes are concentrated in small areas such as construction projects there is an impact upon how they work together, how they are able to assimilate information, how they best receive instruction and how they communicate

with their peers and managers. We found that the works of Hofstede and Choudray are particularly relevant to improving the way in which construction projects and construction businesses further improve their safety culture and performance once a balanced safety culture has been achieved.

Sampling 900 individuals across our business identified 47% as foreign nationals whereas suddenly when you review the London region there is a larger percentage which is around 60% migrant workers or foreign nationals. This indicates that the project findings are relevant to a number of businesses who operate not only in London but in polymorphic environments.

We are now reviewing the nationalities and culture of our projects to access the underlying key cultural differences within a polymorphic London environment and concentrating of the Power Distance (PDI) and Uncertainty Avoidance (UAI) of the various work crews and the supervisor nationality to gain a shared understanding of risk and further improve communication and safety performance.

Given the complexity of the issues Hofstede's work on nationality is not a panacea but it is an area of consideration when undertaking high risk construction based projects this has been overlooked particularly in the UK and the South East with a polymorphic London workforce inside the M25. We had to consider 'Power Distance' PDI and its relationship to safety performance.

The indicators in relation to nationality have led the business to start looking at how we change our methodology and risk assessment into visual method statements and visual risk assessments. Work commenced in the business outside of the Doctorate and we are starting to get varied nationalities to create these visual method statements so it is not only being created from an Irish/English paradigm.

The project provides the opportunity for other stakeholders, clients and the wider construction industry to use the model for delivering change within their businesses where they may not have access to the significant resources required to make business change on a large scale. Understanding the elements which are critical to such change upfront will enable efficient and effective targeting of their valuable and scarce resources.

The project was carried out in its entirety and completed while both parties were employed within the business. Since completing the project both parties have moved on to other carrier opportunities and the change has been sustained in their absence.

iii. Cover Note on Joint Submission

The D Prof project component of this programme DPS 4561 and 5240 has been completed by a team of two collaborative researchers, Michelle Tilley and Aran Verling, both of whom are Executive Directors in the sponsoring business. As co-researchers, we have reviewed the change management programme we strategised and led over the past seven years and ascertained the key drivers for sustainable business change using health and safety as a driver.

The dynamic of this shared research perspective offers advantages:

> ‘The combined contribution of a combination of people with different skills and perspectives to offer, different experiences, backgrounds and life styles and who together are more able to consider issues in a rounded, holistic way and offer an attention to detail not seen on single research projects where individuals have only one perspective or paradigm, and sometimes make poor decisions’. Government Equalities Office (2010: 20-24).

We are working as a team of two researchers to define the success and or failure of the programme from two different perspectives. As well as this paper, a further output of our project will be a research-based guide to a highly successful practical change programme for other businesses to consider, as well as a focused road map for the sponsoring business for planned and continuous improvement over the following years.

The researchers also recognise that the amount of change and the success of the business overall is a direct consequence of the team/male-female approach which has provided a successful delivery dynamic offering diversity of gender, thought, approach, and management style. This dynamic has been an intrinsic part of the portfolio of success which has been achieved in the business, and it is important to recognise that without such a dynamic, the same change programme may not produce the same results when applied elsewhere.

iv. Glossary

Accident	A series of events which occur creating a situation where injury or property damage is sustained.
AFR	Accident Frequency Rate, the standard measurement of health and safety performance used in the construction industry based upon man-hours worked and the number of accidents which occurred.
Behaviour	For the purpose of this study is defined as follows: • The level of eye contact made with senior managers upon arrival their project / site • The body language during discussions regarding safety • The willingness to make change with an open mind • The ability to do as they say, and not to agree and then do something different when the supervisor or manager has left the project • The level of openness and honesty expressed when working on safety issues • Treating safety as a part of their role and not a bolt on to be considered later • Engagement at all levels of the workforce – not just a top down approach • Ownership being apparent in the whole workforce • Simple compliance with processes at all times • Timeliness, good housekeeping and a two way dialogue approach to working each day.
Black Hats	Refers to the supervisors of the site based workforce; ‘anyone who puts other people to work’.
Blokes	Blue collar workers
Blue Collar Worker	Any worker who is in employed in a manual / trade role
C Skills	Construction Skills
CBI	The Confederation of British Industry is one of the UK’s leading independent employers’ organisations representing businesses.
CIC	The Construction Industry Council
CIS	Construction Industry Scheme for tax purposes
Culture	For the purpose of this study defined as:

- The way operatives or blue collar workers respond to safety instructions
- How they behave around each other
- How well or badly they follow defined systems, processes and procedures
- How open the channels of communication are between the supervisors of the workforce, the workers and the managers
- Resistance or willingness to change
- Involvement in making processes work more effectively to ensure better safety
- Recognition that a safer work place is essentially a better place to work, their connection with safety and their personal lives,
- Level of engagement with business leaders,
- Ability to innovate to promote safety improvement,
- Level of caring about each other,
- Connectivity with safety and an improved bottom line.

HSE — The Health and Safety Executive, the enforcement body that governs the construction industry.

Leadership — At site level the key aspects of leadership come from the supervisors of the operational workforce or blue collar workers, the messages derived by the workers from the supervision are hugely important in the way that the workers respond to the safety and other types of messaging delivered by the business and the senior managers.

If there is no buy-in at supervisor level, the senior managers of the business are not likely to achieve success when trying to embed new systems or process, or indeed when trying to change culture and behaviours. The ‘Them and Us factor ‘ plays a large part in creating a barrier between blue collar workers and the senior leaders of an organisation, supervisors see themselves as blue collar workers, and yet they are the important bridge between ‘management’ and ‘worker’.

Much effort must be spent making sure that the right people are in

	the supervisory role, right, from a technical, cultural, and behavioural perspective. The Black Hats were consulted at the outset of the cultural change programme, and many times along the journey, to assess whether they were indeed supportive of the changes proposed. If they felt that they could not openly support the change, then they were offered the opportunity, without judgment or recrimination to give back their black hat and take back the role of the standard operative. A small number of supervisors did exactly that, many for reasons of familial or tribal culture, based on the fact that they did not want to be seen to take the side of senior managers over long term relationships with their family who also work in the business, and in their gangs.
Lead-in Time	The time it takes for construction material or components to arrive from the point at which they are ordered.
Method Statement	The document written in order to explain the methodology behind the undertaking of tasks or operations relating to construction activity.
Near Miss	An incident which occurs and through which only luck separates a lucky escape from an injury or property damage.
PAYE	Pay as You Earn – an employee of the business.
P.C.	The P.C. is the commonly used and short version of principal contractor.
Principal Contractor	The Company that is employed by the Client to manage the site under the Construction Design Management Regulations and who is notified to the Health and Safety Executive as the company responsible in law for the site to its boundary.
Reportable	An accident which leads to more than seven days off work for the injured party and which must then be reported to the HSE, or a dangerous occurrence which had the potential to or which did cause property damage or which had the potential to cause serious injury or loss of life.
Risk Assessment	A legal requirement which must be undertaken when planning a construction activity.
RAMS	Risk Assessment and Method Statements
SCORM	SCORM stands for ‘Sharable Content Object Reference Model’. SCORM is the protocol which enables the creation of units of

	online training material that can be shared across systems.
Slip-form	The engineering rig which is used to form the vertical concrete core walls in a building.
SMS	The electronic Company Safety Management System
SMSTS	Site Manager Safety Training Scheme – a qualification for managers and those who manage large numbers of operatives at work on a construction project or site.
SSOW	Safe System of Work – often known as a method statement
SSSTS	Site Supervisor Safety Training Scheme – a qualification for supervisors and those who manage up to thirty operatives at work on a construction project or site.
Staff	Those employed in the office or in professional roles on a project.
Tender	To price a bid for work using drawings and specifications provided and bidding against competitor organisations.
The Shard of Glass	An iconic structure completed in London Bridge Quarter in mid-2013 and currently the tallest building in Western Europe.
UKCG	UK Construction Group made up of significant principal contractor representatives to derive is all about creating units of online training material that can be shared across systems.
White Collar Worker	Monthly paid, office based ,typically professional and management

1.0 Introduction

The project title for this research is

'What elements are required to achieve sustainable business change using health and safety as a lens?'

Business change continues to be an ongoing challenge. New consultancy models are required to suit the changing financial landscape, which requires businesses to outperform their competitors in order to survive; whilst minimising overheads and removing waste in processes. Whilst business change is a broad topic area, the use of health and safety as a lens through which change is made is less widely-discussed.

The overall purpose is to provide a platform for the next five years in the sponsoring business, to ensure that it is clear how best to employ the resources available to the business in the most effective and efficient way to continue to prevent a fatality as well as continuing to improve business performance.

We expect there to be tangible outcomes from the project which may influence key elements of the business, affecting systems, processes and procedures including but not restricted to:

- The safety management system (Safety Net)
- The behavioural safety programme
- Policies and procedures
- Leadership styles or organisation
- Development of people
- Markets in which the business operates
- Clients & Customers with which the business contracts

The above list is not exhaustive and we understand that the areas on which the business must focus will be determined by the outcomes of the research, which will become natural inputs to the future business. An indicative but not exhaustive list of performance improvement activities is contained later in the document.

This project represents a 'real-life development project'. The research produced from the project was required in order to take the next steps in a thirty-year behavioural safety programme, which is eight years mature. This project was commissioned in order to provide the information required for a stand back review of the journey to date as well as providing the key developmental areas on which the business must focus in order to

achieve the goals of ‘preventing a fatality’ and remaining at the leading edge of a competitive specialist contracting market.

The D Prof also offers the opportunity to apply reflexive thought in a work context, where reflection is a complex, rigorous, intellectual, emotional exercise that takes time to do well (Dewey 1933). We needed a platform and a level of understanding we could return to when we were lost or confused and an environment where we were free to talk about reflection and reflective practice so that it does not fall into disuse but becomes richer and more complex as a result of engaging conversations.

The D Prof Project components of this programme, DPS 4561 and 5240, are being completed by a team of two collaborative researchers, Michelle Tilley and Aran Verling, both Executive Directors of the sponsoring business. As collaborative partners, and as researchers, we have reviewed the change management programme we have both been involved in and led over the past seven years at a corporate level, in order to ascertain what/were/are the drivers in sustainable business change. We worked as a team to define, challenge and debate the success and or failure of the programme from two different perspectives.

The output of this is a research-based guide to a highly successful practical change programme based over three iterations/interventions for the transformation of a first-generation business into a successful second and third-generation business. It will provide a guide for an external audience, along with a focused road map for the business itself, initially also offering competitive advantage over business peers. Specifically, this D Prof project is focused on answering the question *‘What elements are required to achieve sustainable business change using health and safety as a lens?’.*

As a real life development project, the research was conducted in an operational and busy business with multiple variables, as opposed to being conducted in clinical and predictable laboratory conditions. The operational business element poses constraints which include:

- Resources available at the right level and time to interact with the project research
- Our own time in managing the process of this research whilst also facing the challenges of continually developing and running an operational business that is expanding into new and challenging areas.
- Economic pressures in relation to the external marketplace, which dictate the amount of internal funds available to conduct a piece of research of this size and

nature (which in rough terms, excluding our own time and study fees will amount to approximately £30,000).

The research project provides a distinctive contribution to the construction industry, which in our combined personal experience over some 50 years across an innumerable number of contracts and a range of companies continues to focus consistently on safety alone as a mechanism for preventing a fatality, but does not make the link between having safety as a core change element influencing a much wider change programme.

Safety tends to have a much less restricted budget than many other aspects of a business because it is almost taboo to challenge a change requirement made in the name of health and safety of business employees (Mearns 2009). However, a business can utilise working capital earmarked for health and safety to also achieve extensive business performance improvement. This research assists in underpinning the fact that improvement in health and safety is not standalone but is symbiotic with improved business performance.

The research project contributes to our individual career profiles in the longer term; however, there is no perceived short-term gain as both of us are in senior roles in the construction industry and in the business in which we are employed. There is a clear benefit to both of us in undertaking this research based D Prof in the area of transformational business change as it ratifies our competency and specialist knowledge to the wider construction industry and to the worldwide business community.

The project presented personal challenges for us both in balancing the demands of busy and unpredictable work schedules and maintaining a healthy work life balance, whilst undertaking such a detailed research programme. The sponsoring business is aware that this piece of research is vital to underpinning business continuity and success through the next five years and is therefore supportive of the time commitments required to fulfil the project outcome.

We are both senior executives who manage our own time and diaries; we have successfully managed to insert time for at least twenty hours each month into our working schedules, not including any time commitment taken from personal or non-scheduled hours. Through planning and careful coordination we remained confident in achieving the required level of time commitment to finish the project and providing a high quality research contribution.

We aim to provide research that has a high level of empirical academic status. It is therefore our objective to publish this academic work as a paper in a journal publication, such as ‘Policy and Practice in Health and Safety’ and ‘Journal of Organisational Change Management’ as well as publishing as a paper to the Health and Safety Executive for use in the construction industry. We will also later redraft the findings to publish them as a technical paper providing the outcomes to a wider audience in a non-academic language. This will provide a platform for the wider dissemination of our findings, and will provide access to our learning for other more diverse audiences in the construction industry.

> ‘Academic studies have established that behavioural safety works. However to date no review has examined the potential impact of process designs and their components to determine which are most effective’. (Cooper 2009: 36-45)

2.0 Theory Construction

We are both senior industry figures at the forefront of our industry sector, well known to the wider business community and holding positions in the construction industry that complement our role in the sponsoring organisation. Such roles include trusteeships of charitable organisations and policy consultants to external private and public organisations. We are Chartered Directors and Chartered safety professionals; Michelle is a Fellow of institute for occupational safety and health; we both hold Fellowships in Royal Society of Arts,Institute of Directors and Institute of Building; Aran is a fellow of the Institute of Civil Engineers and we also hold other significant Chartered positions relating to our professional standing. Michelle is also a consultant to the British Army holding the Staff Corps rank of Major. We are bound by the ethics codes attached to the learned bodies to which we are professionally affiliated.

The reflexive journey of undertaking the D Prof programme has enabled us both to gain confidence in our prior learning and experience assimilated over two twenty five year construction industry careers and it provides a platform to analyse and synthesise the range of knowledge accrued between us.

We both joined the current business over seven years ago to commence and lead a balanced change process. This process arose as a direct response to a problem presented within the current business, which wanted to expand, but did not have the governance, systems or processes, people or culture to do so effectively or sustainably.

The need for change was driven by the absolute desire of the Chief Executive to prevent a fatality. In the business there was an intrinsic link between making the desired change and the prevention of a fatality. This link was due to the long heritage of the company, with little or no significant change, long-standing employees all of whom had transactional contracts but were guided daily through relational psychological contracts, which includes the perceptions of employer and employee of what their mutual obligations are towards each other and can be distinguished from the legal contract of employment which may offer only a limited and uncertain representation of the reality of the employment relationship as well as a very strong family culture.

The business was highly successful seven years ago, but was operating at the same level as its peer competitors, with little to differentiate it from them. In a niche market of specialist contractors, the business driver to become contractor of choice required significant change to enable the business to rise above its competition in all areas of

performance, but particularly in health and safety performance and health and safety culture. This is a relatively new concept of considering safety culture in a wider context. Choudhry et al. (2007) state that the concept of safety culture is relatively new within the construction industry; but that it is gaining popularity due to its ability to embrace all perception, psychological, behavioural and managerial factors.

Kennedy et al. (1998) found that the 'safety culture of the organization that will influence the deployment and effectiveness of the safety management resources, policies, practices and procedures as they represent the work environment and underlying perceptions, attitudes, and habitual practices of employees at all levels'.

We have been on a learning journey over the past seven years and have developed a range of synthesised knowledge through that journey, which we incorporated into a business change programme.

The change process has been based on three clear iterations over the seven years *(Figure 1)*. *Iteration One* involved gaining a significant culture shift, delivering change management and implementing the various systems and processes. *Iteration Two* incorporated the adoption of the Integrity Matrix and the engagement of the workforce in identifying with the impact a fatality has on the family that is left behind. *Iteration Three* is the investment in the D Prof project and the examination of the business for future sustainable improvement in the area of health and safety.

We have been immersed in the transformation programme ourselves, as insider researchers, with the defined objectives of lowering the accident frequency rate, increasing turnover and profitability as well as getting the business fit for rail and nuclear projects, both of which are highly regulated and highly procedural environments.

We have built a knowledge base, safety culture and a particular way of thinking and reviewing situations that has now developed into an ability to provide leadership and advanced thinking.

This underpinning knowledge and experience has allowed us to work within our employer's business from a common platform and a shared level of understanding that has enabled leapfrog learning and the rapid development of systems and processes to help the company to a sustainable future. This timeline is demonstrated in *Figure 1.*

Figure 1 shows both researchers' career paths running independently within the BAA environment, as indicated by the yellow markers. During this period both of us were working for Mace Ltd, one of us as a project manager and the other as a subcontractor, but in fact we did not know each other during this period and there were no personal interactions.

We both then worked with BAA in very different roles for a number of years, using and implementing the knowledge gained and testing its viability in different business environments, as indicated in *(Figure 1)* by the orange markers.

On separately joining our sponsor company in 2006, indicated in *(Figure 1)* by the green markers, we established that we both had a common level of understanding along with a common language. This enabled us to rapidly deploy change and business performance improvement, using the lessons learned at BAA, and other businesses.

The change initiatives were based over two iterations between 2006 and 2012. The D Prof project is *Iteration Three,* where we sought to establish the key elements that were successful in the change programme.

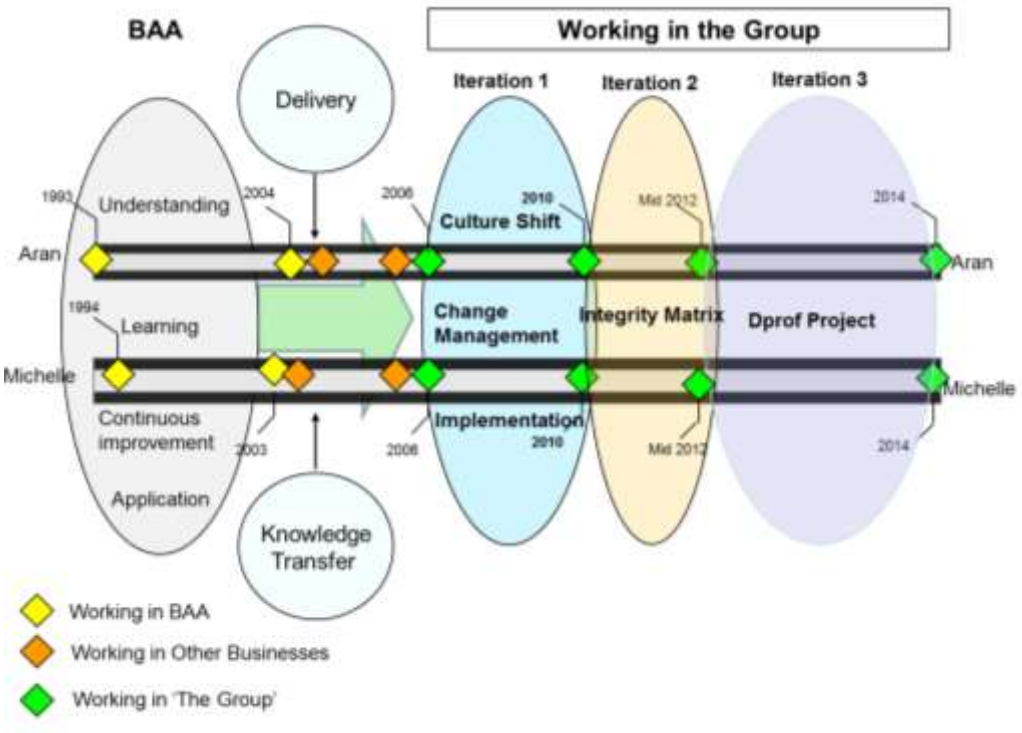


Figure 1 – Career Paths & Iterations/Interventions

The combined reflective journey to establish the overall programme rationale has enriched our joint understanding. It has helped us to identify what is both value adding and non-

value adding but necessary waste within a business change process whilst also continuing to develop our integrated experiential learning for the final project DPS 5240. We have both independently completed, Recognition and Accreditation of Learning, RALs at level 8 to demonstrate our integration of method and extent of knowledge, learning and understanding in application.

There are two core threads, that are mutual but not exclusive, that run through both of our level 8 RAL documentation into this project work. In Michelle's case, this was joining the business to prevent a fatality and in Aran's case it was joining the business to facilitate business change. The roles are not mutually exclusive but crossover and merge to provide collaborative research from two different perspectives *(Figure 2)*.

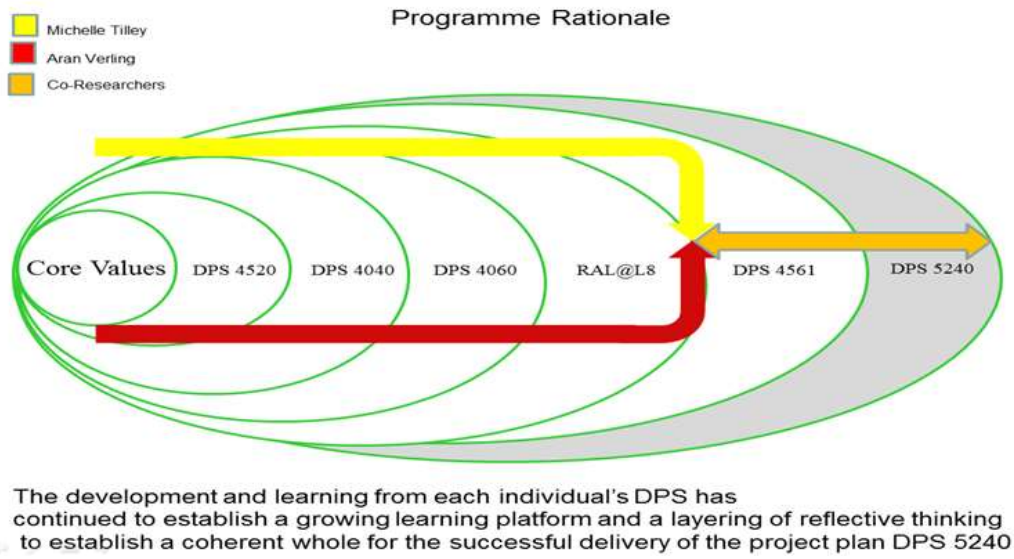


Figure 2 – Learning Platform

We both have extensive experience and knowledge about group dynamics, collaboration and partnering as a result of our practical experiences and individual study throughout each of our careers. Evidence suggests that better performance, results and perspective can be achieved with gender-diverse views providing a positive impact on performance (McKinsey 2007) and that mixed gender teams can be a positive benefit (Costley et al. 2011).

As both of us have worked extensively together for some time in the business change programme, there is a level of shared trust and respect between us as professionals, and indeed a common language, culture and set of values. There is also a genuine commitment to ensuring that each other's perspective and views are faithfully recorded and represented in the research findings and recognition of the importance of respect for the diversity of our individual views (Costley et al. 2011).

The indisputable strength of collaborative research derives from the inclusion principle – taking the widest sense of the term to embrace a shared language and a conceptual framework, creating a shared space for collaborative research (Costley et al. 2011). As Miller (1994) argues, such a framework is created by listening to each other, sharing expectations and exploring barriers to learning within a research group.

There are also disbenefits to collaborative research, the most obvious being the layers of complexity and complication added by having to plan tasks and manage more constraints, as well as ensuring the maintenance of good personal relationships between members of research teams. Collaborative research should therefore be treated as high-risk and high-reward (Costley et al. 2011).

The benefits of joint research are advocated to bring a broader perspective to the primary data and triangulation of results, as described by Arbnor & Bjerke (2009: 7):

> 'We can never empirically or logically determine the best view. This can only be done reflectively, by considering a situation to be studied, and your own (individual) opinion of life. Methodological views make different assumptions about the reality they try to explain and/or understand. This, in turn, means that observations, collections of data and results are determined to a large extent, by the view chosen. What might be essential data to one view can be completely irrelevant to another'.

We have found this to be a powerful element of the joint research, and the benefit of the diversity which it has provided to our thinking and outcomes has outweighed any disbenefit in relation to constraints, planning or additional tasks.

Our inclusive and diverse style delivers more effective leadership, a better ability to understand customers, stakeholders and benefits from fresh perspectives, new ideas, vigorous challenge and broad experience. This in turn leads to better decision making.

> 'The dynamic of this shared research perspective offers the combined contribution of a combination of people with different skills and perspectives to offer, different experiences, backgrounds and life styles and who together are more able to consider issues in a rounded, holistic way and offer an attention to detail not seen on single research projects where individuals have only one perspective or paradigm, and sometimes make poor decisions'. (Government Equalities Office 2010: 20)

By working together, we bring many benefits to our own individual and independent learning. We have leveraged the knowledge from our complementary backgrounds and experiences to collaborate and challenge each other in a way that maximises our understanding and encourages the implementation of new skills and approaches in our respective business roles.

2.1 Aran Verling

Aran Verling
CDir, FIoD, FICE, FRSA, FCIOB, CMIOSH, Chartered FCIPD

The first researcher, Aran, is Irish, male, and brings a strong corporate background with him to the project; his roots are in senior leadership and business delivery.

I have worked for the past 14 years as an Executive Director at main board level with both operational and business accountability in the UK built environment. The businesses have ranged in size from a mature £350 million per annum turnover within a multi-billion pound corporation environment to a privately owned start-up incubator business. I have proven achievements in organising complex systems of people and resources to ensure business success. With a career spanning twenty five years I have, interestingly, only worked for privately-owned 'family-run' businesses, with a maximum of two shareholders and a flat management structure. The D Prof programme is allowing me to access the range of skills I have attained over my working career and codified into a formulated plan or approach to business. From the company's perspective, it is providing the strategic thinking required for a 'stand back' review and the development of a route map to sustainable growth for the next five years.

My learning style (Honey & Mumford 1992) is Activist-Theorist-Pragmatist and my team role using Belbin (1993) indicates very strong Resource Investigator, followed by Implementer, then Shaper (RI / IMP / SH). I have strong leadership value preferences.

Over the years my learning style has not changed from those indicated above. If anything, the Activist Theorist and Resource Investigator / Implementer have grown stronger since my initial exploration of character type.

2.2 Michelle Tilley

Michelle Tilley

CDir, FIoD, MBA, FCIOB, FIOSH, M.Inst Eng. MIIAI, ACIPD, FRSA

The second researcher, Michelle, is English, female and brings a strong collaborative background with her to the project; she offers knowledge of action learning, systems theory, group work and interpersonal dynamics in addition to an academic base from MBA work.

Influencing others has been a highly significant part of delivering change in our business, and without the knowledge gained in previous roles it would have taken me a lot longer to begin the process of change, as acceptance by the business and the teams would have been even more difficult to achieve. Aran and I received significant push back initially on the changes we were trying to make, due to the existence of long term employees, all of whom were at the relational end of the psychological continuum, meaning they saw any attempt to change existing processes as a slight on their performance or commitment to the business. We used appropriate language and messaging, appealing to their key driver of pleasing the Chief Executive, and doing their best to make the business more successful. By using health and safety as the driver for change, our approach alluded to the fact that change was required to increase protection of the business, make it more sustainable and ensuring the Chief Executive personally was protected from legislative issues.

My learning style (Honey & Mumford 1992) is Activist-Pragmatist, with a very high bias on the Activist, leading me to be relentless in driving for what I am trying to achieve, setting hard targets and berating myself for not achieving them. I spent the early parts of my career learning both on the job and in formal higher education and my team role using Belbin (1993) indicates a high bias on ‘Plant’ followed by ‘Resource Investigator’ and then ‘Shaper’.

2.3 Joining the Business

Professionally, we share a homogeneity and common background, including training and development in the high risk, high reward environment of BAA, where we both learned the benefit of working in a framework environment and implementing the ethos of the 'Rethinking Construction: Report of the Construction Task' (Egan 1998). With our combined yet independently established knowledge and understanding of working within this arena, we have 50years of combined experience in project delivery, innovation and partnering within construction.

We have been engaged in change over the last seven years across three clear iterations. *Iteration One* was the start of the process establishing a baseline and implementing basic change while developing systems and processes. *Iteration Two* saw the culture and climate maturing and needing a fresh focus with the implementation of the Integrity Matrix. *Iteration Three* is the D Prof project work which manifested itself because of a plateau of results and a need for a detailed review and rebase lining /stand back review to establish where we were and in what direction we should proceed?

In summary, we needed to make immediate radical changes to the business over the past seven years in a harsh and challenging economic climate.

The results from the synopsis of safety and cultural change are evident in a review of the business which has taken place over the past seven years, and which is evidenced by the increased size of projects; more external accreditation; better qualified staff and workforce; new clients; new market areas; system and process improvement; and fewer incidents and accidents.

The duality of research minds ensures that solipsism was not a factor in this research project. We have also gained a deeper understanding and trust of each other and the natural working style that will assist us in working together to deliver the changes required in the business following completion of the Doctorate study programme, therefore providing enhanced benefit to the business in strategic and day-to-day operational working.

We have found that the process of evaluation and discussion/argument has enhanced our confidence to challenge each other professionally, knowing that the challenge is respectful and healthy and will promote diversity and improve our end result when conducting business together day-to-day.

The previous DPS modules have underpinned the work required in this project module; they have informed the ontology and epistemology for both of us and have engaged our ability to enter into reflexive thinking. The modules have also helped us to form their ultimate presumptions or paradigms in relation to the current business and to the research task.

Being the architects of the change programme on which this doctorate study is based, we have to date been sharing a paradigm, using methodologies based on Guba & Lincoln (2005) and utilising the five research paradigms of Positivism, Post-Positivism, Critical Theory, Constructivism, and Participatory Paradigms, at different times through the business change process. It has enabled us to recognise a trend and methodology in development and to consider how it has been effective.

We have found ourselves in different roles, moving from being action researchers, to practitioner researchers, to complete actor–observers. Fundamentally, we are insider researchers using classical action research as defined by Coughlan & Brannick (2010), which comprises: management action; internal consulting projects; and some action learning. Coughlan (2003) refers to this as mechanistic action research, by which he means that the research is framed in terms of managing change.

2.4 Iteration One (2006 – 2010)

The starting point for the change process was to attempt a cultural shift. As captured by Reason (1997) and Uttal (1983) we wanted a culture of ‘shared values’, which we intended to achieve by approaching change through a behavioural programme and making safety personal to each employee. We focused on behavioural safety as the lens for change within the business.

IAEA (1991) highlights two major points: (1) while safety culture is about good safety attitudes, it is also about good safety management established by organisations; (2) good safety culture means assigning the highest priority to safety. The report then explains that ‘‘safety culture’ as it is related to both the organisation and individuals is attitudinal as well as structural, and concerns the requirements to match all safety issues with appropriate perceptions and actions’.

We believed that a focus on safety facilitates change because, within a business context, it is it is boundary-less and touches all people and departments. Knott et al. (2007) state that the ultimate aim of behavioural change is to turn new behaviour into normal which is core to the development of the cultural shift within the company. This is the case for both the overall business departments and the business context in the sponsoring business.

We used an integrated model which, due to our experiential learning in previous businesses, seemed most appropriate as it enabled us to draw upon our previous experiences where we had implemented radical change as Executive Directors. This is an important point as highlighted in the work of Cooper (2000) who found in his model of safety culture that organisations have often attempted to change people's attitudes without considering either job or organisational features.

In previous roles we had learned that working in one particular area, i.e. safety only, was not the way to effect change as, even if exceptional performance was achieved in that one area, it could nevertheless be counterproductive to the whole change management programme because it sub-optimised the other areas required to achieve this exceptional performance.

Developing and maintaining a positive safety culture can be an effective tool for improving safety within any organisation (Vecchio-Sudus et al. 2004). The challenge is how to develop a culture that is favourable to good safety performance (Hale 2000).

Findings from Pierce (1998) and Williams (1991) illustrate that safety culture does not operate in a vacuum; it affects, and in turn is affected by, other non-safety-related operational processes or organisational systems.

Cooper (2000) discusses that unless safety is the dominating characteristic of corporate culture, safety culture is a sub-component of corporate culture, which alludes to individual, job, and organisational features that affect and influence health and safety.

Similarly, changes are often made to organisational systems without regard to people's behaviour or attitudes (Seddon 1989). Efforts to change people's behaviour often do not take into account the determining effects of organisational systems or people's attitudes (Wilkinson et al 1991). These findings suggest that change initiatives that disregard the interactive relationship between psychological, behavioural and situational factors when developing a safety culture are doomed to failure.

A wider, interlinking view was the better approach, making safety a core value or a golden thread running through the whole business. In describing the change management process it is impossible to disconnect each individual element:

> ‘There is a symbiotic relationship between people, structure, system, culture and procedures’. (Ganesh 2001: 68)

During the past seven years we have instigated and led a number of original professional development and research areas. The development of a behavioural change programme, forming the core of the holistic business and cultural change strategy and the drafting, negotiation, development and implementation of a drug and alcohol policy and testing programme are just two examples at the core of the overall change strategy.

The drug and alcohol programme was a key starting point in a top-down cascade change process and the start of the Black Hats taking control of their people and managing them. Initially we had to arrange both random and with-cause testing.

After about a year the line managers and supervisors (Black Hats) were asking for testing on particular individuals or groups. They realised that by removing the possibility of the workforce being under the influence of drugs and alcohol they were creating a safer work environment and reducing the risk of their team being injured.

The construction industry has a long tradition associated with drinking alcohol in particular where workers are transient or migrant. There is a direct correlation between accidents in

the workplace and the use of alcohol (Mangione et al. 1999) and workplace drug testing can provide a valuable insight into the nature of an organisation (Reid 1990).

Michelle had previously worked as head of construction in the nuclear industry and as such was able to reference examples from the nuclear environment of how testing improves health and safety performance. Underpinning this with evidence of improvement in other industries (Normand et al. 1992: 629-639) proved successful as the business had a target of improving health and safety performance.

Aran had implemented a drug and alcohol policy in 2002, (Leading edge, in construction at the time) at Heathrow Terminal Five and had first-hand knowledge of large scale implementation within the context of both a business and a major infrastructure project.

The implementation of the behaviour-based safety programme required a substantial degree of culture change, with an understanding that:

> ‘Culture is central in governing the understanding of behaviour, social events, institutions and processes. Culture is the setting in which these phenomena become meaningful’. (Alvesson 2002: 4)

There was also a business awareness of the ethical dilemmas that can arise when dealing with workforce, supervisors and managers with a range of conflicting values. It forced us to deal with real people with real people issues in relation to family and social status.

In the seven year period we have moved from being task-oriented (‘hands-on’) to being more target-orientated, with an emphasis on achieving long-term objectives. We have also developed an understanding of how to make tactical choices, while developing capability in a business. New strategies that require organisational restructuring are most effective when the underlying culture is reshaped to align with and support the new focus.

As a consequence of our work in behaviour-based safety and leading the program we had to generate new approaches, as new challenges were identified by the workforce and we had to be agile in responding to their requests.

The greatest challenge was in synthesising different sources of information to create a coherent and multifaceted strategy with focused operational outcomes. This involved drawing on our underpinning knowledge from delivering leading-edge technology in construction projects and transferring it into the business model.

We jointly integrated the safety management systems and processes to co-exist within the various business functions, and managed to assimilate the different interdisciplinary approaches into a communicative presentation piece to be delivered up and down-stream.

Lee & Harrison (2000) found that any safety management system is a social system, wholly reliant upon the employees who operate it. Their view is that its success depends on three things: its scope; whether employees have knowledge about it; and whether they are committed to making it work. In line with this view our initial programme objectives were:

- To significantly lower the reportable accident and injury rate.
- To produce an integrated health and safety system, which was flexible and yet provided excellent governance and which spanned all of the Group companies.
- To convert the behaviour-based safety knowledge developed in the nuclear industry to a currency which suited mainstream construction, and implementing the programme.
- To identify the barriers to change, communicate with the workforce at all levels and demonstrate their buy-in.
- To increase brand value using health and safety as a focal lens.

Initially we focused on learning about the soul of the business, (Gratton 2000) as new Directors to the organisation, we believed it was important to first understand and evaluate the business, the people and the politics before trying to change them.

We learnt how to identify the difference in rational and emotional change. We amalgamated two competing business models to help communicate the emotional response to change. We undertook a literature review of standards and criteria in use or recommended in a wide range of documents; transferring the theory into practice. We captured the current state of the business and designed the change management programme to suit, then synthesised theoretical models into a practical approach for change.

The starting point for the work was to make a cultural shift by approaching the change through a behavioural programme and making safety personal to each employee. This started at shareholder, CEO level, moved through the Directors, and middle management including heads of function, to the ‘Black Hats’ and then and only then, on to

the blue collar workforce, it was purposely not only focused on the workers. It focused on behavioural safety as the lens for change within the entire business.

We have now managed the implementation of a behaviour-based safety programme across a number of UK businesses and mega construction projects and we are on the third iteration of the process and procedures to date. We believe that a focus on safety facilitates change as it is boundary-less within a business context and touches all people and departments at various levels.

The wider more synched approach is supported by the work of Geller (1994) who put forward a model which distinguished three dynamic and interactive factors: person; behaviour; and environment. We believed that the McKinsey model was better suited to the challenges of the current business than the COPS model (Culture, Operations, People and Processes) as suggested by Price Waterhouse (1995) The COPS model would result in too-narrow a focus because it only addressed four key elements/areas. The complex nature of the construction industry (unpredictable, knowledge-based), as well as the amount of radical change required across the key business areas; required a wider model for successful implementation.

To sustain the changes, we needed to align the key inputs with the desired change. This included aligning institutional practices, systems, performance drivers, communications and capabilities needed to drive towards the desired culture.

Figure 3 – Seven Key Business Areas – Adapted from the McKinsey (1980) Model

The culture of the workforce in general appeared to be of the belief that ‘well I have always done it that way, and I’m still here’. We needed to move the focus to one of returning home safely to their families every evening - a paradigm shift was required, not just a minor improvement. Minor improvements may still save an individual life but open communication instilled through the behavioural programme, would mean capturing today’s near misses and preventing them from becoming tomorrow’s multiple fatalities.

Heinrich (1959) theorises that the theory of unsafe acts leading to minor injuries and eventually to a major injury prompts many organisations to pursue the control of unsafe acts in order to prevent the inevitable major accident.

A good behaviour-based safety programme is not about processes, procedures, rules and controlling violations; it should be about ‘cultural change’. That is, changing people’s intrinsic beliefs on a psychological level, by motivating, communicating and ultimately engaging with them to work more safely.

> ‘Employee involvement in health and safety management relates to a more positive health and safety climate – 77% of employees felt encouraged to raise concerns in a good health and safety climate’. (HSE Fit3 2005/6)

The desired outcome for the change programme was to create a Safe and Productive Working Environment, Preventing Fatalities, Incidents and Injury. The context for this, is that the company had a very low employee attrition rate. The market segments in which it works cover a whole cross-section of construction activity, from groundwork, and civil engineering, including very large structures, to high-end interior fit out projects. It is a business that was driven by a production culture and by people who primarily held a belief that safety was a competing value or add-on to the daily production requirement.

Our focus was on creating a culture where it is taboo to cause an accident and it is okay to say ‘no’ to unsafe working: Shoesmith (2006) found that if people don't remain vigilant, the organisation's safety management diminishes, therefore the traditional behavioural approach of worker observations and coaching conversations are ineffective. Shoesmith found that the critical issue is the need to focus on the behavioural and motivational factors at stake in maximising workplace safety.

We had learned from experience that the obsession about safety has to be obvious throughout the business at all levels and the project work sites, with high visibility from the moment you enter the projects/offices. It ranged from: installing signage at the entrance to projects saying ‘be safe home safe’; to getting the message on the back of all our branded high visibility clothing with ‘think safety act safely’; to a sign ‘recording total safe work hours completed on site to date’ - all working in tandem. It included photographs on the walls and notice boards showing winners of the last month’s safety award, and high impact posters displayed around the cabins and offices.

This visual messaging reinforced the culture that safety was something to be discussed openly and that as employer and employee we had a joint responsibility in ensuring everybody returned home safely at the end of the day.

We understood that for this implementation process of *Iteration One* to be more successful than both our previous organisation and business experiences, it was necessary to address the following areas:

Table 1 – Change Consideration in Our Business

- We had to ensure the implementation team was better trained prior to commencement. Previous trainers had delivered a garbled message.
- We had to personally focus on planning the implementation. It needed to be better-managed and controlled. It needed to start with the Directors, and move down to the line management structure to the workforce, with engagement, interaction and transparency at each change in line management.
- We needed to source new course content: The existing training video involved an American worker. This needed to be amended to reflect a UK workforce not an American workforce.
- We had to provide governance at the group level for a consistent approach across all business units - as previously, businesses had tended to access the feedback with a range of different perspectives.
- We had to be more visible in implementation and leadership.
- The leadership team needed to articulate their feelings about how important safety was to them personally, and impart it to the workforce.
- We had to ensure that the supervisors conquered their reluctance to discipline for non-compliance by using a White, Yellow, Red card 'Tough Love' approach.
- We needed to get all the project managers to take the lead/own and commit to the programme effectiveness improvement where this had happened.
- The feedback from the workforce had to be dealt with promptly and with clear visibility.
- The workforce was inclined to participate more openly in face-to-face or oral communication, particularly if it was in an informal manner. We learned that using written feedback sheets or communication mediums was not as successful.

2.4.1 Workforce Engagement (WFE)

We understood from engaging with change in the past that a proper understanding of what employee engagement really means and how we can positively influence engagement, can dramatically improve company performance.

Fleming and Lardner (2002) identify two management behaviours critical to safety:

- Meeting with employees frequently to discuss safety issues.
- Responding quickly to safety suggestions and concerns raised by employees. Shearn (2004) found that by encouraging employees to think innovatively beyond their role prescriptions, they become focused on improving processes and creating better products and services. Lawler (2006) established that by engaging employees, and creating a focus on health and safety it is possible to drive up safety performance as employees are best placed to make suggestions on how to perform their roles more safely'.

Research specific to the construction sector, by Cameron et al. (2006) and Lancaster et al. (2001) suggests that such improvements are brought about because employees:

Table 2 – Employee Improvements in Our Business

- Perceive improvements in provision of information by management, opportunities to express their views, and effectiveness of worker engagement management.
- Have a better understanding of the hazards associated with their work due to their full-time involvement in these tasks, and therefore are best placed to offer suggestions for further control of hazards.
- Have a better understanding of the operational constraints, therefore allowing development of more practical and realistic safety procedures, further improving the acceptability of health and safety procedures.
- Have greater ownership of safety management and feel empowered to act on hazards. This should ensure that hazards are removed faster and more effectively as the decision to act can be made quickly, rather than sending the 'hazards identified' information up the chain of command, and waiting for the 'eliminate hazards' decision to come back down before any actual hazard elimination activity takes place.

Having reviewed the WFE approaches we established a list of questions for our consideration and analysis throughout the objective setting for the programme:

Table 3 – WFE List of Questions Applied to Our Business

1. Rewards and Recognition

Question: How might we alter the reward strategy and recognise improved safety performance for Blue collar employees?

2. Human Capital Infrastructure

Question: Do our employees have the resources and information they need? How many nationalities do we have and what are the core languages for communication?

3. Human Capital Strategy

Question: Are our policies and procedures transparent and understood by employees

at all levels?

4. Learning Management

Question: Could we be doing more to boost engagement by enabling disadvantaged employees to gain literacy and numeric capability?

5. Knowledge Management

Question: Are our employees fully informed on Safety as a core value and is best practice shared across the group?

6. Workplace Design

Question: How could we promote the social interactions that often stimulate new ideas? How do we create a safe and productive working environment preventing incidents and injury?

7. Employee Relations

Question: How could we communicate details about major organisational changes, and initiate programs to reduce the negative impact of such changes on morale and productivity?

8. Career Development

Question: Do supervisors have the necessary skills and training to help them develop employees and keep them safe at all levels with clear guidelines for achieving their goals?

9. Recruiting

Question: How do we recruit employees most likely to be engaged with our company Vision for safety as a core value?

Table 3 details some of the questions that we used to inform our initial worker engagement strategy which commenced in 2009, these formed the foundation for the early transformational change activity in the business. On reviewing the survey in 2009 in *Iteration One* we were able to analyse the data to determine a direction in which to take the business forward into *Iteration Two*.

Within the overall results, which demonstrated a positive culture, it was still possible to identify possible problems and issues expressed by a minority of employees. On this basis four main areas have been drawn together and are listed below, starting with the poorest, or where largest proportion of employees expressed these views.

Table 4 – Key Areas from 2009 Survey – Iteration One

- Some feel that health and safety procedures do not always reflect the work that they do and can be hard to follow. In particular, those with less than one year's experience feel that certain jobs are just difficult to do safely.
- Feedback reporting is seen by some as part of a culture of blame and they feel disenfranchised by the process.
- Pressures of productivity are seen by some as more important than safety and some younger employees favour the opinion that it is acceptable to take risks to get the job done.
- A small section of employees felt they were being harassed and bullied with there being just over 100 individuals who felt they were subject to harassment, and 60 to bullying
- Harassment was more significantly expressed by younger groups.

Lunt et al. (2008) suggests that to facilitate rapid spread of effective behavioural change through workforce engagement the answer is 'Integrating 'top-down' with 'bottom-up' incentives'.

Mintzberg (1994) argues that strategy is not necessarily determined by senior management alone, but can be influenced 'bottom up' as ideas are tried and tested in an organisation. Therefore providing the correct level of comfort and information to the employees had the impact of the workers driving change from the workface up through the business without undue senior management pressure.

The process of managing external parties as well as internal parties presented us with significant challenges, as the external parties simply dealt in black and white facts, where the internal stakeholders were incredibly emotive, making it imperative to manage the information received professionally and accurately. Accountability became 'blame' and is highlighted by the workshop transcripts.

Our intent was to change the culture at the 'core value' level, and to nurture human responses within our workforce to keep themselves and others safe. To challenge the industry to realise that a fatality is not a necessary outcome for operating a construction business in the UK.
This led us to prepare a list of what we needed to achieve - as objectives to make the implementation a success, in addition to the vision, provided the 'what' we needed to achieve:

Table 5 – Objectives for Success in Our Business

- To prevent a fatality associated in any way with our business and use lack of fatality as a success criteria.
- To have researched and established a base line for the level of 'Safety/Engagement/Respect' our operatives/staff currently experience.
- To identify how improvements can be implemented across the Business and in what timescales to deliver leading-edge performance.
- To formulate key indicators to measure the success of the implementation.
- Execute the change on a short, medium and long term basis.

We had to make sure that all blue collar operatives and white collar staff return home safely each and every day from our complex and busy construction site (comprising 50 projects with 200+ simultaneous open workfaces delivering over five million hours annually). To achieve this there were a number of fundamental tasks to meet. The overall project objectives needed to be incorporated into a programme delivery plan.
To make the change process work we both had to have two different organisational positions and take on two different roles at different times, collectively or as, 'Good Cop /Bad Cop'.

The delivery strategy had two clear positional stand points and approaches: hierarchical; and collaborative.

1) Hierarchical

The overarching authority had to be there for individuals and business unit leaders to realise that inaction and apathy had direct consequences and that the change was going to happen and was supported by the CEO and business owner. This position was more **on** the business.

This manifested itself into a stratagem, which was 'You have a voice, you have no choice!' This suggested that the change was going to happen and employees could decide with us how it was going to happen and how we should get there.

2) Collaborative

We also had to roll our sleeves up and be part of the solution where we become the executive sponsors **in** the operating businesses of this change programme, with responsibility for;

- Helping the business unit Directors to instil the vision and goals
- Ensuring that the business units continued to focus on the projects.

- Guaranteeing that the allocated resources time and money were not diverted.
- Exercising our authority to remove barriers and bottlenecks.
- Holding the project managers and Directors accountable.
- Communicating with the Executive Board of Directors.
- Reviewing and signing off the projects at critical milestones

Iteration One highlighted that the managers did not appear to have a personal need to move with the industry for three core reasons.

- They were unaware of the changes in the industry because of their static workforce. No new employees bringing fresh ideas into the business.
- They found the change irrelevant to them - as their role would continue, they could ignore it.
- Implementation had not been followed up in the past, so there was apathy in delivering change.

We had to also consider how we dealt with individuals and find the line that separates acceptable conduct from actions that invite opprobrium and punishment. To achieve this we created a policy of ensuring that every incident was fully investigated and during that process, we would involve the individuals who were either responsible or a part of the incident. This enabled us to also drive a policy of 'organisational justice' which enabled us to use punishments such as ensuring that the party responsible for the incident through non-compliance had to present the learning and the reasons why they made the decisions that they did. The workers received the information regarding breach much more positively from their peer, and the individual created some positive outcome from a negative initial action or decision.

One of the other challenges has been to stop silos from developing and to ensure that we found or recruited people who are intellectually able and politically prepared to connect the dots.

Heffernan (2011) discusses the effort, commitment and mistakes required to overcome the sheer difficulty people have working with each other, he found that negotiating the complex interface between their personal ambitions and organisational goals promotes tensions in working well as a team, even with a single goal.

When we had identified the tasks it became clear that the workforce could not engage with all these change elements at once so we decided to approach the change programme from a short, medium and long term perspective for the implementation of *Iteration One*. This proved to be a success and the workforce became accustomed to change on an on-going basis and now embrace it as custom and practice.

Project Plan

Table 6 – Project Plan 3-9 months

Short term 3 – 9 months
• Evaluate through a survey the current business state and workforce perception. • Educate the business on Corporate Manslaughter and its impact. • Communicate the aims and goals of the organisation. • Communicate the specific goals of this initiative and the timing. • Communicate business progress, plans and performance. • Open up two-way communications. • Review the safety culture within the business and establish a baseline. • Provide training in the delivery of method statements and daily task briefings. • Engage in process improvement in safety by bringing the workforce into the classroom. Delivering new systems and processes to enable a better safety culture. • Undertake English as a second Language (E2L) training across 39 Nationalities. • Involve workers in the development of construction methods, method statements, sequencing etc. • Get the workforce to take ownership of their environment.

Table 7 – Project Plan 9 – 18 months

Medium term 9 – 18 months
• Increase core competency of blue-collar workforce, through training and increasing skill levels. we created a training matrix for all job site workers • Increase core competency of managers and supervisors. • Provide an interactive training forum using method actors. • Get the workforce to take ownership of their environment. • Retain the services of trained employees. • Improve general numeracy and literacy. • Evaluate through a survey the current business state and workforce perception. • Gain an understanding of what resource we had and what the demographic /capability make up consisted of.

Table 8 – Project Plan 18 – 36 months

Long Term 18 – 36 months
• Move the statistical reporting norms AFR significantly below industry standards. • Improve the capability of managers to work closely with and support employees in training programmes. • Improve the adoption of new technology. • Continually raise the bar on working conditions. • Utilise the best of industry tools and equipment. • Adopt industry-leading working practices to deal with changing demographics. • Evaluate through a survey the current business state and workforce perception. • Create appetite for innovation in the workforce.

We started by establishing a broad-based rollout to all line managers and staff to achieve a 'ground swell' and attain a core value, while defining their responsibilities. Core values are the fundamental beliefs of a person or organisation which dictate their behaviour and actions. We then moved on to more tailored programmes, along with a layered approach to constant communications in order to consistently sustain the message throughout the business and keep it revitalised and fresh.

> 'A positive safety culture will result when all relevant parties, (a) understand their responsibilities (b) are provided the information to fulfil their responsibilities (c) can feed concerns upwards through communication'. (Dejoy 2005: 105-109)

We had utilised a visual aid for identifying the 'controlling mind' of the workforce on a previous mega-project, and again implemented a policy which stated that all supervisors would wear a black hat, identifying them clearly and visibly as the persons responsible for safety, and the 'controlling minds' from a Health and Safety perspective.

Following the structure and chain of command in the military and considering the risks associated with our typical work/risk profile we adopted a 'Squad' strategy where one officer is responsible for ten soldiers, and in our workforce we allocated one Black Hat responsibility for a team of ten operatives, or five, 'Fireteam' where the activity is classified as high risk. All supervisors in the business are now colloquially known as Black Hats. This meant their visibility was prevalent across the site, and it was one of the core

elements of the change process; the line managers at the workface are responsible for and own safety.

This visual information system aligns well with the research described by Grief (1991); who discusses the improvements which can be made in both quality and safety through a consistent approach to information giving.

The introduction of the Black Hat for line managers/ supervisors created a challenge for the supervisors as they were now clearly being identified as the person in charge. This challenge is identified by Hopkins (2006). Where he describes his view that standard safety behaviour programmes have no impact on accidents that occur without any active behaviour, safe or unsafe on the part of the front-line worker, he found that by focusing on management behaviours the programme becomes a means of changing the safety culture of the whole organisation.

We received initial significant push-back on the changes we were trying to make, due to:

> 'Existence of long term employees who were at the relational end of the psychological contract continuum, meaning they saw any attempt to change existing processes as a slight on their performance or commitment to the business'. (Tilley, M. 2006)

We had to consider the moral impact this was having on certain individuals who now suddenly felt a responsibility for the safety of others as well at themselves. In a number of instances individuals decided to hand back the responsibility and return to working as part of the team as opposed to working as a leader. This involved an ethical dimension as it also entailed the individual receiving a reduced remuneration package. It also forced us to consider the impact on their personal life where as a leader they had respect and were the 'General' in charge - and as the majority of the workers all socialised with each other, it could prove to be loss of status/position in their society. This became a key learning point in *Iteration Three* including the impact of culture /nationality on risk and hierarchy.

As a result of this 'Black Hat' initiative, along with the issues outlined above, a number of people needed to change roles and a number of people needed to leave the business. This review of personnel prompted us to reflect critically on our own and the team's practice.

Table 9 – Reflection on Our Own Practice

- We found the construction worker was harbouring an inherent fear of speaking out to supervision as a result of 'Mitigated Speech' and hegemony.
- Supervision was under the perception that productivity was to be achieved at all costs.
- We emphasised and prioritised that the business was only interested in a hierarchy of delivery which involved safety, quality and production - in that order.
- We needed open communication up and down the line management structure**.**

On reflection, in future change implementation programmes.

Table 10 – Reflecting on Our Future Change Programmes

- We would spend more time in future establishing where the relationships were within the business and how strong certain line manager's hold was over workforce.
- We will spend more time establishing links with potential champions at business unit board level to help lead the implementation. The way we implemented the change management process within this business structure would not work in a larger, more corporate enterprise.
- The autonomy we were afforded allowed us to have immediacy of decision making through our accountability to the shareholder and due to our experiential learning. We had the ability to adapt to the changing landscape which was a fundamental as to how rapidly change occurred in this business. This would be unlikely to occur in a more corporate enterprise as there would be too many managers and department heads and stakeholders with personal issues, who would need to be influenced.

The change process described is a learning journey, and after seven years of constant reinforcement, we believe we are still only at best a quarter of the way through achieving a true behaviour-based safety culture similar to Nuclear or Oil and Gas but ahead and at the leading edge of the rest of the construction industry.

The change process has been based around delivering a balanced change management program across the *Seven Key Business Areas-Adapted from the McKinsey Model* as detailed in 2.4 previously.

The business areas have to be in sync for the change to work. We needed to assess constantly where our values were in the context of the changing business environment and with respect to the changing values in society.

Following the research done by Peters et al. (1982), we made efforts to recognise the interplay between the different elements of the change strategy. To do this we utilised Action Research, Soft Systems and Survey Based Research to facilitate the change in the business, coupled with a series of decision/hold points within a continuous, PLAN – DO – CHECK – ACT cycle, establishing root cause behind plan failure and resolving the issues immediately. The business culture change had to be done whilst maintaining business continuity and being focused on delivering bottom line improvements in a global recession.

Organisational culture is a balanced approach and according to Cooper & Phillips (1995) and Cooper (1997) is: The product of multiple goal-directed interactions between people (psychological), jobs (behavioural) and the organisation (situational).

This project has allowed us to review and consider the best research methodology and methods required to identify 'What elements are required to achieve sustainable business change using health and safety as a lens?'

Whilst carrying out the balanced change process we have also been developing knowledge from the various research methodologies utilised. We have had to consider and balance that knowledge throughout the study process whilst thinking in terms of the methodology of complementarity, which provides Strength in all types of knowledge creating work.' (Arbnor & Bjerke 2009). It also provides the absolutely necessary circumstances to be able to assess and develop the knowledge–creating resources of a company with a high crealiability, that is, the very foundation for a company's present and future power as a business culture for development and renewal of their operations' (Arbnor & Bjerke 2009).

2.5 Iteration Two (2010 - Mid 2012)

We spent seven years creating an open vertical information channel focused on health and safety using the frontline supervision (Black Hats) of the workforce they are the people who have the most influence on our workforce's behaviours, culture and performance at the operational workface. In 2010 we engaged with the concept of Integrity within the business to link our open communication and adopted the principle of

‘Seven Attributes that influence a company’s culture of integrity’ from ‘the corporate executive Board Company’ as the next vehicle to drive change.

Our culture is one of complete transparency which is based around the principles espoused in the Integrity Matrix *(Figure 4)* with which we govern our business, the most important element being ‘comfort in speaking up’, followed by direct leadership from the ‘Black Hats’ and ‘tone from the top’ from the Executive Directors (the researchers).

Figure 4 – Integrity Matrix (2011): The Corporate Executive Board Company

Reason (1997) equates safety culture with an ‘informed’ culture which is dependent in turn on a ‘reporting’ culture that is underpinned by a ‘Just’ culture, his views correspond with and support the values espoused by the Integrity Matrix we have used to manage our business for some years.

Our workforce have an open communication channel, which starts at the beginning of each day where they get to do a review of the previous day and a risk preview of the day ahead. Any issues which they wish to raise would normally be raised at that forum and dealt with immediately or in the Site Safety Leadership Team meetings outside of those meetings there are numerous vehicles for individuals at any level inside or outside the business to raise any issue or report any incident or near miss from which the business can learn.

The business instigated Safety Leadership Team Meetings on a bi-monthly basis, to get all the senior and supervisory workers and employees into the same room to hear the same messages from the Directors and the senior team. These sessions provide opportunity to disseminate valuable learning, cultural messaging, and to provide open and honest feedback.

We use the sessions to make the link between hearts and minds and health and safety by inviting client speakers to give their honest and un-rehearsed opinion of how we / they are performing and what health and safety means to them; making the tangible link between excellence in health and safety and repeat business therefore on-going work for them. We also invited guest speakers with a story, people like Jennifer Deeney, who lost her husband in a tragic site accident only six weeks after they were married, and who became a HSE inspector to try and influence the industry in to making sure it did not happen to others.

These kinds of speakers give their views honestly and with passion and a very real connection to the audience, helping the workers to remember why they should stay safe at work.

We conducted a pulse survey to establish how the teams, workers and staff were feeling about the culture of safety in the business, to help us to understand where some of the areas for focus should be and to understand their personal and professional safety beliefs.

The Directors of the business were tasked with undertaking Director safety tours of which a big part of which was focused on leadership visibility and commitment through communication with the workforce, asking them how they were, if they had issues, how we as a Board of Directors could assist them in improving health and safety for them and specific to their role.

We commenced the process of Director clinics because it was essential to ensure that the communication of the importance of safety was felt at all levels, and that communication was seen to be two way, leaders will be more effective if they explain their decisions and persuade employees, Mobley et al. (2011)

The sessions were kept deliberately small to encourage open discussion, usually one or the other of us (the researchers) would hold a clinic in the construction site meeting rooms or in the shared welfare facility where the operatives felt most comfortable; their own environment. We would buy bacon sandwiches and make tea for the workers, asking them to come and join us away from the construction workface for an hour and a half, initially opening the discussion with some information about what the company has planned for the next few months, what new projects had been won, and what was in the pipeline.

This enabled the discussion to commence in an open way with no fear of job losses as they were able to see that the future of the company was healthy. We also discussed new initiatives that we might need their help or support with, as well as asking for their views

on areas of change or improvement that we were planning to make. Once the conversation was beginning to flow more easily, we were able to ask the questions related to how they would suggest we can improve safety, key questions were:

‘ what can I do differently to help you do your job more safely’
‘ is there anything that I do which stops you from doing your job as safely as possible’
these questions were framed to ensure that there was no association to their failings, only that of our own, and how we can improve or help improve safety performance.
This approach encouraged open participation and active listening, some of the issues that were presented to us were trivial, however, some were significant and seen through the operatives eyes not our own. One of the key requirements was to ensure that feedback was provided to the workforce regarding their comments and how were going to deal with the issues raised. It was important to show that their comments were meaningful to us and also important that we gave honest timescales for dealing with them, or to be clear if in fact we were not able to deal with their issues and why. This process underpinned the aspects of visible leadership and open and honest communication as well as trust in colleagues. In selecting the participants for the Directors clinics we had to also give consideration to the ‘gang’ they were working in and the makeup of the individuals within that gang.

The culture of construction is traditionally one of a ‘gang’ mentality, this means that gangs work together in close-knit trade-based groupings. These groups or gangs, consist only of the specific trade-based workers such as scaffolding or carpentry, as well as their supervisors and apprentices, it is very unusual to see a multi trade gang because this does not fit with the historic unionised gang separation of one trade, one gang.

This historic silo mentality between gangs has a negative impact on health and safety as it prohibits open communication between gangs. This means that operatives in one trade gang will not address other trade gang members if they see them doing something which is unsafe, it would be seen as someone else’s problem and nothing to do with that gang or their supervisor. This mentality severely inhibits the development of an overarching healthy safety culture.

This development into gangs became problematic for the construction industry when the role of the main contractor receded and direct workforces were not employed any longer by one company in order to complete whole projects. In the early 1990’s, construction contracting moved to a management model where main contractors did not actually employ workers only professional managers and they would appoint through sub-contracts other contractors to actually do the work.

This silo-based gang mentality is also further complicated by the outcomes of a number of recessions, which have driven manufacturing and to some extent, trade workers out of the construction industry. Much of the workforce for the construction industry comes from migrant workers, either European, or Indian sub-continent with a recent influx of Eastern European workers tempted to the UK by the good living conditions and the now strong economy with higher rates of pay. These nationalities have gravitated around the various trades in areas of speciality as detailed in *Figure 5* therefore further complicating the communication between gangs.These gangs types will vary through out the UK construction industry but we have indicated our representation.

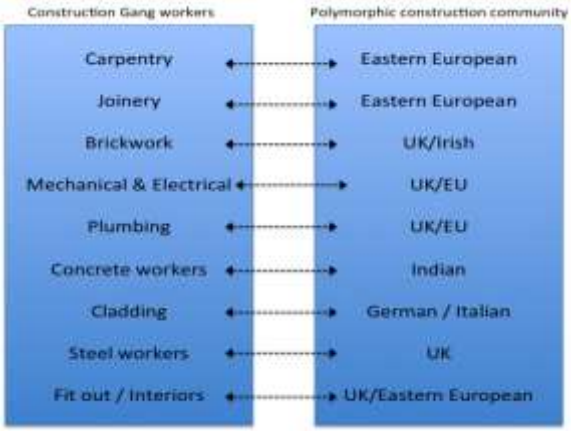


Figure 5 – Culture of Construction in our Business

The perception of risk between the various nationalities was a very early concern and the ability to recognise potential risks at the workface, to help with this we immersed all our workers in near miss training and encouraged them to engage with the reporting process, providing them with underpinned evidence that more open reporting leads to a much better safety culture, helping them to understand and to feel comfortable with being open about mistakes and also exactly what constituted a near miss as many of them were unsure of what one was.

We provided supervisor specific Black Hat training to give them the confidence to speak to their peers in a more formal way, to help them with presentation skills, and to enable them to issue directives and orders in a respectful way to the workers. We helped them to understand that the best approach is a softer yet assertive one, rather than an aggressive uncaring or bullying one.

We delivered corporate manslaughter training following the change in legislation to the whole business, to help our workers understand how the changed legislation could impact them if they chose a route of non-compliance or disregarded company processes or

procedures wilfully. This helped our employees to see that we were acting in the best interests of them first as well as the company and that complying with our systems and processes provided them with the best form of self-protection should anything go wrong or there be an accident.

We developed a layered approach to poster campaigns, ensuring that they were eye-catching, unusual and artistic – and that they made absolute sense, tying in with the messaging that the workers were receiving through all of the other initiatives.

We commenced the process of competency assessment across all levels, giving our workers absolute confidence in their own abilities whilst also ensuring that we were able to spot any gaps in our own business requirements. We also developed a training matrix to make it visible and clear to our workers where they would need to aspire to for their role, and ensuring that their training was funded in a timely manner.

We developed a 'Safety Latest' communications magazine which told the story of the journey we have been on, and gave thanks and recognition where deserved and which highlighted some of the really innovative things which project teams had undertaken. This magazine went to clients, main contractors and to our workers, it became a much talked about piece of company literature and gave the employees a window on what was happening across the whole business, as many of them are polarised around one project for some considerable time.

The safety intranet was further developed, and branded 'Safety Net' (SMS), we created a brand for safety using consistent logos and colours so that workers could easily identify a document or piece of literature which was of safety significance.

The business invested heavily in introducing RFID Tagging, a system of tagging for our tools which ensured that our workers could not take out tools or equipment for which they were not trained. This is done through a card system where the worker details and qualifications are stored on the swipe card, and can be accessed through a handheld machine. It is effective in dealing with issues relating to workers using tools for which they are not qualified or trained, with the added benefit of decreasing losses to plant and stores to virtually nil.

All of these initiatives formed the basis of *Iteration Two*, which was both system and process as well as behaviour-based, driving equality and balance through the three safety areas of system, process and people.

We have considered our positions in relation to the start point on the D Prof journey, and the learning established through the DPS 4520 in which we were able to articulate our values, areas of expertise and specialisms as well as reflecting on the learning journey to understand our own habitus. The DPS 4520 presented separate ontologies for each researcher which then led us into looking at epistemology where upon investigation it became clear that we were positioned at opposite ends of the spectrum for positivism and constructivism, as well as Pragmatism and the Actor Approach.

Learning from Implementation

Table 11 – Learning from Implementation – Iteration Two

- Our initial impressions were that the project would be successful and that we would be able to notice a significant change as we moved through the implementation. However we were not prepared for the impact that changing any other systems and processes would have on the success of delivering safety as a core value.
- We were also not prepared for the appetite for change, which the workforce was now seen to embrace. There were problems in keeping up with a lot of requests for better system and process to improve delivery at the workplace and a substantial investment in resource in both time and money to deliver this.
- We needed to reassess the resources and the investment required but the results were already starting to show in bottom-line profits and a reduction in major injuries and accidents. On presenting to the shareholders they were prepared to invest more resources, based on the results achieved.
- We discovered that we needed to reflect more. This included stepping back once the initial leadership piece is complete with the workforce and concentrating on the issues that arose while maintaining a wider view of the overall business horizon. Importantly, we needed to ensure that each of the seven areas of business were in sync as the core values developed.
- We had to entrust the implementation to the project teams and the departmental leaders.
- This implementation is now mature in its seventh year and the core value is embedded within the entire business.

The sponsoring business utilises both of us to deliver a single strategy and solution for transformational change, it is therefore appropriate to deliver this research as a dual project back to the business, mirroring and complementing our day-to-day working arrangements.

3.0 Engagement with the Critical Literature for Iteration Three: D Prof Project

The research proposal asks a question regarding 'What elements of change are required to achieve sustainable business change using health and safety as a lens?'. Greenhalgh et al. (2004) Keupp et al. (2012) and Boons (2013) conducted systematic reviews focussing on the critical aspects of transformational business change in a variety of settings; however, there is little research that seeks to provide the answers to transformational business change that also has a relationship to behavioural health and safety change. The majority of the literature related to health and safety enhancement focuses on improvements in systems, processes or culture, but seldom through holistic and progressive transformational change. It is this aspect of new research that our D Prof focuses on.

Our proposal aims to provide a deep level of underpinned evidenced research that will offer companies wishing to make significant change efficiently the opportunity to learn from the experiences of others.

Lunt et al. (2008) provides a systematic review of existing literature and thus a critical starting position for the exploration, the appendices from the report split in to two key areas:

1) Organisational focussed practices
2) Behavioural/worker engagement interventions.

The core themes expressed by Lund et al. (ibid) were a lack of balance in the approach to the engagement process and that business change had not been considered in the wider arena; nor had utilising open vertically integrated communication lines through health and safety to deliver a business change process.

In order to explore the literature, a systematic process was employed utilising both Middlesex University Summon facilities coupled with Business Source Complete, Cambridge Journals online; Emerald; Oxford Journals online; PsychNet; Web of Science; and Wiley online,

The search strategy employed a Boolean approach using the following terms, which were employed singly, in pairs and in groups, or the Boolean operator 'AND' or 'OR' employed. A wildcat operator, '*' was utilised as a suffix in an attempt to capture all permutations of phrases. The process was repeated across the databases explored.

Table 12 – Coding Structure Step 1

Column one (primary word or phrase	Column two (combined with)	Column three (combined with)
'Safety'	*'Behaviour'*	*'Transformation'*
'Safety culture'	*'People'*	*'Leadership'*
'*Safety climate'*	*'Culture'*	
	'Communication'	
	'Transformation'	
	'Leadership'	

A significant number of academic researchers were discovered in this area, many of whom have looked at the areas of safety culture safety behaviour, tried to define their true meaning and have and developed models to support their hypotheses. The literature was explored thematically using the terms above with a primary focus on empirical research.

3.1 The Positioning of Health and Safety within an Organisation

Our literature review indicates that poor safety culture has been implicated in many large scale industrial accidents and disasters including Chernobyl, the space shuttle Columbia, and the Ladbroke Grove and Clapham Junction rail crashes, (James,P 2009: 5-31). In his research James, P. (ibid) suggests there is a continuing need to 'raise the profile' of health and safety, in addition he suggests that corporate safety culture is independently associated with corporate safety performance, an association which is apparent across many sectors. This is a critical observation central to the entire development and implementation of this project. What, perhaps, is different in our proposed approach is that health and safety drives the operational change rather than being an implicit or explicit addendum to corporate direction.

It is now over 40 years since Robens (1973) assisted in shaping change in the attitude to health and safety in companies, when his committee stated that 'the most important reason for accidents at work is apathy, people simply do not care enough'. It is imperative to the effective management of a company that the board makes sound decisions based on fact and underpinned evidence, and not on supposition or hearsay, and that the board engages with the process of change, or 'it cares enough'. The Robens Report asked the questions, 'What do we mean when we say that the traditional methods and institutions have failed? What are these methods and why have they failed?' His report highlights the need for further research, much of which has been conducted since his report was published in 1973, however, much of that further research raises still more questions.

Popma (2009: 33-51) states that ‘encouraging workers to participate directly in improving health and safety is crucial’. He also states that ‘management commitment is crucial’. His statements highlight the need to ensure that the ‘crucial’ areas of focus for the worker engagement and management commitment must be established so as not to waste resources or indeed to demotivate workers if results are not achieved. Safety culture can be considered as a management tool which will be beneficial in controlling employees’ beliefs, attitudes and behaviours (Fernandez-Muniz et al. 2007).

Marsh (2009) states ‘it is impossible to put the principles of health and safety into action without high levels of senior management commitment translated into a sound high level strategy’. He does not, however, detail the elements required for a strategy to be successful. Marsh (ibid) also briefly discusses the cultural aspects of achieving successful behavioural safety change, simply stating that ‘a proactive culture is essential to achieving that change’. He suggests that ‘safety must be a core value’ and ‘change is inevitable and essential for an improvement in safety culture. Companies have to manage it and learn to embrace it’. This is fine in principle but the evidence from the accidents cited above suggest that the above is all too easy to say, but more difficult in practice to achieve. Research such as Marsh (ibid) provides no underpinning substance to assist a company wishing to make a fundamental culture change in order to improve their health and safety performance. Again this point is central to the proposed study, since through it, we seek to describe a change process in action to which Marsh alludes.

In parallel to the above, Zohar,D. (2002) focuses on the styles of leadership and the influence this has on the safety climate. Sonderstrup-Anderson et al. (2011) found evidence for this association, defining a safety climate as the employees’ shared perception of objective risks at work and the way that this work is organised and embedded in an organisational context.

As far back as Robens, the role of senior management was central to implementation of a safe workplace. Since that time there have been a plethora of high profile accidents in which the role of senior management and safety culture within organisations has been called into question. There is clear evidence that leadership is linked to the development and maintenance of a positive safety climate and is indeed central to our project – where health and safety becomes a core brand value around which business change can be developed.

3.2 Relationship between Safety Climate and Safety Actions

Cooper & Philips (2004) explored the relationship between safety climate; safety outcomes/behaviours; and overarching company culture, drawing a conclusion that positive safety climates will encourage safety behaviours. However, they also take a position that behavioural safety intervention is perceived as a form of training rather than culture or behaviour change. As an external observation of this work, it should be noted that the response rate for engagement with the research altered from 69% in phase one to 35% in phase two. One may ask the question as to why interest and response declined so significantly in a situation where safety climate was under study?

Flin (2003) states that managing an organisation's long-term approach focuses on key determinants of the safety culture. One of the successful key factors is defined in Flin's research is the degree of management commitment to safety at all levels from front line supervisor to the CEO, this is supported by the work of Zohar et al. (2014), Colley et al. (2013), Hopkins (2006), Cooper (2006), Dejoy (2005), Chandler & Huntebrinker (2003), Johnson, (2003), Jaselskis et al. (1996) and Duff et al. (1993), who all found that management's demonstrable support was significantly associated with behavioural safety performance. Brondino et al. (2013) highlight the importance of involving co-workers alongside supervisors as a safety climate agent. Geller (2006) offers a contrasting perspective suggesting that the complexity of health and safety as a construct means that one should look outside of the organisation to make change – as we do in our own work through seeking external views throughout the evaluative process.

Choudhry et al. (2006) explored a range of literature and found that whilst the concept of safety culture has been around for many years the true nature of a safety culture is not precisely clear. This is an interesting point for those in a practice environment, since it would appear that the term is widely employed but not clearly understood. From our own perspective, therefore, as part of the wider work within the project, a number of these studies were used to gauge our safety culture and cultural change processes, using these studies as benchmarks and tools for identifying areas needing consideration.

Thompson et al (1998) present a model that links management support, organisational climate and self-reported safety outcomes, such as safety condition/safety compliance, while Kennedy & Kirwan (1998) focus on aspects of safety management practices called the Safety Culture Hazard and Operability (SCHAZOP) and provide a qualitative analytical approach to identify detailed vulnerabilities and the means for their prevention. HSE (1999) produced and utilised a Health and Safety Climate Survey Tool that helped in

establishing what employees thought of their organisation's health and safety issues, and provides a basis on which to improve health and safety, involving employees in the process; an area progressed further by Hale (2000) who elaborates on the complex aspects of safety culture, and suggests the elements of a good safety culture. Guldenmund (2000) and O'Toole (2002) postulate safety as the central object of organisational culture, while Lee & Harrison (2000) further developed a model which addresses attitudes, perceptions and reported behaviours. It provides reliable measurement scales and examines the issues of culture divergence, not only between organisations as well as sub-populations within a single organisation.

Pidgeon & O'Leary (2000) develop the learning organisation model in a slightly different direction and discuss its application in minimising future incidents by learning from mistakes made in the past, building on the pioneering work of Turner (1978) who focused on learning from major incidents, linking with Rundmo (2000) who presents mental images of risk and the results of a survey addressing issues such as safety climate, employee attitudes, risk perception and behaviour among employees within the industrial company Norsk Hydro. The presented model links safety climate factors to actions related to the control of risk, a link which is further developed in the model by Cox & Cheyne (2000) and separately by Neal et al. (2000), both of which describe the development of two elements of a toolkit, which combines audits with questionnaires assessing employees' perceptions and attitudes and linking organisational climate to safety climate. Neal et al's 2000 model demonstrates that organisational climate predicts safety climate, which in turn is related to safety performance, a concept which is further underpinned by Clarke (2000) and which Grote and Kunzler (2000) take a step further showing that attitudes and perception surveys produce parallel results to auditing in their socio-technical model. Cooper (2000) produced a reciprocal model of safety culture to understand its dynamic, multi-faceted and holistic nature

McDonald et al. (2000) explore the relationships of divergent aspects of safety culture and safety management systems and presents a revised model of safety management systems. Glendon & Stanton (2000) present the useful distinction between strategic top–down, functionalist perspective and data-driven bottom-up, interpretive approaches to safety culture, underpinned by the research of Cooper & Phillips (2004), which focused on a link between measurement and improvement in safety performance. Contrastingly, Glendon & Litherland (2001) present the factor structure of safety climate and develop a behavioural observation measure of safety performance. However, it fails to find any relationship between safety climate and the behavioural observation measure of safety performance.

Mearns et al (2001) revealed benchmarking strategies for monitoring safety climate and presented the relative weaknesses and strengths of organisations' safety-climate profiles in a readily accessible format and Neal & Griffin (2002) presented a model identifying the linkages between safety climate, safety knowledge, safety motivation, and safety behaviour demonstrating that knowledge and motivation mediate the relationship between safety climate and self-reported safety compliance and participation.

Mohamed,S. (2002) presented a model where safe work behaviours are consequences of existing safety climate in construction site environments and later in (2003) promotes adopting the balanced scorecard tool to benchmark organisational culture in construction and argues that selecting and evaluating measures in four perspectives: management, operational, customer, and learning, would enable organisations to pursue incremental safety performance improvements, a model further developed by Silva et al (2004). Cooper & Phillips (2004) helpfully determine the relationship between the measurements of the safety climate and safety behaviour, whilst Fang (2006) and Zohar,D.(2010) identified the dimensions of safety culture to be measured in order to improve the culture of safety in construction. Christian et al (2009) and Nahrgang et al (2011) established that individuals who perceive that their organisation values safety are more likely to comply with safety procedures, and voluntarily enhance the safety of their workplace. Colley et al. (2013) found that a rational goal focus was associated with good safety outcomes when it was combined with a human relations focus but was associated with a poor safety outcome when combined with internal process focus. This suggests that safety actions need to be delivered in a balanced way to have a positive impact on safety culture – and this balanced approach was the way in which our project was delivered.

Numerous definitions of safety culture exist in the academic literature, and examples of selected definitions are shown in *Table 13.* Only twelve (12) of the thirty-one (31) selected studies define safety culture; most of the definitions are relatively similar in the beliefs perspective, with each focusing, to varying degrees, on the way people think and/or behave in relation to safety. These definitions tend to reflect the view that safety culture is something an organisation 'is' rather than something an organisation 'has'.

The definitions *Table 13* adopted by Hale (2000) and Cooper (2000) explicitly outline the contents of safety culture.

Table 13 – Source of Safety Culture Definitions

Reference	Definition of Safety Culture
Kennedy and Kirwan (1998)	An abstract concept, which is underpinned by the amalgamation of individual and group perceptions, thought processes, feelings and behaviours, which in turn gives rise to the particular way of doing things in the organization. It is a sub-element of the overall organizational culture
Hale (2000)	Refers to 'the attitudes, beliefs and perceptions shared by natural groups as defining norms and values, which determine how they act and react in relation to risks and risk control systems'
Glendon and Stanton (2000)	Comprises attitudes, behaviours, norms and values, personal responsibilities as well as human resources features such as training and development
Guldenmund (2000)	Those aspects of the organisational culture which will impact on attitudes and behaviour related to increasing or decreasing risk
Cooper (2000)	Culture is 'the product of multiple goal-directed interactions between people (psychological), jobs (behavioural) and the organization (situational); while safety culture is 'that observable degree of effort by which all organizational members directs their attention and actions toward improving safety on a daily basis'
Mohamed (2003)	A sub-facet of organizational culture, which affects workers' attitudes and behaviour in relation to an organisation's on-going safety performance
Richter and Koch (2004)	Shared and learned meanings, experiences and interpretations of work and safety - expressed partially symbolically – which guide people's actions towards risk, accidents and prevention
Fang et al (2006)	A set of prevailing indicators, beliefs and values that the organization owns in safety
Christian et al. (2009)	Discuss that individuals who perceive that their organisation values safety are less likely to be involved in accidents
Nahrgang (2011)	Show that an individual's perception of safety climate matters, because it has an influence on their behaviour.
Colley et al. (2013)	An examination of the relationship amongst profiles of perceived organisational values, safety climate and safety outcomes.
Gillen et al. (2013)	A workshop to evaluate safety culture and safety climate in the construction industry, discussing constraints and influencers, as well as the differences between high performing mega projects and poor performing ones and what may have influenced the safety performance.

3.3 Integration of Safety within Wider Quality Domains

Koehn & Datta (2003) argue persuasively that an effective quality, environmental and safety management system not only ensures a quality product, but also reduces costs and enhances productivity, whilst their argument is persuasive, they did not evaluate their findings so no underpinning evidence of improvement to performance or bottom line, can be seen by their case study work. The authors state that management must continually remind employees to engage in planning, checking and reviewing information in order to attain compliance, which is further reinforced by the Institute of Petroleum (2003).

Lousine et al. (2004) did, however, evaluate the findings of their survey work in a similar area, which suggests that safety can be improved through measurement, management and an integrated quality management system. They saw reduced employee claims, improved productivity, reduced employee turnover and a higher percentage of repeat customers. Nielsen et al. (2003) found that the implementation of an incident reporting scheme elicited a decline in the incidence of major incidents at a Danish metal plant, also stating management commitment to the scheme as one of the key success factors. Austin et al. (1996) found that applying a (safety) intervention early in a project resulted in a $10,000 saving due to early completion of the job, worker satisfaction was improved and management wanted the programme to continue after the study was complete. Brosseau et al. (2007) found that a systemic approach to the design and development of interventions improved the effectiveness of the intervention outcome, whilst Bryden & Hudson (2008) and Marsh et al. (1998) found that being in the upper stages of a safety maturity model served as a common goal when implementing a ‘hearts and minds’ worker engagement programme.

Minter (2003) found that worker productivity improved due to observation, so if management can create an atmosphere in which are treated as part of the team and are given attention and each team member is a valuable asset to the company, then workers will become motivated and empowered. Minter also states that an attentive worker is a safe worker, while Meldrum and Cameron’s (undated) research states that a focus on worker behaviour alone does not ensure a reduction in accidents and incidents, but that a more holistic worker engagement programme is necessary.

Zacharatos & Barling (2005) in their Shell case study working with oil and gas workers, found a positive relationship between high performance work systems and occupational safety performance, and that trust in management and perceived safety climate were found to be the mediating influences. Zohar & Luria (2005), using surveys and audits,

found that because organisations are social systems, it is necessary to make changes in all climates, for instance not just safety, but productivity, quality, environment etc in order to make change in the whole organisational culture. Cameron & Duff (2000) and Rasmussen et al. (2006) detail the importance of worker ownership of behaviour safety initiatives, advocating the need for top down commitment and employee participation in goal setting in order to improve the chances of success.

Research also points to the need for future work in considering the role of health and safety in investigating the relationship between safety culture and business performance. James, P. (2009) 'suggests' research provides no solutions in relation to how 'raising the profile' is achieved.

Holt & Scott (2011) state that 'understanding what needs to be achieved is crucial to the role of manager or leader'. They also state that 'these objectives may at times pull against one another for example when a product must be delivered but organisational change is also required'. It is this conflict between delivery and achieving health and safety change that causes tension and which highlights the importance of identifying the changes in order to ensure that change is made in the areas which will make the most difference, whilst minimising the impact to the delivery processes within the business. Again this is a critical and central element to the work of our project, since by placing health and safety at the centre of the organisational change, this tension can be lessened.

Holt & Scott (ibid) do not detail how an organisation can begin to 'understand what needs to be achieved'; however, our research has been designed to assist organisations with that 'understanding' process. This requirement to 'understand' also has to be considered with the requirements of the Financial Reporting Council (2010), which dictate that 'the board's role is to provide entrepreneurial leadership of the company within a framework of prudent and effective controls which enables risk to be assessed and managed. The board should set the company's strategic aims, ensure that the necessary financial and human resources are in place for the company to meet its objectives and review management performance. The board should set the company's values and standards and ensure that its obligations to its shareholders and others are understood and met'.

3.4 Role of National Culture and Identity within Safety

Hofstede (1984, 1991) conducted a highly influential study on work-based organisational and national culture at IBM: The Power Distance, Uncertainty Avoidance, Individualism

(Collectivism), Masculinity (Femininity) and long-term orientation which for many years was the only empirical research available.

In recent years however, the work of Hofstede has received some challenge from McSweeney (2002) and Spector et al. (2001). Despite this criticism, his work remained the most influential study conducted, with House (2001), updating the research to bring a more modern approach and make it more current with today's organisational models Hofstede (2005). In (2014) Minkov replicated Hofstede's early work, obtaining a close replication of his findings for uncertainty avoidance with strong face validity, internal reliability, and similar predictive properties to those of the original work; thus providing a validated answer to Hofstede's critics. Despite this more modern approach, there is still little research that has been conducted on the influence of national culture on the safety climate of an organisation, or on the safe or unsafe behavioural differences. We focus extensively on the challenges to the work of Hofstede in section 6.0 Discussion.

The work conducted by Mearns & Yule (2009) and building on the Hofstede (1984, 1991) and House (2001) found that Power Distance scores were more homogenous than would be expected according to the Hofstede data for those groups. Mearns & Yule's (ibid) work also showed clearly that Power Distance was a good indicator of risk taking behaviour and as a potentially significant influence on behaviour in the workplace.

Another predictor, according to Mearns (2009), is the commitment of corporate senior management, which is itself a reliable predictor of self-reported safe and unsafe behaviours. As perceptions about senior managers commitment deteriorates, workers seem to take more risk and break more rules. This relationship between behaviours and risk is not uniform between cultures however.

As perceptions regarding the commitment of the senior managers increase, the more trusted, and the more genuine concern that they show for the workers' safety, the propensity of workers to take risks and break rules decreases. Casey et al. (2015) indicates that this is exacerbated by the additional complexity presented by the increase in international trade and globalisation, which in turn is increasing the cultural diversity of the modern workforce, typically manifesting itself as multinational work teams performing their tasks under the management of foreign leadership.

Importantly for employers, migrant workers have been found to have a higher likelihood of experiencing safety incidents than non-migrant workers (Mearns & Yule 2009). Migrant workers can be defined as a person who is to be employed, is employed or has been

employed in a paid activity in a state of which he or she is not a national (OHCHR 2007) which is further supported by MacLay (2010) who defines a migrant as a multicultural workforce as a work group made up of person(s) with different cultural background working in another country that is not his or her country for several reasons.

Spangenbergen et al. (2003) conducted a study that provided a unique opportunity to measure workers of similar national backgrounds, working on the same tasks on the same project over a specified time period. Although Hofstede and others indicate that Norway and Sweden have similar profiles regarding Power Distance, this study indicated that the two national groups performed entirely differently. This was attributed to the differing levels of training, education, and planning as well as a different compensation system.

Johnson et al. (2003: 39-44) and Geller et al. (2006) state that:

> 'Directly reducing risk taking behaviour should help to prevent accidents'.

There is no underpinned evidence to support that statement and it can only be classified as supposition. Our project aims to provide evidence to support the clarification of which areas will reduce risk-taking behaviour, therefore improving health and safety performance.

Cameron et al. (2006) recommend a total safety management framework as a basis for improvement and evaluation. This does not help companies to identify the relevant elements and encourages only the introduction of a complete safety management framework. The introduction of such a framework if nothing were in place would be a slow, time and resource heavy commitment, with change being incremental and over a long period.

Our research proposal aims to provide companies with some key aspects that will offer tried and tested solutions, proven to make change, without the risk that they may focus on the wrong elements of a safety framework initially and see little or no effect for potentially significant investment of resources.

3.5 Ensuring Sustainable Organisational Change

Both researchers have left the company upon which the study was based following the death of the Chief Executive, to whom they both reported. The question of sustainability is important because often when the change agents have left an organisation which has undertaken significant change, the change reverts back to the pre-changed state.

Failure rates are high because organisations install new systems, processes or practices, but fail to implement the change fully – people are not sufficiently committed to the new ways of working. Miller (2004) reveals that to overcome these challenges and build a sustainable change capability the knowledge, skills and processes must be developed by people inside the organisation. Only when organisations learn new ways to implement change initiatives will they sustain them long enough to realise the benefits.

The dominant view suggests that change processes unfold in three phases, typically described as 'unfreeze-change-freeze'. First, leaders create a sense of urgency and seriously challenge existing ways of doing things. Then new processes and systems are introduced. Lastly, those changes are institutionalised Levesque (2005).

Vora (2013) discusses the three change stages as pillars of change consisting of enlightened leadership to provide change direction, great project management to manage technical aspects of change, and excellent talent management for implementation of the change.

Vora (ibid) also discusses that leadership is one of the critical components of initiating and sustaining organisational change. He states that successful transformation requires 70-90 percent leadership vs 10-30 percent management effort. Svensson and Wagner (2012) identified that sustainable business models need to be based on economic, social and environmental elements, so as to provide empirically-driven foundations for relevant business theory, while the planning, implementation and evaluation of sustainable business models evolves over time within companies and their supply chains, as well as in the marketplace and society Høgevold (2014).

This research project was developed with clear links back to:
1. Economic – a desire to survive in a recessional economy by expanding our client base into high risk, high reward markets such as nuclear and aviation.

2. Social – to provide a safer, more enjoyable and respectful workplace for our workers, to mitigate churn and embed training and development at all levels of the organisation, providing a stable and learning organisation.

3. Environmental – improving our environmental performance in both the context of the wider environmental impacts and also improving the working environment for our teams and workers, as well as for our sub-contractors and suppliers.

Cooper & Rousseau (1994) hypothesise that moving employees along the psychological contract continuum from intendedly negative to intendedly positive can only be done if the

nature of the psychological contract between the employer and employee has been kept and not broken. We built on the psychological contract by investing in our workforce in the areas of training, improved welfare, engagement with senior teams and continually and consistently immersing the workers in the behavioural safety programme.

These examples above represent pro-role behaviours and are positioned on the intendedly positive end of the psychological continuum, encouraging workers to enhance or maintain their roles.

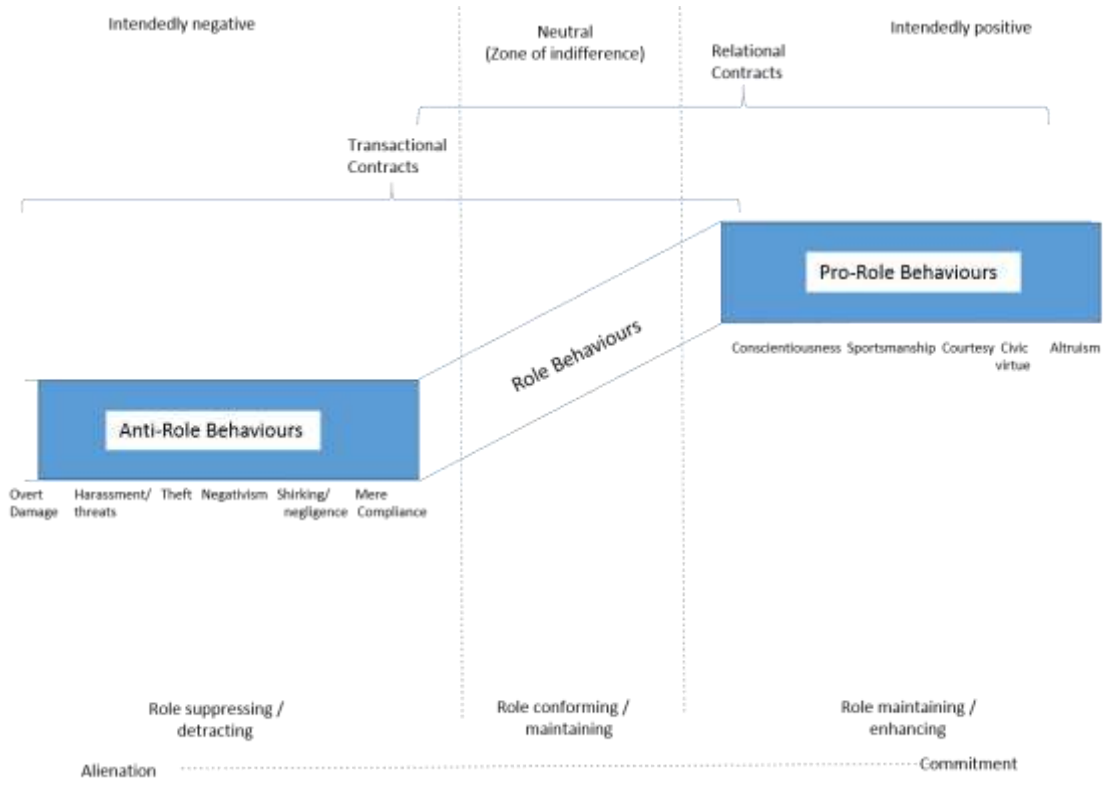


Figure 6 – Anti-role and Pro-role Behaviour (Cooper and Rousseau 1994: 111-133)

3.6 Employee / Employer Relationship / Employee Engagement

This research project considered the challenges presented when embedding and achieving long term sustainable organisational change. As action researchers, we developed an approach that ensured the continual involvement of employees at all levels. We worked with the workforce to find who the key influencing voices belonged. Kelley (2004) states that leadership is important, but the majority of work performed in organisations is a direct result of the contributions of followers. Effective followers have been characterised as acting with integrity based on their own set of beliefs (Lundin and

Lancaster 1990) while relationship-oriented theories of leadership position followers as critical contributors to the success of the organisation, Banutu-Gomez (2004).

In our project we worked with ththe followers to encourage and train them to own critical parts of the change programme. This ownership within the followers changed the wider workforce's perception that the Directors of the business were the owners of the change. These key voices became the owners – and also the advocates – of the change instead and they became responsible for ensuring this change was consistently applied on all sites. By using an internal audit team to measure compliance and to support the key voices, we were able to detach ourselves from being Directors 'doing it to' our business and create ownership of change at the levels responsible for implementing it, with a focus on supervisors as the key change agents. When supply cabin leaders and followers share a common (transformational) style, the co-influencing relationship between them should be at its strongest Hogg et al (2003).

When we were developing systems and processes, we worked hard to ensure that the right level of training was invested in the workers who were asked to own them. We wanted to make sure that they were comfortable with the rationale for change, as well as being clear about the link to business benefits and feeling confident about being able to execute the actions required of them.

Ownership was developed at all levels of the business, even in the lowest skill areas, where people were engaged in managing and reporting on the cleanliness and fitness for purpose of their own welfare facilities. This developed not only ownership, but respect for the new processes, because workers were able to see that when raising issues using the newly developed inspection sheets, they would get results. Their supervisors fixed issues, invested in welfare as required and, generally, standards increased – therefore not only maintaining but improving the psychological contract relationship between employer and employee.

Both researchers still have relationships with key individuals at manager and senior level in their old organisation, as well as with the professional consultant teams who operate independently of the business. Through discussions with those key individuals, it is clear that the changes put in place have been sustained. Health and safety remains a core value; Safety Leadership Teams are continuing each month with full staff engagement from supervisor up to Director level; innovation in health and safety remains a high priority, and investment in this area continues, along with ongoing investment in training for the organisation's workers.

Clients still remain happy with the way that the company delivers its major projects and the diversity of clients has not diminished. The Company has been successful in retaining all the accreditations and audits gained through the change process, evidencing that the systems and processes have remained in place and that the workers are compliant with them. Turnover has increased further, highlighting that the long term strategy for growth is still delivering results. Some of the organisation's professional teams have also confirmed that this culture continues to be supported at all levels of the organisation.

This is good evidence that the organisation has retained the strong culture of health and safety that was developed through the change project after both change agents have moved out of the business. The culture change work can be described as sustainable.

3.7 Stakeholders

In the last decade scholars have called for the creation of a new theory of the company or firm that could more accurately describe company behaviour by focusing on stakeholder relationships (Brenner and Cochran 1991; Donaldson and Preston 1995; Hosseini and Brenner 1992; Jones 1995; Wood 1991).

Freeman, (1984) states that firms should look for congruency or fit between the firm and its stakeholders, and should assess fit by identifying the effects that stakeholders have on the firm or that the firm has on the stakeholders, which categorises into the following areas: economic, technological, social, political, and managerial.

Work by Miles (1987) suggests that organisations that are attuned to their stakeholders and devote resources to 'manage' them are rewarded financially and socially for this behaviour, while Key (1999) considers understanding the reciprocal contractual rights and duties that organisations have with their different stakeholders to be central to creating a new theory of the firm.

Our stakeholders played an important part in the creation of a sustainable change methodology.

Over time we ensured we engaged all levels of our workforce in the change that we were delivering in the business while still protecting their highly relational psychological contracts. Pesqueux, (2005) states that as a 'theory of organisations', stakeholder theory helps to nourish a relational model of organisations.

We also engaged fully with our customers on a regular and individual basis to ensure that we were heading in a direction that supported their own long-term strategic goals. This

approach also enabled us to invest heavily in our change programme because we were certain that it would be in the interest of gaining more work.

We also invited our customers to speak at our monthly Safety Leadership Team meeting, where they discussed openly and directly with our teams, what was important to them in working with their contractors and specifically with us as a business. They talked about our performance in relation to our ability to win ongoing work with them and discussed our performance levels in comparison to our competitors.

This level of customer involvement had the effect of ensuring that all levels of management down to supervisor level heard directly about the positive impacts that our change project was having on our success and our ability to continually win work – which in a recession was a very important factor and helped to reinforce the positive impacts of the psychological contract between employers and employees.

3.8 Socio-Technical Systems

Many people now acknowledge that systems that are developed using a socio-technical approach are more likely to be acceptable to end users and to deliver real value to stakeholders. Socio-technical approaches can help the design of organisational structures and business processes as well as technical systems (Baxter 2011).

3.9 Conclusion

The literature provides a range of evidence as to the role of leadership, safety culture, and safety climate, but the degree of detail on how to achieve these aims is often lacking. This is a critical point for those within business, particularly senior leaders, who have limited time to read research-led literature. As Robens (1973) highlighted, it is imperative to the effective management of a company that the board makes sound decisions based on fact and underpinned evidence, and not on supposition or hearsay. Whilst this evidence-based approach should be based on internal knowledge it can equally apply to the wider literature, if that literature provides the evidence for effective improvement. However, if this wider literature provides little in the way of evidenced approaches it is likely to be ignored. It is therefore a central component of this research that a systematic approach of intervention is provided.

4.0 Moving from Iterations One and Two into the D Prof phases

4.1 Context

4.1.1 What had the organisation learnt?

After a seven year transformational change programme, the purpose of this D Prof project was to establish: 'What exactly are the critical elements to focus business effort on going forward?'. The business was fit and lean following *Iteration One* and *Iteration Two*, and it was important to ensure that continued effort would be undertaken in the most efficient and effective way and focused on the areas that would have the most impact.

The starting point for the business at the beginning of *Iteration One* was making a cultural shift and approaching change through a behavioural programme that made safety personal to each employee, and throughout the first and second iterations, behavioural safety became the driver for change within the business.

The co-researchers had been immersed in this transformation programme, as insider researchers and with the context of the strategic and operational setting that executives confront in their managerial lives. Rynes et al. (1999) the researchers undertook the research project as insiders of their own organisation. Gosling and Ashton (1994); Coughlan et al (2004) with the research aim being to generate actionable knowledge to improve the business. Their objectives were defined as: lowering the accident frequency rate and increasing turnover and profitability, as well as getting the business fit for rail and nuclear projects.

The business 'needed to consider how it was spending its time in ''action' or in 'activity' (Bryant 2011). Once it had made the most significant improvements required to ensure a number one position in its specialist market place, future changes only needed to be small and incremental.

The business was also more adept at making change than it was some five years previously. The workforce was used to changes and they were made quickly with little or no emotional disturbance to the employees' psychological contracts and it was important to retain the culture of an agile, changing and improving organisation.

A well-developed and business-specific culture into which managers and employees are thoroughly socialised will lead to stronger organisational commitment, more efficient

performance and generally higher productivity (Deal & Kennedy 1982; Graves 1986; Hamden-Turner 1990).

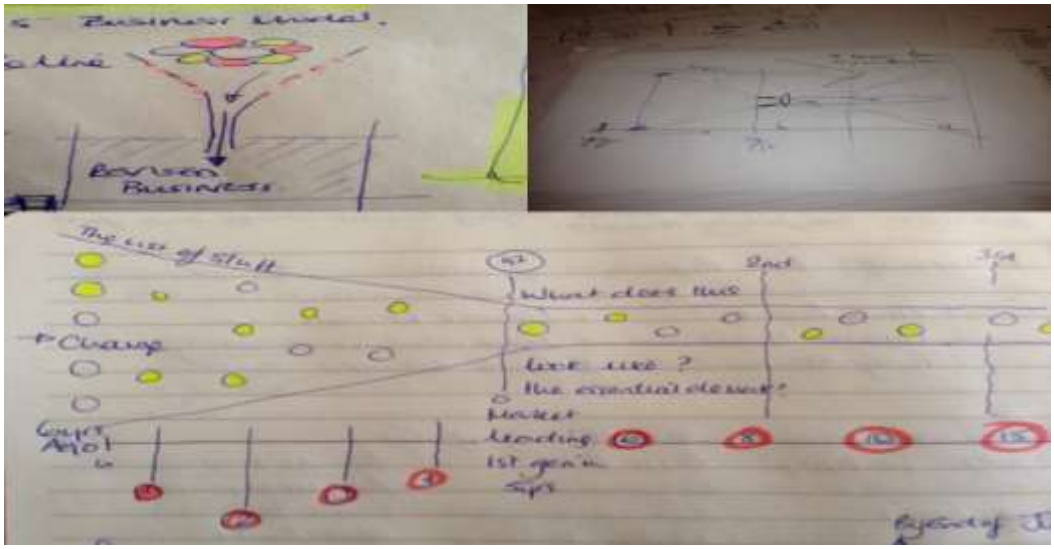


Figure 7 – Sketch Iterations of the Identification of Elements and Filtration

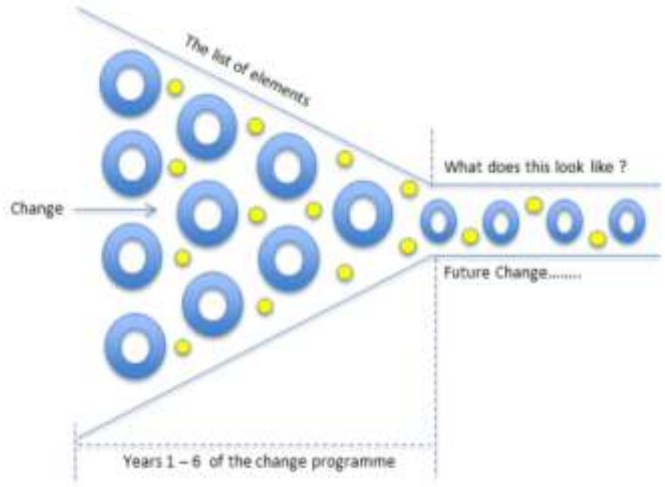


Figure 8 – Resultant Elemental Model for a Long Term Change Programme

4.2 The Focus on Innovation and Accident Frequency Rate

In order to further reduce the Accident Frequency Rate and to continue our journey in prevention of a fatality, it was important that we establish what the critical elements were and what was required for business continuity over the next five years (*Figures 7 and 8).*

Business continuity required us to make our message clear to the industry: that we were setting ourselves up differently from our competitors because we were competing on workforce safety performance and value for money (not margins), and that we were

leading innovation. We had to make our brand positioning unambiguous and communicate it effectively.

To build the brand we had to be more innovative in bidding, which drove tangible savings in programme time and/or prime cost and allowed us to retain or even grow our margins over our competitors even though this wasn't an area of focus. Like the rest of the industry there was a significant potential for reducing waste in our business and we needed to identify and remove it.

To put substance behind our brand promises we needed to provide real evidence that we were more innovative than any of our competitors. This needed to emerge in our responses to our clients in measurable time, cost and quality advantages over our competition.

We needed to create a desire in the minds of the best industry consultants to work with us because we were more innovative and we would enhance their chance of being successful. To achieve this, we also needed to create an internal environment of thinking and intelligence to develop applied benefits for the client and ourselves. We had to create demand and act as an attractor.

If UK construction – based on the industry average – was placed on the behavioural safety triangle *(Figure 9)* it would nestle one up from the bottom. However, there are pockets of excellence and that should be noted. These include our business in 2012, Terminal 5 Heathrow, HSE-RR516 (2006) and the 2012 Olympic Park HSE-RR942 (2012).

It is important to understand that in analysing the health and safety performance of our business (by man hours worked) as we were, we were measuring the best in the industry and becoming even better. The UK industry average Accident Frequency Rate stood at 0.6 in 2006/2007 while our AFR was 1.6.

In the years 2007/8 Iteration One, we had over 48 reportable accidents but in 2013 we had only seven reportable accidents. (It should be noted that at one point in the intervening years our reporting process changed slightly as a result of the wider change programme). Throughout this period our reporting standards had increased and we were now aware of every near-miss or dangerous occurrence that happens within our business which was a notable achievement. In 2013, our statistics, changed and showed a marked reduction to an accident frequency rate (AFR) of 0.22, representative of the transparency

and depth in near miss and AFR results.The business was outperforming the industry average. The near miss reporting showed a 100% increase in the period.

Figure 9 – Behavioural Safety Triangle (Adapted from the Latham Report 1994)

The results from the above synopsis of safety and cultural change were evident in a review of the business over the seven years.

As the construction industry continued to experience a period of austerity, our management strategy had focussed on innovation, reliability and consistency. We had identified and delivered improved cost and value for our clients and ensured that we had maintained the highest standards of delivery across the areas of health and safety, environmental management and corporate responsibility.

To move behaviours and outcomes from ‘business as usual’ to exceptional world-class performance, we had been delivering a transformational change programme that focussed on driving business excellence using the lenses of Safety, Quality and Performance.

The business now considers itself a ‘learning organisation’ as defined by Watkins and Marsick (2006) and this philosophy helped us improve our best practice, knowledge capture, business process improvements and operational effectiveness. Fiol & Lyles (1985) state that learning does not imply change and that there are different levels of learning, each having a different impact on the strategic management of a company. The business has shown that change and learning have been embedded, with examples of our success in this respect including the creation of a logistics and consolidation centre and a design and manufacturing centre, which supports and enables our continual drive towards the use of prefabricated materials delivered on a just-in-time basis to reduce lead-times and waste associated with traditional site-based project delivery.

Commentary within our industry, some of which is detailed below would lead us to the conclusion that we are on the correct path to sustainability:

> ‘Government looking at viability of more offsite construction/prefabrication, mobile communications, robotics etc. to reduce the need for labour on construction sites.’ Construction Skills Network (2010: 46, ref 89).

> ‘There is likely to be an increase in requirement for Innovative Methods of Construction, with a subsequent increase in training needs, reduction in demand for some trades on-site but increase of others in factories (e.g. creation of pre-fabrication), and more computer aided design. The use of new materials may also have an impact of industry requirements, in terms of training and development, and increased specialism in off-site activities’. Construction Skills (2010: 40, ref 52)

> ‘Behavioural change i.e. people innovation – is critical for the sector. The consumer needs to understand how to use innovative products and realise the benefits of new and innovative processes and working practices. However, the essential skills required to support the growth of innovative construction products and techniques, and to work with modern methods of construction, need to be identified and developed’. Construction Skills (2010: 40, ref 56)

We continually reviewed performance on every project to ensure ongoing improvement across our businesses through monthly contract reviews, with the teams presenting their projects to the board every month. We had to continue to encourage clients and our staff to give us feedback on topics as diverse as value engineering and design, workforce competence, and health, safety and environmental results. Having created the environment for people to have ‘comfort in speaking up’ we had to listen.

> ‘When things go wrong, employees usually have a good idea of how to fix them. You need to create a state in which they’ve got the courage to do something. You want to build organisations where everyone sees provocation as one of their essential roles.’ Sittenfeld (1998: 66).

Our people were at the forefront of their field. Their clear leadership in health, safety, quality, environmental sustainability and corporate responsibility continues to differentiate the business from the competition. Working closely with our project teams at the earliest possible stage helped to craft practical solutions that enhanced project performance. We

also had to find a way to, develop and retain new recruits into the sector to provide a sustainable base of resources.

4.3 The Need for Continued Change Management

New entrants to the industry lack core skills such as business enterprise and communication, as well as fundamental English, Maths and Information and Communication Technology (ICT) skills. With more computerised diagnostics systems anticipated within the industry in the future, the need for a solid base in ICT is becoming increasingly important. Tedia (2012) found there is substantial evidence that ICT promotes a quality education and effective teaching- learning atmosphere for both a student and teacher.

The construction industry trades have historically, along with the Army, been chosen by more practical workers with little desire to continue academic study. Both the Army and the construction industry tend to have to start the development and moulding of basic life skills in young recruits. Employers report that today's school leavers lack skills considered essential to job success Casner-Lotto and Barrington (2006). It has been suggested that in the last decade people haven't had the same exposure to traditional values, which previous generations did, so as a businesses and as an industry, it is necessary for employers to take on a role of basic training and development of moral fibre.

In the view of the co-researchers the construction industry and the business community at large have to start with training and development in the 'core values' of courage, integrity, respect, loyalty, discipline and commitment. People have to be prepared to enter this and any business because:

Heffernan (2011) found that assimilation into the cultural norms of an organisation is considered to be a profound experience. The first step of conformity is the choice to enter a particular profession or organisation.

We taught the workforce to belong to the organisation as opposed to feeling they had to be obedient to their 'Black Hats'. We needed to inculcate values and beliefs and a way of being. Under our approach, it was about becoming one with the business.

We were striving for the individual 'Black Hats' to have reached a point of 'neuroplasticity'; to respond to intrinsic stimuli by reorganising their own structure, function and connections. Neuroplasticity can be described at many levels, from systems to behaviour

Cramer et al. (2011), with the ability to change and grow according to experiences, which effectively rewires people, teaches them lessons and helps them not to make the same mistakes as they may have made in the past. They need to develop an authenticity and we as an organisation needed to be encouraging, authentic leaders so that their personal values and the values of the organisation were aligned.

To retain our position as one of the leading specialists in our sectors, we had to refine our performance further to secure increased efficiency, productivity and be aware of the changes technology is creating in society and in new business opportunities. The construction industry is populated with engineers who will adapt technological advances to meet the environmental and business requirements so we had to focus considerable energy on this area in order to stay ahead.

We worked on directly developing new products that helped us win more work and not rely solely on the smart ideas emerging from our supply chains, which could be shared amongst our competitors. And if we were perceived as innovators by the supply chain they would prefer to work with us than our competition. We had to be creative and innovative whilst ensuring that our intellectual property remained protected.

The results of this D Prof project now provide the opportunity for other stakeholders, clients and the wider construction industry to use our model for delivering change within their own businesses. Many may not have access to the significant resources required to make business change on a large scale, and therefore understanding which elements are critical becomes important when committing valuable and scarce resources (time-money).

The deliverables for the project were:

- A stand back review.
- A strategic look forward.
- A potential template for industry to follow.

‘What elements are required to achieve sustainable business change using health and safety as a lens’?

We have reported here in the prescribed academic format as detailed by Middlesex University. The academic report has a fixed design research format to suit academic research publication standards. A further report will be generated from the research conducted in the form of a technical report for use by non-academic audiences.

Together, these reports will provide an original contribution to practice by providing a route map to business change established by a review of a multi-million pound change management programme, which covered a range of areas.

We want them to encourage dissemination of our learning to a wider and work influencing audience and be used by other businesses or enterprises as appropriate to their individual change aspirations.

We will be exploring the ways in which ‘a researchers’ involvement with a particular study influences, acts upon and informs the research’. (Nightingale & Crombie 1999)

There has been no political pressure from the sponsoring organisation in defining the methodology of the research project with respect to any of the following areas:

- Selection of research focus
- Selection of research design
- Granting of access
- Publication of findings
- Use made by sponsor of findings

5.0 Methodology

We sought to identify what had been the change management areas or area which had been key to the staff, clients and stakeholders over the period of seven years from both an internal and external perspective through both a qualitative and quantitative survey method.

5.1 Epistemology & Methodological Approach

As part of the D Prof process the joint researchers have been able to articulate values, areas of expertise and specialisms as well as reflecting on the learning journey to understand our own habitus. Within DPS 4520 we recognised our separate ontologies which then led to our epistemology positioning in which it was determined that we were positioned at opposite ends of the spectrum for positivism and constructivism, as well as Pragmatism and the Actor Approach (Arbnor & Bjerke 2009).

Such a divergent positioning could have provided considerable difficulty within the research approach. As such, examination of Arbnor & Bjerke (2009) on operating approaches and paradigms within collaborative work was explored.

Our opposing operating approaches provided coverage of the 'systems approach' (Arbnor & Bjerke 2009) as both opposing styles overlap in the middle at 'systems approach'. This position has benefitted us in building new models of reality and developing new systems and interventions whilst carrying out the change programme in the business over the past seven years. As a result of engaging with a 'systems approach' we had been successful in changing all the key systems in the business because the work and approach has also been informed by both the 'analytical' and/or the 'actors' approach.

We then established a new working paradigm for the research project based on Arbnor & Bjerke (2009: 235-236) in which both approaches were utilised in a dual exploration of the project.

Gabrielsson (2009) writes in relation to leadership that:

> 'It is not enough just to understand one's leadership style or the style of others in a leadership team; one must also exercise style flex that can enable the parties to function in a mutually-beneficial situation congruent with the needs of the individuals and the organisation'.

This statement has been redirected to the research paradigm and is core to this research process in which both qualitative and quantitative paradigms have been employed

As joint researchers it was a critical baseline to establish an agreed methodological approach. As novice researchers, a fundamental review of research approaches was employed.

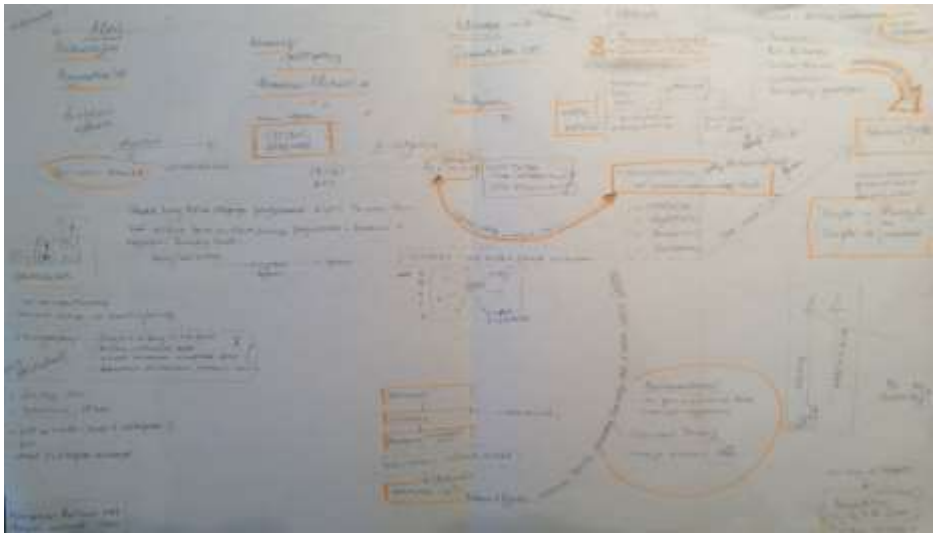


Figure 10 – Philosophical Positions – Methodologies & Methods Explored

Our initial view was that the project would be framed by 'Phenomenological' (Husserl 1931/2002; Moran 2000) and 'Grounded Theory' (Charmaz 2006; Glaser 1992) (*Appendix 1) (Figure 10).*

Further research established that *'*Grounded Theory' was unsuitable for our needs and for the needs of the research, due to the extensive number of re-visits required to focus down the research material. It became apparent that 'Survey Based Research' (Easterby-Smith et al. 2002) would be a more suitable alternative methodology. However, such survey-based activity should still be based within the qualitative and quantitative approaches. As such methodologically, a mixed methods approach was adopted in order to gain both a breadth and depth of data (Robson 2002). More specifically, it was also established that to get more meaningful results in 'mixed method interviews', structured and unstructured questions should be employed as opposed to a pure phenomenological approach.

We established that due to the mixed audience of site-based individuals, that is, managers from mixed professional roles, as well as senior client representatives, it would be necessary and advantageous to the research outcomes to utilise a multi-strategy mixed method design (Tashakkori &Teddlie 2003; Creswell, 2002). This would enable us to harness the power and depth of qualitative and quantitative data and review from two differing philosophical positions.

A mixed method interview approach also suited our purpose as 'it seeks essentially to describe rather than explain, and to start from a perspective free from hypothesis or pre-conceptions' (Husserl 1970). We were starting the project without pre-conceptions or bias toward the end results. We were emphasising the importance of making clear how interpretations and meanings were placed on findings, as well as making the research visible in the frame of the research as an interested and subjective actor rather than a detached and impartial observer (Plummer 1983; Stanley & Wise 1993).

Mixed method research enables a variety of methods to be utilised including interviews and focus meetings. It provides minimum structure and maximum depth. Lester (1999) discusses balancing the importance of maintaining focus on the research issues, whilst avoiding undue influence by us as insider researchers.

Elliot (1987: 149-169) points out that:

> 'In developing our understanding we have to risk our values and beliefs. As we open ourselves to the things we seek to understand they will force us to become aware of the problematic pre-judgements and to criticise them in the light of new meanings'.

It is this 'understanding' of the elements required to achieve sustainable business change through the lens of health and safety which will led us to look at the norms in a different way and to challenge them.

This process of underpinned research will enable companies choosing to utilise our research to 'understand' the impact that making those changes identified as 'important elements' could make to their businesses if they become aware of the pre-judgements that they may have made and see them in the light of 'new meanings' or in other words our research findings.

Our main philosophical theoretical position whilst delivering the business change programme has been situated in 'advocacy /participatory' and 'pragmatism' fittingly close to the research approach outlined by Robson (2002) in which approaches that 'work' within the field are advocated. As dual researchers we were situated in that of 'constructivism' (Michelle) and 'positivism' (Aran).

Easterby-Smith (2002: 30) states that 'human action arises from the sense that people make of different situations, rather than as a direct response to external stimuli'.

Our natural contrasting stances allowed us to hold different views between social constructionist research and positivist research.

In addition to positioning our approach we were cognisant of Creswell (2003) who suggests that in areas where little is known, that a period of theory construction be employed. To this end assumptions about the situation or the hypothesis were suspended. The research data was collected and resulting theory grew out of the research as we formulated and analysed it.

It should be noted that consideration was given to a range of other methodological approaches in relation to the project needs. A number of research methods had been used previously in the business to effect business change and we discounted methods with which the participants would be overly familiar. These methods included Soft Systems, which had been used on a regular and recurring basis as well as case study research – which is also conducted on a regular basis in the business as a day-to-day research and developmental method.

Research methods which were considered and found to be unsuitable were hermeneutics, phenomenological research and grounded theory – the latter of which came close to meeting the research requirements but did not quite fit specifically because of the number of return visits required in narrowing down the outcome, therefore presenting un-manageable constraints on our ability to perform those return visits in a timely manner whilst also doing our day job. We also considered and discounted experimental research and ethnography as unsuitable.

5.2 Theory Construction

Creswell (2003) discusses the necessary processes involved in research and, as highlighted above, points to periods of theory construction and theory testing. We commenced our review of knowledge and information by holding a number of working sessions to establish all of the previous change elements conducted in the business during the past six years. We considered the seven elements *(Figure 11)* of the business and collated the various change areas under these headings:

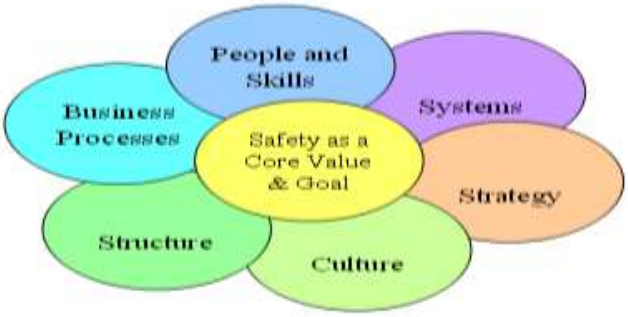


Figure 11 – Seven Key Business Areas (Adapted from McKinsey Seven S' Model)

The sheet entitled *Lay Up – 9 August 2011: Review of Topic and Requirements (Figure 12) (Appendix 2)* documents our debate regarding the title, and the key words required to make that title meet our criteria and that of an academic research piece. We then moved on to the question 'what does it do?'. We established that the research delivered also to be focused and real, meaning that it needed to answer a valid and unanswered question; it needed not just to have academic standing but be worthwhile and useable for all; it had to be industry and business credible. The project also had to underpin future change in the sponsoring business and to support its future needs. In the work conducted to date we are comfortable that all of those criteria have been fulfilled.

We then mapped out what has been achieved so far in the sponsoring business change programme. Once all of the areas had been catalogued we collected them into our own new seven key headings *(Table 14)*, representing the seven key areas of the sponsoring business, to form a simple list.

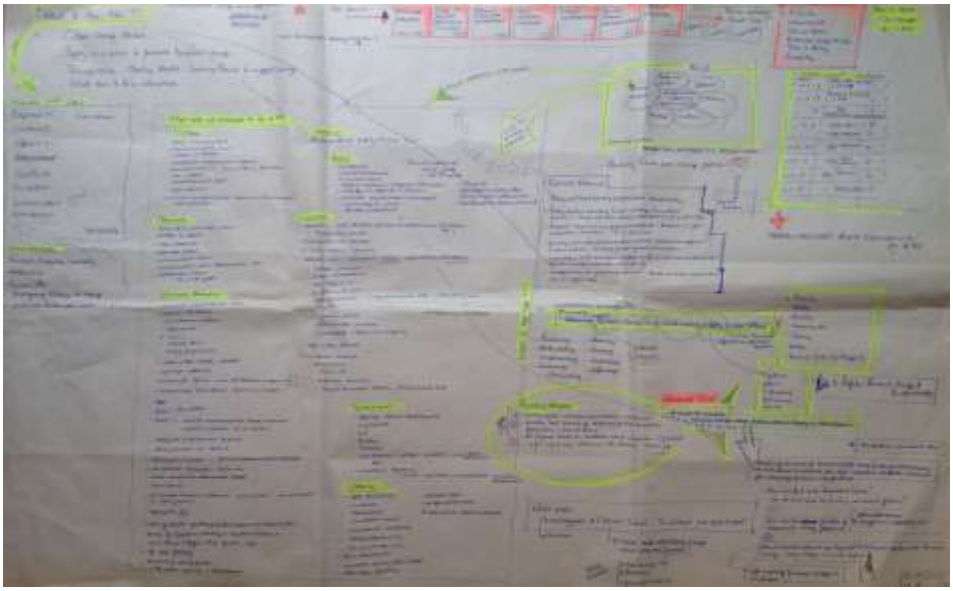


Figure 12 – Lay Up – 9 August 2011: Review of Topic and Requirements

The sheet below marked *Change Implementations at Group (Table 14)* was the result of this review and it created the areas of: 1) Systems, 2) Processes, 3) Business Readiness, 4) Behaviours, 5) People, 6) Culture and 7) Safety

Table 14 – Change Implementations at Group

Change Implementations at Group
Systems • Safety Management System (SMS/SafetyNet) • Environmental Management • Carbon Capture • Embedded and Productive Carbon • Accreditations: 14001, 18001, BES6001 • HAV Meters • Masternaut / CO_2 • Self Service • Consolidation Centre – Demand Fulfilment – Restructure
Processes • RFID tags / Assetagz management • Letters of Appointment • Web Ordering • Kanban Stores • Consignment Stock • Supply Chain Management – Frameworks – MOT • Learning World   ○ 1% of UK NVQs

Business Readiness
• Corporate Manslaughter Training
• Vehicle Car Policy
• Occupational Health Systems
• Dramanon
• Senior Leaders Team meetings
• Director Tours
• 31 Day Programme
• Safety Pre-Start Launch
• Supplier Grading
• Modular Build – into IBP Business Model – JV
• Outsourcing HR offshore – back to line management
• Quality Management System rewritten
• Environmental Management System
  ○ Waste Management/Measurement
  ○ Waste per capita as a Metric
• Targets and Objectives Setting
• Development of People
• Training / Layer – Train/Implement/Train/Freshen
• Increased Turnover – Bottom Line
• Additional Competent and Qualified Staff

- Succession
- Extended Offering – New Sectors – New Clients (Only 2 clients When Joined)
- Developed Group Brand
- Introduction Of Digital Prototyping Techniques Including Visualisation
- Design Of Logistics Strategy And Implementation
- Last Planner / Work Flow / Production Manager
- Re-bar Factory
- Following Institute of Directors Guidelines
- CITB grant recovery – £300k/annum

Behaviours

- Behaviour-based safety culture (7yrs)

People

- GP Service
- Health Screening
- E2 Language
- Safety Critical Worker Medicals
- Walk-In Service At Euston
- Improved Recruitment Retention
- Employer Of Choice
- Reward Strategies
- Two Management Strategies
    - Blue Collar
    - White Collar
- Templates
- Redundancy Matrix Training
- Recruitment Matrix Training
- Human Capital Report (Annual)

Culture

- Diversity – CIPD Awards, Women in Construction (External ref)
- Temperature Checks
- Sustainability Awards
- Gloves, Glasses, Helmets
- Brand Management – Internal / External – Vision, Reputation / Mission
    - Safety Challenge
    - Real Apprentices
    - Group Brochure
    - Corporate Brochure x2
    - Building Lives – Relationships external – Reputational
    - Women in Property
    - Safety Latest
    - Westminster College
    - Calendar (Profile) Charity
- The website – revised
- Customer surveys
- Resources
- Timeline
- Director Clinics

• Drug & Alcohol Testing – Random / With Cause
Safety • AFR Reduction • Culture • Reporting • Lowered Claims • Insurances Lowered • Transparency • Accountability • Restructure • Better Qualifications For Staff • Daily Task Briefing • Welfare Standards • Method Statement / Risk Assessment Compliance • Visibility of safety messages

In section 5.1 and in this section the need for theory construction phases to be implemented is advocated. With hindsight we recognise that as researchers we wanted or indeed needed a sense of clarity to our work and as such we attempted to establish a working title for the research. We now recognise that it was too early to put a title in place, However it is pertinent to point out that it did assist us in focusing the research thinking and planning to a specific area. To illustrate this point there were three working titles established at this early point in the process (see bottom right of the sheet shown above dated 9th August 2011 and detailed below):

- A review of our model for business change using sustainability and safety as core values to evaluate the most expedient and affective elements for achieving business change faster

- How has the perception of 'the sponsoring company' stakeholder groups changed since undertaking the behavioural change programme?

- What elements are required to achieve sustainable business change using safety as a core value?

Having identified the above range of change initiatives that have been delivered during the past seven years, these became the 'OUTPUTS' from the change programme. We then established a list of the key areas by headings 1-7(*Table 15*).

To facilitate and focus the attention on the data, and distil the information for surveying, we established three headings/passes, and distilled through the 'three-pass' process as follows: In the first pass we identified the seven areas from (*Table 15)*. In the second pass,

by reviewing the headings we amalgamated ‘system’ and ‘process’ and ‘behaviours’ into culture. Having further consideration to the amount of data to collate and the fact that the business readiness and system and process had been driven by safety in the third pass, we duly merged these into safety. This made three key headings of People, Safety and Culture as our key areas of focus and these areas became the ‘INPUTS’ for the research.

We colour coded the key elements into, 1) **People**=Green, 2) **Culture**=Yellow, 3) **Safety**=Turquoise this colour code remains throughout the method and findings for clarity.

Table 15A – Step Down; People, Safety, Culture

First Pass	Second Pass	Final Pass
1)Systems		
2)Processes		
3)Business Readiness	1)Business Readiness	
4)Behaviours		
7)People	2)People	1)People
6)Culture	3)Culture & Behaviours Systems & Processes	2)Culture
7)Safety	4)Safety	3)Safety, Business readiness Systems & Processes

This resulted in the three main heading areas of People-Culture-Safety that has been used throughout this study. In condensing the headings from seven to three, we considered the size and complexity of the project we would undertake, and the effect that such a wide coding scheme might have on the possible success of the research outcome.

These three headings informed our thinking following the initial working session, and we started to consider the chronological and causal links in the work previously undertaken at the sponsoring business. We then process-mapped and time-lined them *(Appendix 3) (Figure 13).*

Figure 13 – Process Map Time Line

After reviewing the three areas People-Culture-Safety, we proceeded to compare them with other key models to test the validity of taking this approach. Focusing on these three particular areas, we were able to draw parallels with Geller (1994) who puts forward a safety model distinguishing three dynamic and interactive factors, namely person, behaviour, and environment. Geller (1997) includes this safety triad and recognises the dynamic and interactive relationship between the three elements. As a result we determined that our positioning of our research work to date and plans for its future direction was supported by existing research within the field, which would both validate and underpin the project.

5.3 Reflection on our Model Compared To Current Knowledge in the Field

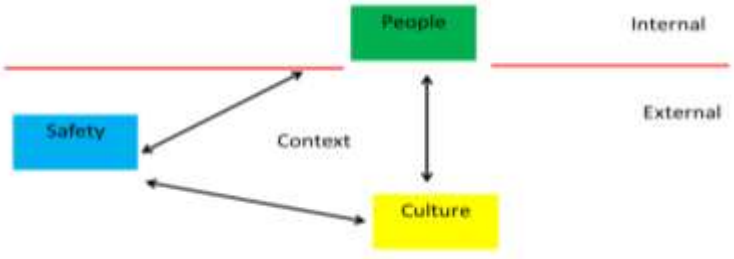
This positioning was further supported by the work of Bandura, A (1977 a,b) and the reciprocal determinism model, which was later adapted by Cooper et al. (1996); Cooper (1996 1997 a b), to reflect the concept of safety culture, leads us more to our own particular data sets and triangulation. These findings were followed by Grote et al. (2000) who presented a socio-technical model of safety culture that links the safety management system and safety culture to the general organisational design.

Cooper (2000) argued that organisational culture is the product of multiple goal-directed interactions between people, jobs, and the organisation, and presented a model that recognises the presence of an interactive or reciprocal relationship between psychological, situational, and behavioural factors.

Cooper (2000) contains three elements that encompass subjective internal psychological factors, observable ongoing safety-related behaviours and objective situational features.

These elements directly linked to defining our question sets with, structured and unstructured questions and view across people, safety and culture while considering both an internal and external perspective (*Figure 14).*

Objective Audit, quantatattive sampling, internal questionnaire.
Behavioural Sampling, external observational factors, workshops, interviews.
Perceptual Audit, external interviews and questionnaire *(Figure 15).*



1) **People**=Green, 2) **Culture**=Yellow, 3)**Safety**=Turquoise

Figure 14 – Our Basic Model

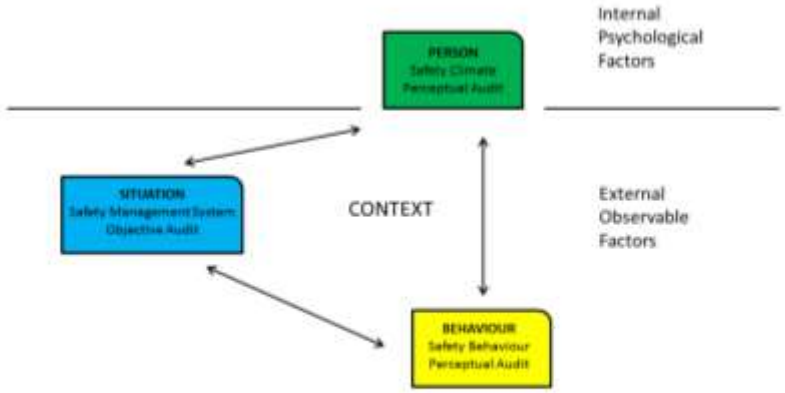


Figure 15 – Recreated – Reciprocal Safety Culture Model (Cooper 2000)

By incorporating safety climate, safety systems and behaviour-based safety, which built upon work by Cooper (2000), Marosszeky (2005) and Neal et al. (2000), the conceptual model and our practically implemented model of construction safety culture lead us to consider that we should:

> ‘Collectively recognise the presence of interactive relationships between psychological and perceived, environmental and situational and behavioural constructs, having the potential to analyse safety culture as the three constructs

can be measured independently or in combination on any construction site' Choudhry et al. (2007 207-212).

Cooper (2000) states that:

> 'Thinking of the measurement of safety culture in these terms (safety climate, safety systems and behaviour-based safety), therefore, provides an organising framework to assist in on-going practical assessments and analyses, with which the holistic, multi-faceted nature of the safety culture construct can be more fully examined in depth'.

Cooper (2000) also states that:

> 'The reciprocal framework has the potential to provide organisations with a common frame of reference for the development of 'benchmarking' partnerships with other business units or organisations. This latter point may be particularly important to industries where there is substantial use of specialist sub-contractors (e.g. construction), as people from different organisations will be able to communicate in the same language'.

Choudhry et al. (2007: 207-212) state that:

> 'Safety culture could be defined as: the product of individual and group behaviours, attitudes, norms and values, perceptions, and thoughts that determine the commitment, style and proficiency of, an organisation's system and how its personnel act and react in terms of the company's on-going safety performance in construction site environments'.

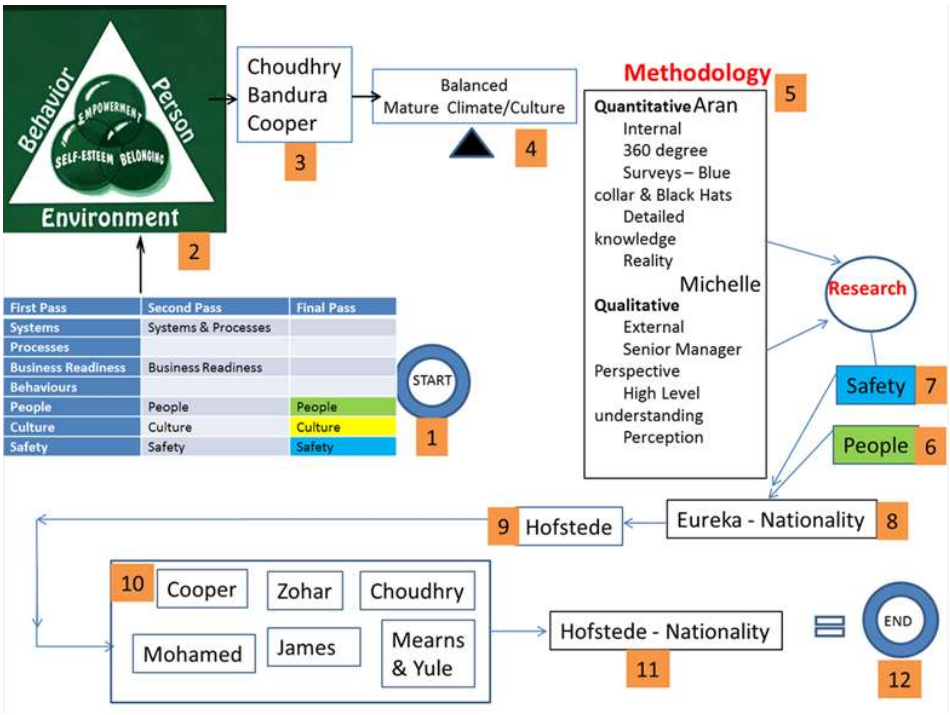


Figure 16 – A – Summary of Route Map to D Prof

5.4 Data Collection

The data collection methods we used were designed to reflect the 'multi strategy design' and required the collection of substantial amounts of both qualitative and quantitative data to provide the project outcomes; specifically the use of 'concurrent triangulation' where qualitative and quantitative methods are used separately, independently and concurrently. Once collection was complete, results were compared to assess their convergence.

We recognise that there are benefits and risks to using a multi-strategy design, the key risk being the skills and competencies of the researcher to undertake such a complex design method. In our case, a multi-strategy design plays to both our strengths in that we naturally lean toward opposing research methods, making both viable and appropriate. The other key benefits of a multi-strategy design according to Bryman (2006a) are:

- Triangulation
- Completeness
- Offsetting weakness and providing stronger inferences
- Answering different research questions
- Ability to deal with complex phenomena and situations
- Explaining findings
- Illustration of data

We conducted three types of data collection comprising:

- Method One – One-to-one interviews using qualitative data collection
- Method Two – Two facilitated workshops using qualitative data collection
- Method Three – A large scale structured survey using quantitative data collection

We designed a structured approach to the data that was included in the interview, this allowed for easier analysis and greater comparability of the data provided.

5.5 Constructing the Questions

Qualitiative Questions

We developed a series of four structured and open questions based on People–Safety-Culture, which the interviewer was tasked with asking the interviewees, and around which the interviews and workshops were facilitated.

These questions were designed to pick up on the themes detailed in the *Change Implementations at Group* Sheet *(Table 14)* identified earlier while focusing in on the areas of People, Safety and Culture. In so doing we were seeking to use health and safety as a way of establishing which elements of the change process were required to achieve sustainable business change.

The questionnaire consisted of a structured approach. The interviews and workshop also consisted of both a structured element and an open format to enable the candidates to discuss freely the topic areas. To avoid the issue of the response affect occurring we sourced an independent third party interviewer and facilitator who was detached from the business to conduct the interviews and workshops. This is predominantly because we were insiders and the participants in the workshop are all line managed either directly or indirectly by us.

The interviewees are all known to us in our role as insider researchers and it would therefore be inappropriate for us to conduct the interviews – the likelihood of experiencing the ‘response affect’ Bradburn,N.M.et al (1980) would be high if we were the interviewers or facilitators.

The use of a third party impartial interviewer was proven to be a wise decision, as once the dataset was coded and analysed, both of our names were included in the top cumulative 25% of the most frequently used words, ‘Aran’ in the top 14% of cumulative occurrences and ‘Michelle’ in the top 17% of cumulative occurrences. This showed us

clearly that we are influential in the business as Directors, and also too close to the research subjects to conduct the interviews ourselves whilst avoiding the response affect.

The interviewer/facilitator was directed to establish a good level of rapport and empathy, which would be critical to us gaining depth of information, particularly when investigating issues where the participant had a strong personal stake. This approach is connected to mixed method research and the research was conducted using a panoply of methods which included one-to-one interviews, comprising in part structured questions and free flowing conversation.

We also utilised the outputs from a structured focus meeting/workshop that was facilitated by an external resource using pre-prepared questions provided by us as well as free flowing conversation.

The questions were structured as follows

Q1 – GENERAL – Constraints or Enablers

In relation to the pre-briefing information issued to you, do you have any positive or negative experiences of any of these constraints or enablers, and which ones do you consider have the most impact over company and individual health and safety performance?

Q2 – PEOPLE

Reflecting on your experiences of the Group, what impact has the training and development of the staff and workforce had on their relationship with health and safety, and what positive or negative changes have you noticed in company performance generally as a result during the past six years? Please identify any specific skills or knowledge areas which you feel may have contributed to those changes.

Q3 – SAFETY

Considering safety management in the Group, which elements do you believe helped facilitate an improved HSE systems, processes and procedures environment, and which of those improvements have made the most significant difference to safety performance in the past six years – and has it been communicated?

Q4 – CULTURE

Thinking about your own expectations of company culture, how do you see that the culture in the Group has changed over the past six years? If it has, what are the values that have helped to change this culture – and has this been communicated?

After developing the structured questions, we drafted a project briefing information sheet for both the workshop participants and for the interviewees, to refresh their understanding of the considerable volume of change which they had been part of over the preceding seven year period.

We then briefed the facilitator using two levels of questioning around each structured question, to establish a deeper level interrogation (*Table 16*).

Table 16 – Interviewer/Facilitator's sheet

Qu. 1. Constraining / Enabling	1.1 Most impact	
	1.2 Positive experiences	1.2.1 Description of experience
		1.2.2 Factors influencing experience
	1.3 Negative experiences	1.3.1 Description of experience
		1.3.2 Factors influencing experience
Qu. 2 Personal Development	2.1 Personal expectations	
	2.2 Comment on specific knowledge	
	2.3 Identify specific skills	
	2.4 Comment on transfer of skills or knowledge	
	2.5 Impact/changes	2.5.1 Positive
	2.6 Impact/changes	2.5.2 Negative
Qu. 3 Safety Management	3.1 Procedures	3.1.1 Daily Task Briefings / Method Statements
		3.1.2 SMS
	3.2 Communication – information	3.2.1 Videos: Induction etc.
	3.3 Safety Management	3.3.1 Behavioural safety
		3.3.2 Training & development / CS106 Competency Matrix and Training Plan
	3.4 Layered training – Process	3.4.1 Continuous improvement NVQ, SSSTS, SMSTS, other
		3.4.2 Learning from near misses – Safety Leadership Team meetings
		3.4.3 Charge Hand demonstration

Qu. 4 Culture	4.1 Communication	4.1.1 Values
	4.2 Transparency	4.2.1 Clarity of Expectation
		4.2.2 Trust
		4.2.3 Leadership
		4.2.4 Integrity

The structured questions were followed by open dialogue in both the interviews and in the workshops, enabling the interviewees and the workshop delegates to include any areas that they felt pertinent but which did not naturally fit into the structured questions.

We designed the interviews and workshops such that the delegates included in them had differing perspectives on the business as well as representing various different levels of understanding around the core business systems and processes, operations, people and culture. Each participant was selected based on creating a diverse group of voices with different roles, of different ages, length of service, and from a variety of different projects.

We did not codify any of the facilitator's input in our codification exercise, only that of the individual interviewee or the workshop delegates. We did not code any I/She/He/We/They references. We both treated any reference to any company as a reference under the heading of People.

Quantitative Questions

The questionnaire had two different sections. The first section established the demographic and identified a set of key performance indicators (KPIs) that would allow us to dissect the cohort, while the second section asked a series of questions under the three key headings of People Safety and Culture.

Table 15B – Step Down; People, Safety, Culture

First Pass	Second Pass	Final Pass
1)Systems		
2)Processes		
3)Business Readiness	1)Business Readiness	
4)Behaviours		
7)People	2)People	1)People
6)Culture	3)Culture & Behaviours Systems & Processes	2)Culture
7)Safety	4)Safety	3)Safety,

First Pass	Second Pass	Final Pass
		Business readiness Systems & Processes

The questionnaire was designed to capture a range of detail, with reference to the audience.

We needed to establish a range of key performance indicators (KPIs) which would allow us to configure the data set in line with our sample group.

The sample group identifiers/KPIs were as follows:

Table 17 – Profile KPIs

• Employee Company
• Gender
• Nationality
• Employee status (blue collar / white collar)
• Employment type. How they were employed (PAYE etc.)
• Job function and level of seniority.
• Age
• Time with the business/length of service

The predominant population completing the quantitative survey consisted of blue collar workers or site-based project teams whose perspective is largely confined to project based environments, whilst the interviews and workshops consisted of white collar/knowledge workers or clients, with a very different perspective on the business, some of whom are project-based, but all of whom are removed from the blue collar workface by experience or seniority.

It is important to bring some context to the role of a blue collar worker in relation to a white collar worker in our business. A blue collar worker is one who is paid weekly, who generally has a more transient and transactional psychological relationship with the business, as established in the work of the co-author, Tilley,M.(2006), their training is primarily skill-based, and they would have less exposure to direct messaging from Directors and senior leaders of the business, taking their messaging from the management teams based on site (the middle managers) and from their Black Hats (their direct line management).

Safety Leadership Teams are hosted quarterly or more frequently on each project and are attended by the middle managers and the ‘Black Hat’ supervisors, but the blue collar workforce do not attend these meetings directly. The business relies upon the attendees at the Safety Leadership Teams cascading the information and transferring the messaging to the workforce instead, because of the sheer volume of numbers and the difficult logistics involved with inviting all of the blue collar workers.

The white collar workers, by contrast, are a blend of various levels of management, mostly based out on projects in teams, all of whom have a clear structure and hierarchy. Most of them hold a degree in their specific discipline and can be described as professionals and many of them are also members of a relevant professional body that supports their specific discipline.

The white collar workers would regularly be involved with, and often form part of teams working with Directors to make relevant change decisions or to assist in solutions to challenges, therefore taking direct verbal and non-verbal messaging from Directors and senior leaders of the business. All of them would attend the quarterly Safety Leadership Team meetings, as well as some of them hosting the project-based Safety Leadership Team meetings, therefore being responsible for cascading information to the site teams and to the sub-contract community under our control.

The white collar worker would receive several days of theory-based training during the year. The white collar worker is paid a monthly salary, tends to have a relational position on the psychological contract continuum with a long period of service in the business, often having progressed themselves through the business over a period of time which has usually also included some formal professional education.

Performance indicators were selected by reviewing existing survey data, both internally and externally, and from other reference projects where questions were asked in relation to the previous results and findings and if these results were influenced by, length of service, age, employment type, nationality, and whether a multicultural workforce is less safe in a construction risk environment where their first language is not English.

We had previously undertaken a survey in 2009 and we added other relevant areas from our learning and experience. We understood that we had a range of different nationalities and five different forms of contract for employees’ engagement.

As previously detailed, the business is unusual in that it is a direct employer and has a directly employed workforce that flexes from 500 to 1500 blue collar workers and 400 white collar workers.

It was important to us to capture the feedback from the workface and to establish how our Black Hat supervisors were cascading the change process to the workforce.

The three main areas, People, Safety and Culture covered a number of different questions 102 in total (People – 27; Safety – 30; Culture 45) asking respondents to what extent they agreed with statements (ordinal data).

The questions were established using a previous survey utilised in 2009, for consistency, while integrating a nuclear sector (EDF) supervisor behaviour and aviation sector (BAA) supervisor/manager questionnaire while creating questions that were relevant to the data as identified in the *Change Implementations at Group* sheet *(Table 14)*.

The questions were designed to capture the data in a form that simplified the data entry process and which avoided intermediate systems where the original response must be further categorised (Robson 2011).

The questions and data collection, through coding, were directed around the three key headings discussed previously: People, Safety and Culture.

The business has worked across a range of building and civil engineering projects with over 35 million man hours in the past seven years. It has a workforce made up of 39 nationalities and consists of two key groups, general labour/blue collar and knowledge worker/white collar *(Figure 17).*

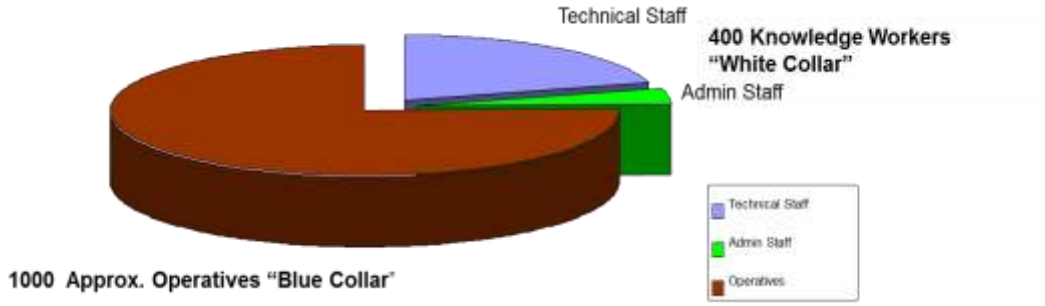


Figure 17 – Workforce Groups

We were conscious that we had two very different audiences which required us to consider they will both have very different ways of receiving information.

They are employed using five different types of employment contracts with a range of different levels of management.

We communicated that it was acceptable to take time out to complete the quantitative survey by providing them with a KitKat and teabag for a cup of tea *(Figure 18),* using subconscious messaging rather than a directive approach.

Figure 18 – Take a Break for Safety

5.6 Ethical Considerations

It is usual for the researcher to be in the less powerful position in any research project, however, we are both Executive Directors within the business unit that the project is focused on, and therefore we are in a more powerful position than all those involved in the workshop/focus meeting. It was thus important that the workshop/focus meeting was facilitated by a third party.

We are both members of Chartered professional bodies, all of which have ethical codes which must be considered and adhered to. According to Punch (1986), ethical issues frequently arise from a clash of personal and professional interests. It could be that the researcher has a personal motive in obtaining a piece of information and in doing so, breaches the line between personal privacy and confidentiality often in order to achieve a career gain. This is not the case with us as we are already of senior standing in the business and in the construction industry, and there is no prospect of short-term career gain linked to this project work.

Whilst we are aware that many organisations are subject to rigorous justification and ethical assessment by various committees, this is not the case for this project, as the

basis for the research is a dual shareholder business, where decision making is instantaneous and transparent. All approvals have been achieved by the parties involved in the process of researching and considering the outcomes of the project.

The ethics have been considered carefully in relation to social, economic, personal and environmental implications.

We have considered any potentially detrimental social effects in carrying out the research and have ascertained that there are no immediately obvious social risks to publishing the findings into the public domain, either internally or externally to the business – other than maintaining the business's anonymity.

We have considered the aspect of economic risk involved in conducting the research, particularly in relation to the employing organisation on which the research is conducted. To date, we have not indicated in any written project documentation or presentation material which company is sponsoring or involved with the research. This has protected, and will continue to protect, the sponsoring organisation from any negative impact in relation to revealing unique selling points or intellectual property to the competitor market in which they operate.

From a personal perspective, we have also considered the possible risk and impacts for ourselves and have concluded that the research project will undoubtedly provide benefits to each of us in that we both wish to entertain a portfolio career in later life; this Doctorate could provide the platform for such a career step.

> 'The social investigator must sort his values and obligations and weigh them repeatedly throughout the research process'. (Dalton 1964)

We both took the decision to enter into the Doctorate programme of study independently of any coercion by the business or any other party, and therefore the time and effort spent has been properly weighed up against the benefits of career choice in later life.

We have considered any environmental impacts that may arise from undertaking the project, and we have established that no environmental impact is apparent.

In accordance with the recommendations made in a statement of ethical practice from the Journal of Social Research Online – we have ensured the following ethical considerations in our research methodology:

- People will have the choice to participate in the research and signed consent forms will be obtained
- There will be no coercion of participants
- The true nature of the research will be disclosed
- There will be no deceiving of the participant in any way
- We will not induce the participant to commit acts which might diminish their self esteem
- We will not expose the participants to physical or mental stress
- We will not invade the participant's perceived privacy
- All participants will derive equal benefits and considerations
- All participants will be treated fairly and with respect
- Appropriate measures will be taken to store research data in an appropriate manner; we will have regard to their obligations under the Data Protection Act.
- The anonymity of the participant will be maintained at all times in the process of research

It was key to us that the participants are clear in their understanding of the project and their involvement in it before the project commences 'as the amount of information that can be conveyed and absorbed, prior to consent is limited' (Walker et al. 2008: 156-174). The interviewer/facilitators asked the questions defined by Crow et al. (2006: 83-95) at the beginning of a participant's involvement to ensure their understanding. All participants were issued with an ethics letter before taking part and their agreement was secured on this basis *(Appendix 4).*

5.7 Method One: Interviews

The one-to-one interviews provided qualitative data and were conducted with six external third party client or senior construction industry figures, using structured questions drafted by us (see page 93 above), as well as free-flowing dialogue to close out the session. The interviews were conducted by an external interviewer to ensure validity.

The industry figures were selected for their involvement with the business over a period of time and had all been associated with the change programme over a number of years.

In a few cases the individuals had worked with the business in 2000 and again in 2005 before the change programme had begun, and were very well placed to provide before and after viewpoints. Their answers were delivered based on the time of their involvement and the knowledge /perception they had of the business over the intervening period.

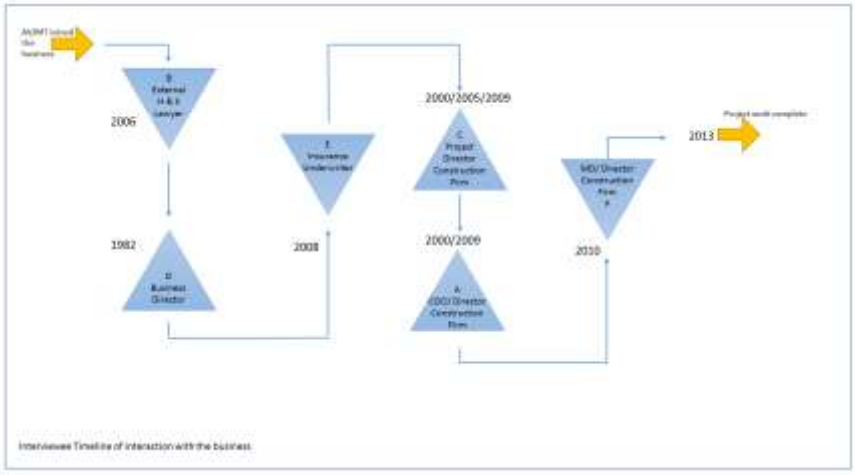


Figure 19 – Interviewee Timeline of Interaction with the Business

These in-depth interviews enabled the participant to provide a full, rich account and allowed the interviewer/ facilitator considerable flexibility in probing interesting areas that emerged. This research focused on the interview cases as a whole not on individuals.

The interviews consisted of four structured questions and were audio-recorded, transcribed verbatim and subjected to detailed qualitative analysis – attempting to elicit the key experiential themes in the participants' discussions.

Interviews and workshops were analysed using a 'thematic coding approach' (Braun & Clarke 2006), the advantages of which are its flexibility for use with qualitative data as well as its accessibility to inexperienced researchers.

The qualitative data was analysed following completion of the one-to-one interviews. The transcripts provided us with the opportunity to independently codify the information which came from the interviews for the first time. At this point we began to identify key categories which summed up accurately what had been said.

Thematic coding has use outside of academic communities due to its common language and terminologies. This aspect was important to us because the research was going to be utilised by the sponsoring business and others to provide them with knowledge about the critical elements required for change. Therefore their understanding of the output

generated, which would be dependent on the language and terminologies used, was a key requirement to the research and its ongoing usefulness.

Our original intention was to utilise a computer assisted qualitative data analysis tool, NVivo 10, however, upon completion of the manual coding exercise, our consultant advisor and our tutor advised us that the use of NVivo 10 would add no further value as the level of manual coding had reached a granularity which was already richer and deeper than NVivo 10 could provide. We therefore took the decision, with the support of our tutor and our advisor, at that point not to run the data through this software and to work instead with our manual coded outputs only. Our respective codification of the data was conducted independently of each other, and from two different philosophical standpoints, giving richer and more diverse data analysis.

5.8 Method Two: Workshops

The structured focus workshop provided further qualitative data and was conducted by an external facilitator in order to provide distance from the subject for us as insider researchers, it focused on an audience made up of twelve senior managers and Directors of the business, all of whom have been involved in the business through the process of change and had seen the various outcomes.

We reflected on Robson (2011), and his view that focus groups tap into a different realm of social reality from that revealed by the other two methods utilised. The focus group was constructed carefully to provide the diversity required to support gaining that different social reality, and therefore offering us a different perspective for our research.

The group was constructed to be heterogeneous, twelve in number, from a variety of power perspectives, professional areas, genders, backgrounds and educational levels. We considered group size and make up using the thinking of Stewart and Shamdasani (1990) who suggest groups of eight to twelve in order to achieve best results. We were disappointed as in both focus groups the female representative did not attend and, as the choice of females was severely limited (very few senior females exist both in the business and in the industry in management roles), it was not possible to replace them at short notice, so whilst the focus group design was mixed gender, the actual workshops went ahead with solely male representation.

The workshops consisted of the same four structured questions and the data was accurately captured using a digital recording device. A stenographer was employed to

transcribe the conversation verbatim and the facilitator captured information on a flip chart from the additional free flowing information that arose from the discussion.

The focus workshops were treated in the same way as the one-to-one interviews and were hand coded and analysed in the same way by us both independently of each other, using an individual word coding approach based on People-Safety-Culture, as well as a quasi-statistical approach conducted in an excel spreadsheet format to provide the best result possible.

5.9 Method Three: Surveys

The surveys, in the form of a self-completion questionnaire, provided quantitative data for analysis using SPSS. The questionnaire *(Figure 20)* consisted of one hundred and two (102) questions covering three different topic areas: People, Safety & Culture *(Appendix 6).*

People, Safety & Culture

Please complete the following questionnaire comprising multiple choice questions. The questionnaires will be anonymous with no way of tracing back who has completed them and the findings, based on the data collected, will be published for research purposes. No names will be used in this study, or any subsequent publication, and any data collected will be held in strict confidence in line with data protection requirements.

I Agree	○
I Do Not Agree	○

EMPLOYEE COMPANY

Company A.	Company B	Company C
○	○	○

GENDER:

Male	Female
○	○

Nationality:

Staff Monthly	CIS/ Ltd Company	PAYE Weekly	Sub - Contractor
○	○	○	○
Manager	Manager	Manager	Manager
○	○	○	○
Senior Manager	Senior Manager	Senior Manager	Senior Manager
○	○	○	○

AGE:

○	16 – 24	○	25-35
○	36-45	○	46-55
○	56+		

TIME WITH THE BUSINESS:

○	0 - 3 month		
○	3 - 12 months	○	1 - 5 years
○	6 – 10 years	○	Over 10 years

What does our safety culture look like to you?

INSTRUCTIONS
Please follow the instructions carefully all you need to do is fill in the circle that represents your answer. Give your answers based on your experience working for 'The Group' and not on your experiences in other companies or industries. Do not take too long over each question, as it is better to indicate your first immediate response. There is no right or wrong answer we are only interested in your perceptions. If you have **NO** opinion or knowledge of a certain question, tick "neither".

* White Hat = Directors/Management ** Black Hat = Supervisor

Figure 20 – People, Safety, Culture Questionnaire

5.10 Guaranteeing Anonymity

The interviewees were identified using letters of the alphabet; the recordings were transcribed verbatim and sent to the researchers without any identification of the interviewees at any stage. Interviewees in the one-to-one interviews were given a single letter of the alphabet e.g. A or B. Delegates involved in the workshop were given numbers, e.g. Participant 1,2,3.

The individuals who completed the survey were not able to be identified in any way. The surveys did not containing any identification marks relating to project, postcode, role, line manager, length of service, age, gender, religion or sexual orientation.

Diversity of survey participants was ensured by allowing the survey to go out to everyone with the aim of as many people as possible completing it using this anonymous approach and various forms of media were used to conduct the same survey, for example Survey Monkey was used for online digital data capture and paper copies were also used to ensure that those with poor or low computer literacy could take part on an equal basis.

Any individual who needed support to complete the questionnaire was offered assistance using our trusted construction support staff, who were asked to act as research champions for us on each site to enable as many participants to take part as possible. The construction support staff were also asked to collect the completed returns and submit them to us once all surveys were completed. A timescale of two weeks was given for the survey period.

Any candidate who wished to withdraw was able to do so with no repercussions, as Directors of the business we were able to confirm that their employment and their involvement in the research were completely divorced.

We aimed to achieve an 80% return rate from the questionnaire; and in fact we achieved an 87% return, with over 1,000 questionnaires issued and 992 complete and valid returns. This high number of returns provided a high probability of being within a range of the mean of the surveyed population, and we were confident that the large sample collected would provide us with a more accurate estimation of the population mean than a small sample would (Dewberry 2004).

Howell (1997) endorsed the view that measurement scales are not of critical importance when choosing statistical tests, however, the distinction between categorical and continuous variables is vital. The data obtained from the outputs of our survey using the Likert scale was treated as continuous.

This approach, however, has not persisted without criticism and much has been written about its limitations. Primarily researchers have emphasised the limitations of the Likert scale and have debated whether the resulting data are ordinal or interval, whether a mid-point should be used, and have explored the extent to which the number of categories on a scale and the use of numbers versus labels influences the responses given. Researchers have also addressed their limitations for cross-cultural research, highlighting differences between cultures in scale completion rates, familiarity with scales and the impact of translation and modesty (Ogden 2011).

5.11 Methodology Summary – Route Map to D Prof

Our route map to the D Prof project is described in *Figure 21*.

We started with our headings derived from the key activities undertaken in *Iteration One* and *Iteration Two* and detailed in the *Change Implementations at Group* sheet (*Table 14).* We brought the seven key focus areas down to five in the second pass and then down to the three key areas at the third pass: People, Safety and Culture *(Table 15).*

People-Safety-Culture led us back, in step two, to Geller (2008) with behaviour, persons and environment, leading us to consider empowerment, self-esteem and belonging. Starting to put these areas together we established a platform there for the D Prof project that was validated by our literature review and documentation.

On further review of the literature, we started to look at Choudhry et al (2007), Bandura, A (1986) and Cooper, M.D. (2000). We began with Bandura, A (1986) and putting his reciprocal model together, and then moved to Cooper, M.D.(2000), incorporating his model up and developing it further. This created a balance out of the three key areas of person, situation and behaviour, which started to look more like People, Safety and Culture, and this resonated with our approach and validated our starting point – step three.

We then started to review Cooper, M.D. (2000) and Choudhry et al (2007) in detail, looking into their research and findings. They concentrate on climate and culture, and focus on trying to get the balance right and their conclusion was that, until you get the balance right you can't really go forward doing anything else, that you have to balance out those aspects of, people, safety and culture along while simultaneously getting your climate and culture aligned, until you get that alignment it is impossible to get meaningful data.

5.12 The Unasked Question

Utilising a flexible research methodology enabled the research themes to develop as the project progressed, and indeed permitted us to explore questions that had not been considered at the outset of this research process.

As will be seen in the results and discussion, during these early phases, an aspect of national identity became apparent as an obstacle to effective OHS behavioural change.

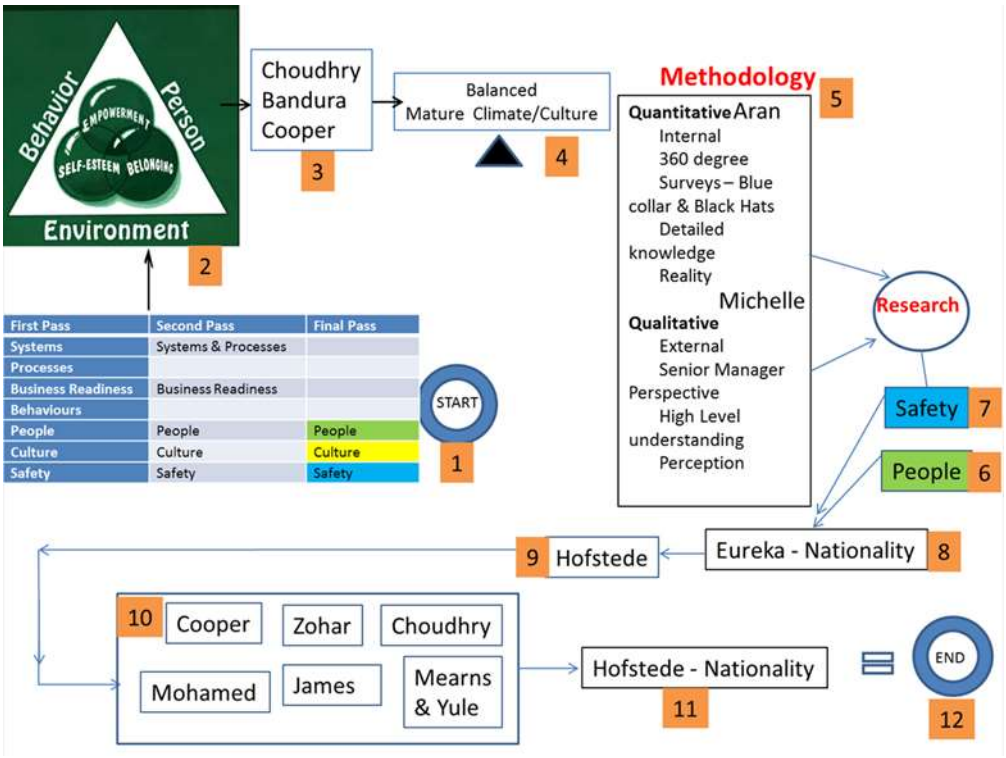


Figure 21 – B – Summary of Route Map to D Prof

It was within the quantitative data set, that safety (7) came out as the most prevalent issue; but upon deeper interrogation of the data and review of the answers provided we then started to find that one of the key indicators was nationality.

Having not considered the works of Hofstede before (8), we then started to look at what the impact of nationality means. We reviewed the work of Hofstede (9) and considered the work completed in Delta airlines by Helmreich & Merritt (2000) in relation to nationality. Having reviewed the findings, we then considered what they would look like from our people, safety and culture perspective. As such there is a section within the critical review of literature on the role of nationality within the context of OHS management.

This led us back to a further review of both the literature and the research of safety and culture behaviours – and that brought us back to Cooper (2000) again, to Choudhury et al (2007) and then Mohamed,S. (2002), James,P(2009) and Zohar (2010).

Cooper,M.D. (2000) and Mearns & Yule (2009) then led us back to Hofstede again. We started to critique Hofstede as to whether Hofstede is relevant or not. On review, Mearns & Yule (2009) and James,P. (2009) led us back to the fact that nationality is a key driver, although there are some retractors from Hofstede (Brewer and Venaik 2014; Baskerville-Morley 2005; McSweeney 2002) who say that management is as influential as nationality.

We had dealt with the management viewpoint by asking questions around the supervisor role in the quantitative survey. We had received the managers, input as well as that of the

workforce/blue collar individuals input. Our survey had dealt with the people at the workface (blue collar) and those at managerial level (Black Hats) – step 10.

The findings led us back to Hofstede & Nationality, not as a panacea, but actually as an area of consideration that has been overlooked, particularly the UK and the polymorphic workforce inside London's M25. The results from the qualitative survey employed we had to consider 'Power Distance' PDI and its relationship to safety performance.

Our business sampling in method three, across 900 individuals showed that 47% were foreign nationals. Almost half our workforce did not have English as a first language. Not only did this have enormous implications for our business and the way we communicate within it (as well as a strong implication as to why health and safety performance could be plateauing) but given that the business was closely representative of London as a whole – there must be other companies that could benefit from our approach (Step 11).

We had not been thinking about individuals' perception of risk 'Uncertainty Avoidance' (UAI) and their level of understanding of the instructions we give. We had not considered that when we're giving instruction – from a paradigm perspective – we both sit in an Irish/English paradigm while many others do not. When we reviewed each nationality in relation to Hofstede's previous findings, English and Irish sit alongside each other, so despite our other differences, every time we create a communication or piece of work for the business it always looks the same because we are thinking about it from an Irish/English perspective; we're never considering it from a Romanian/Lithuanian perspective and we're never thinking about what our messaging is. It became clear that we needed in the future to consider the PDI and UAI for our workforce.

These indicators in relation to nationality led the business to start looking at how to change methodology and risk assessments into visual method statements and visual risk assessments. Work has commenced in the business outside of the Doctorate and we are starting to get the other nationalities to originate these visual approaches so they are not being created from an Irish/English paradigm only.

We are reviewing the nationalities and culture of our projects to access the underlying key cultural differences within a polymorphic London environment and concentrating of the PDI and UAI of the various work crews and the supervisor nationality to gain a shared understanding of risk and further improve communication and safety performance (Step 12).

The following sections (sections 5-10) will demonstrate the detail of this D Prof project, from findings and analysis through to conclusion.

6.0 Data Analysis & Findings

The data collection methods previously described provides triangulation of findings as a result of a robust methodology.

Triangulation was achieved by using two methodological approaches, three different independent audiences, two different philosophical and theoretical approaches with dual researchers from opposing viewpoints, as well as one being male and the other female, two different data analysis methods – providing triangulation at all levels of project design.

This triangulation ensured that we were able to establish possible issues with the underlying project design such as flaws in the data, invalidity of response and providing a deeper level of research.

As dual researchers we provided a cross-check for each other, given our opposing viewpoints, with the third party interviewer provides an impartial interview technique. This was particularly important in the free-flowing conversational element of the one-to-one interviews and the workshop.

These various approaches drew on both qualitative and quantitative analysis techniques. The interviews and focus meeting/ workshop used qualitative analysis techniques and the survey was coded and analysed using quantitative techniques and the data analysis tool SPSS to provide the results. The qualitative data enabled us to further analyse the data provided in relation to the culture and health of the business change programme outside the D Prof.

Whilst quantitative and qualitative data analysis methods are often regarded to be at opposite ends of the scale, it was beneficial to both the D Prof and to both of us to use a mixture of both which is reinforced when comparing our different philosophical positions.

A mixture of both methods has provided depth and validity to the data findings, playing to our different strengths, whilst also providing a level of comfort for us both that we can conduct independent learning in a style which suits our own individual bias as well as having the experience of joint learning, understanding and reflection.

This mixture of methods developed a deep sense of pride in our abilities as individual learners, enabling us to reflect on the learning journey of singular experiential learning, as well as providing the rare opportunity to develop and expand those individual thoughts

and findings into richer and more diverse arguments through joint discussion and analysis which in turn provided a platform for pushing boundaries in particular areas which were new to us such as the relationship between Hofstede's (1990) Power Distance (PDI) versus Uncertainty Avoidance (UAI) Model, and our workforce.

The quantitative analysis was statistically analysed using SPSS software, with the assistance of a statistical research analyst whom we tasked with a list of areas for comparison and a number of iterations in relation to cross tabulation of data sets.

The quantitative data from SPSS provided the opportunity to dissect and extrapolate the results in order to examine them from many different perspectives.

Plotting out the means of the various combinations of independent variable to be examined, and looking at the way that the lines relate to each other. There can be either a 'crossover interaction' or where the lines are not parallel it can be described as simply an 'interaction' in the sample data (Balnaves and Caputi 2001).

This does not necessarily mean that there is an interaction for the statistical populations measured, simply that there is an interaction in the sample data. It was important therefore to assess whether there any apparent interaction effects and if it is statistically significant.

Our methodology also explored whether or not there were 'main effects', that is, effects of one independent variable on the dependent variable (Arnold 1997).

We subjected the results to thematic analysis using a combination of 'manual coding up' and 'manual coding down' (Fielding 1993).

Coding down was done by highlighting text in a colour designating a given factor within the coding rules. We then worked together and separately to highlight and number text in accordance with the coding protocol developed.

Coding up was done by the production of spreadsheets for each factor. We worked through the transcript to lift out the themes from the coded text relevant to that factor. As insider researchers utilising an external resource to conduct the interviews and focus meeting/workshop we could also operate as 'actor-observers', enabling us to critique and view the implications of the differing perspectives from each position with the importance of distance from the subject.

We then drew out the conclusions which arose from the resulting mixed method data. The objectives of the project were achieved by taking the analysis of each of the various data methods and evaluating the resulting hypothesis.

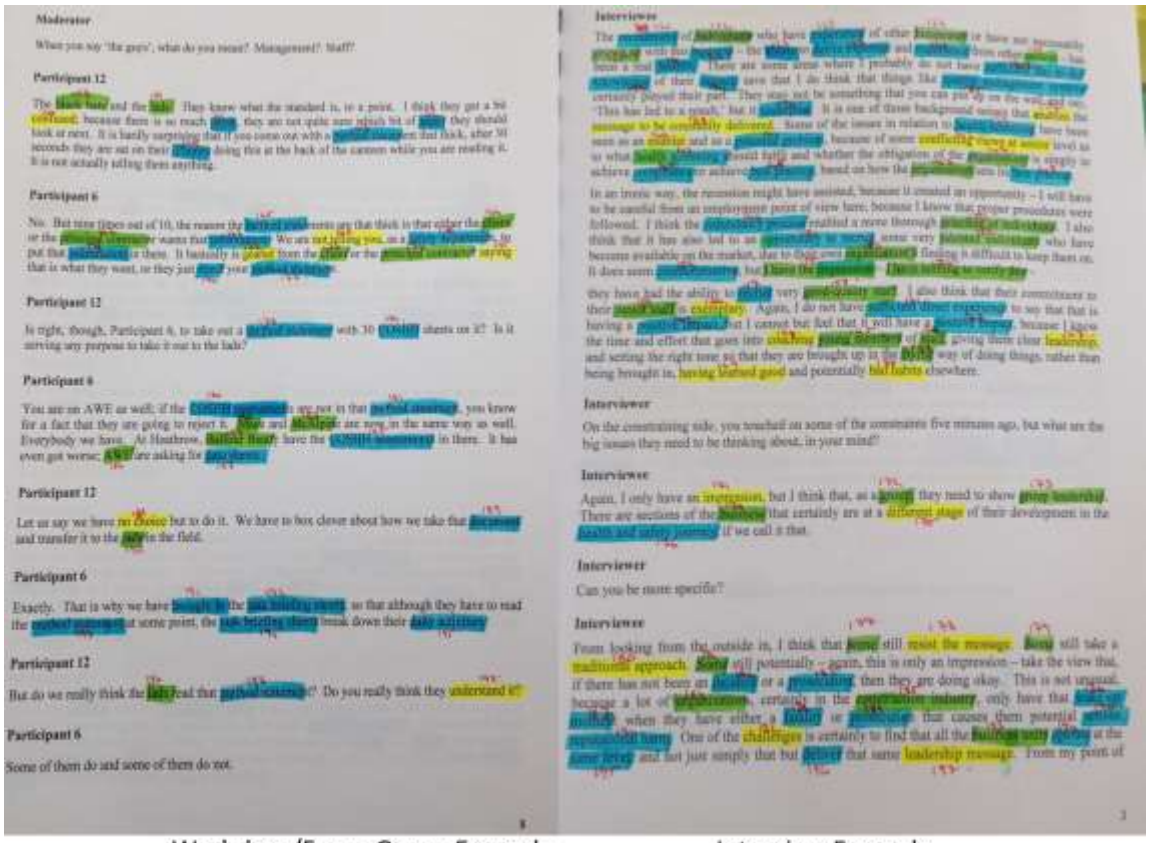
6.1 Qualitative Data Analysis & Findings

Introduction

The results of the analysis returned different outcomes for the qualitative and quantitative data, which justifies our decision to use two different methodologies for analysis as appropriate. If we had pursued only one of the analysis methods we would not have uncovered such rich and diverse findings because our results would have gone down one track only, whereas we have two clearly different sets of findings from workers essentially in the same business albeit with different educational or cultural perspectives. Our data is richer as a result of using two analysis methods, and has proven to be highly valuable to us in both the academic purpose and as the basis for further change within our business, and within the industry as a whole.

The differences in the data collection process should also be considered when reviewing the results of the analysis, in particular in relation to the way that the use of language and free use of descriptors generally is unrestricted in the qualitative data, giving a much more diverse range of language; whilst the quantitative data was collected in such a way that language was not relevant to the outcome, using the Likert scale instead, with a series of set and closed questions providing no opportunity to expand on thoughts or views.

Using the previously developed coding structure we extracted the number of references to People, Safety, and Culture established during our individual codification of the qualitative data sets. After the hand coding they were fed an excel spreadsheet in order to achieve the results of the analysis We then amalgamated the data sets into one combined data set which we utilised for the overall analysis.



Workshop/Focus Group Example Interview Example

Figure 22 – Coding Examples for both Workshops and Interviews

We found 9,447 references to People, Safety or Culture in the combined data set. There were 4,168 references identified within the interviews and 5,279 references identified in the outputs from the workshops as detailed below in *Figure 23.*

Count of Key Word														
				Culture Total	People				People Total	Safety				Safety Total	Grand Total
Row Labels	2	3	4		1	2	3	4		1	2	3	4		
Interview	285	193	311	1166	530	442	217	401	1590	428	439	256	289	1412	4168
A	69	16	55	218	94	97	21	48	260	73	61	37	25	196	674
B	33	52	50	211	161	39	32	86	318	35	3	31	25	94	623
C	53	26	38	175	43	69	38	27	177	39	33	31	16	119	471
D	35	51	59	180	75	107	56	68	306	66	97	48	65	276	762
E	85	26	80	283	88	89	34	63	274	149	199	74	90	512	1069
F	10	22	29	99	69	41	36	109	255	66	46	35	68	215	569
Workshop	214	87	288	1035	682	486	168	599	1935	958	574	440	337	2309	5279
A	98	20	154	586	497	242	58	378	1175	648	288	167	157	1260	3021
B	116	67	134	449	185	244	110	221	760	310	286	273	180	1049	2258
Grand Total	499	280	599	2201	1212	928	385	1000	3525	1386	1013	696	626	3721	9447

Figure 23 – References Identified in the Outputs

Despite the fact that Safety had the most instances and occurred, when combining the results of both the interviews and workshops, more than People, the most common words referenced were, ‘People & Guys’ and the most common reference area from the categorisation People, Safety, Culture was People (in green) from within the top cumulative 25%, with 14 references being contained within the first 25 number instances,

equating to 16.9%. There were eight instances relating to Safety (in blue), 6.10%, and three relating to Culture (in yellow), 1.83%.

Key Word	Number	%tag	Cumulative %
People	460	4.87%	5%
Guys	179	1.90%	7%
Family Name	158	1.67%	8%
Training	145	1.54%	10%
Safety	133	1.41%	11%
Black Hats	131	1.39%	13%
Aran	102	1.08%	14%
Company B	93	0.98%	15%
Culture	90	0.95%	16%
Michelle	88	0.93%	17%
Company C	83	0.88%	18%
Health and Safety	73	0.77%	18%
Company A	69	0.73%	19%
CEO	58	0.61%	20%
Paperwork	54	0.57%	20%
Group	50	0.53%	21%
Method statement	48	0.51%	21%
Project Managers	48	0.51%	22%
Systems	44	0.47%	22%
Change	42	0.44%	23%
Method Statements	42	0.44%	23%
Leadership	41	0.43%	24%
Company	38	0.40%	24%
Subcontractors	38	0.40%	24%
Processes	37	0.39%	25%

Figure 24 – First Pass Snapshot of the Spreadsheet

Figure 24 represents a first pass snapshot of the excel spreadsheet used to collate all of the data. These have been colour coded to reflect People, Safety & Culture. On reviewing the data within the sheet it became evident that there were a number of areas that needed to be consolidated to get a better view of the combined data set.

Key Word	Number	%	Cumulative %
People & Guys	639	6.77%	6.77%
Company, Company A, Group, Company B, Company C, Family Name	491	5.20%	12%
Health & Safety & Safety **	206	2.18%	14%
Training **	145	1.54%	16%
Method statements; Method statements & Paperwork	144	1.52%	17%
Black Hats**	131	1.39%	19%
Aran**	102	1.08%	20%
Culture**	90	0.95%	21%
Michelle**	88	0.93%	22%
Systems & Processes **	81	0.86%	22%
CEO**	58	0.61%	23%
Project Managers **	48	0.51%	24%
Change **	42	0.44%	24%
Leadership **	41	0.43%	24%
Subcontractors**	38	0.40%	25%

Figure 25 – Consolidated Revised Table

The consolidated revised table in *Figure 25* identifies the top 25% of all the words used. It can be clearly seen from the summary that People & Guys-related words were the most prevalent at 6.77%

The data set, when further considered, indicates that People were represented in 16.89% of the top 25%, clearly indicating that the key output from the qualitative survey was People.

It can also be clearly seen that the word ‘Aran’ and the word ‘Michelle’ appear in the top 25%, which highlights the importance of our decision to use an independent interviewer/facilitator to conduct the one-to-one interviews and the facilitated workshops, thus avoiding the ‘response affect’, which would almost certainly have occurred had we conducted the workshops ourselves or indeed been present in them. Despite the fact that the participants were aware that the researchers would see the anonymised outputs from the workshops, the participation they displayed by having a third party was evident in the openness of the conversation, which would not have occurred had we (the researchers) been in the room face-to-face.

Using thematic coding as our analysis method, we analysed the data presented to us in the qualitative interviews. The coding analysis showed clearly that People, Safety and Culture featured as our key issues, with the sub-themes of Aran, Michelle, CEO, systems and processes also occurring regularly. The themes and sub-themes are shown in the table detailed in *Figure 25*. We went on to explore these areas further, by extracting quotations from the workshops and the one-to-one interviews conducted during the process. The quotations detailed below in *tables 18-31* are representative of the key and underlying sub-themes in order to illustrate the convergence across all the various methods of qualitative data collection.

Our analysis of the data also revealed that the qualitative data expressed a much more positive impression of the business when viewed from the perspective of those external to it, such as clients or consultants in the one-to-one interview process, providing us with an insight into how the work conducted through the change process has been perceived by those who see only the outcomes of the change, but are not necessarily an intrinsic part of it – in, fact they would be described as the recipients or benefactors of change. These external parties all have influence in the area of appointment or assessment in commercial or risk terms in relation to our business, so their perception of our business is critical to increasing brand value, turnover and to an ongoing successful order book.

The qualitative data presented a success story when viewing from the outside, which is pleasing and which indicates that our strategy for change has positively affected the

brand, and has created the right perception regarding the culture of our business in relation to safety and provides external benchmarking. All external participants had the very clear opinion that safety was our highest priority and that we were leading the way in relation to performance when compared to our peers.

The qualitative data revealed a different outlook when reviewed from the internal perspective using the outputs from the workshops, with a clear view that the business operates a ‘blame culture’ and that the change programme has been put in place simply as an ‘arse-covering’ exercise designed to protect ‘them’.

In this context, ‘them’ seems to reflect the Directors of the business, and there is no recognition by the workshop attendees that whilst protecting the business from a governance perspective, the change programme has also provided a very solid platform to protect the worker, the manager, and anyone who works in, with or alongside our business, provided the rules of the Safety Management Systems are followed.

The references to ‘blame culture’ and ‘arse-covering’ are interesting and we will discuss them further in the next section, because at no point during any of the workshop transcripts do the participants acknowledge that ‘they’ are also perceived by others as leaders.

The workshop attendees refer frequently to ‘they’ revealing their viewpoint of a very ‘them and us’ standpoint, whilst not recognising that the attendees themselves are also ‘they’ in the context of leadership as their roles all encompass leadership, and management of the workforce, sometimes directly and sometimes indirectly.

The context in which they place themselves as holding no real accountability or responsibility presents an interesting discussion and one which requires further discussion and focus, providing an insight into a gap in responsibility between the Directors and senior leaders of the business and the workforce, where middle managers are abdicating accountability and responsibility up or down, but not accepting any themselves.

There were clear statements regarding the business operating a blame culture and aspects of these views were interesting and surprising – particularly in relation to role of project manager in the business.

There were comments that directly related to aspects of the change programme which through pushing accountability and responsibility down into the projects the attendees perceived that they were having to ‘take the blame’ and were being ‘set up’ – for instance because the business had devolved human resources to line management, with

centralised support by appointing the Project Managers with accountability and responsibility in writing.

This strategy is sensible and efficient for a typical hub and spoke organisation such as ours, and ensures that employees have a direct contact in their immediate location rather than having to come back to head office every time they wish to discuss issues relating to human resources.

This aspect of perception of a blame culture is not a new finding; In 2009 we conducted a Culture Survey, which was also completed anonymously by more than 600 employees of mixed worker employment status. One of the four areas identified for possible improvement following analysis of the results of the 2009 survey related to a minority of people who felt that 'feedback reporting is seen by some as a part of a culture of blame and they felt disenfranchised by the process'.

As a business we had worked hard to eradicate the blame culture perception, but it seems that the approach taken did not resolve that perception. It is important to consider the potential 'groupthink' effect, described by Janis (1972) as:

> 'A mode of thinking that people engage in when they are deeply involved in a cohesive in-group, when the members strivings for unanimity override their motivation to realistically appraise alternative courses of action'.

This phenomenon can cause thinking to be led down a particular path despite professional opinion, factual presentation, or other leadership methods which would normally enable individuals to think freely.

The two workshop groups consisted of a number of influential individuals central to the business and with significant long service and with strong views on the change programme. It could be derived that the phenomenon of groupthink led the workshop attendees to consider the facilitated questions with only one perspective rather than a more balanced perspective with several individual views being considered, debated and discussed.

Another key contrasting point which was evident in the interviews (external) but which was conversely viewed in the workshops (internal) was the perspective on growth and increased brand value. The external perception was very much that the change programme had driven the success of the business and had influenced the increase in turnover and brand value. Some of the comments are detailed below from our various client and external interviewees.

The external parties are from a variety of external stakeholder areas, such as legal, insurance, clients, and in one case an existing board Director of one of the businesses. The interviewees were chosen because of their longstanding relationships with the business, meaning that that they are able to comment meaningfully on their perception of how the business has changed. We chose one internal candidate to represent the view of the board of Directors; he was chosen because of his long service and his understanding of the business prior to the transformational change programme commencing, as well as his deep understanding of the culture of the business, thus providing a 360 degree view at a senior level.

All interviews were anonymised prior to us receiving them. We took this decision to assist our interviewees in being completely open and honest in their views, which may have been more difficult for them had the interviews been attributable to them because of the longstanding relationships with the business and with the researchers directly.

All of the comments below are direct quotations from the transcripts, which are shown in groups as the themes align, with a discussion at the end of each selection of quotes. The clustering of expression in relation to the topic areas of People, Safety and Culture are displayed in this way to give the reader a sense of the understanding and sentiment that the external interviewees have of the business. We have included a large selection of quotes to accurately portray a full and comprehensive appreciation of their viewpoints, which in many cases contrasts with the internal viewpoints. This approach allows us to anchor the themes in the mind of the reader, with cognisance that each of the external interviewees is seeing the business from a different standpoint and perception.

Company Level Commentary

In setting out key themes there is a danger that overarching commentary can be missed. As such we start the thematic analysis with perspectives that examine the impact of the change programme. Within this commentary various views are illuminated but are all framed within context of positive change outcomes. There are three significant elements to the commentary: the first is that the organisation is seen to be ahead of its peers in terms of safety management, a clear objective at the commencement of the change programme; the second is that the mindset and culture, something that we will explore in more detail, has altered to the benefit of all staff; and thirdly that organisation remains open to continue to change focused on those exposed to the safety risks.

Table 18 – Interview Quotes – Company Level

'If you go back 15 to 20 years and look at the concrete industry then, (the company) would not have figured very large, but now they are mega-large. I do see quite a change in their becoming significantly more sophisticated than their peers, and that is a good thing' Interviewee B
'Just the concept that management is there to serve the blokes right at the sharp end of getting the work done is a very powerful concept' Interviewee B
'People seem to be thinking more about what they are doing. It seems a more sophisticated organisation than it used to be, with more thought to how things are done smartly, and how to move things forward, not just doing the same things that we have always done' Interviewee E
'They are still thinking hard about how to generally improve the way they do things. Whether the whole organisation is becoming smarter, I can just say that the people I have worked with seemed smarter than they were before' Interviewee C
'If I had to choose between (the company) and somebody I do not know, or even somebody I do know, they are starting from a good position, as far as I am concerned' Interviewee C 'If you line them up against the wall and say which you would pick first, you would not say there is no one else as good, but (the company) is right up there. My perception would be that, as far as taking safety seriously, having a go at it and trying to do something about it, they are right up there' Interviewee D
'With regard to safety, without doubt some fundamental changes for the better have been visible to everybody in this company, since this procedure was started. I do not know whether that was four, five or six years ago. That does not just mean seeing the accident frequency rate going down. Jumping to the last part, it is very much seeing that the culture of the company has changed drastically' Interviewee D 'How we are perceived outside this company now is quite a significant factor. People view us as very safety conscious. We are up to speed with things. We are at the sharp end with most of the things happening. I suppose we are leaders now. That is a good thing. It has led us to tender in places where we might not have done before, for instance in the nuclear work. We are involved in rail work now, too, which has been useful, because the market we were in before has changed for the worse. There is not as much commercial building work going on anymore, and we have moved into something else and are taking turnover from that' Interviewee D
'That is one of the messages you try to send to the guys so that, if they are unhappy with something, they can speak up and would be supported' Interviewee D
'All the employees in the company have changed their attitude to safety. We are

supported by all the systems we have in place. We have safety-net systems; we have all sorts of access to things on the internet. That supports it all and keeps it going' Interviewee D
'Across the construction business, they are among the best I have seen' Interviewee E
'They seem to be forward-thinking, thinking for the future. Everything they do makes sense. They talk about it, but not only do they talk about it, they implement it' Interviewee E
'Leading from the top, CEO, is supporting Michelle and Aran, from what I have seen, thoroughly on this. The environment changed because of that. I think everyone is aware of why you need to do it now. If you went on to the site and said, 'Why are you doing this?' they probably could explain more now than years ago' Interviewee E
'Every single accident, they investigate. They look at the system: is there something they can improve on it? They are constantly looking to improve. If something happened, why did that happen? How did that happen? The questions that I would ask, they are already asking. By the time I have a meeting with them, 'Yes, that happened there, but that will not happen again, because we do not use that anymore', or 'The procedure has changed'. It is forward-thinking that helps to prevent future accidents' Interviewee E
'I think they have listened to employees and looked at things they can improve on, and learned from it. The behavioural thing, they have got employees to believe in it. From what I have seen, it is all right saying something, but it is about getting the employees to believe it. They could implement something at my company now; do people believe in it? It is the whole thing of hearts and minds. From what I have seen, from the sites I have seen, people do seem to have changed over the years. Behaviourally, they believe in it now' Interviewee E
'I think it is a much safer environment now on their sites. For example, the number of incidents is so reduced now' Interviewee E
'Based on my current experience, I would say that (The Company) is among the best in terms of their commitment (to health and safety) Interviewee E

We have extracted the salient **'Key Words' **** areas marked with ** in *Figure 25* for further expansion and dissection of the findings.

Leadership**

The company's leadership style is often referred to as 'strong' 'clear 'or 'focussed' and 'committed', by the external interviewees, all of which are positive in relation to a leadership approach (Hallinger 2003). Leadership is described as 'key' to success of a change programme.

There are statements regarding the different stages of development within the Group of businesses with the core business being seen as leading the field and the others not yet operating at the same level.

The internal workshops showed that the attendees appreciated clear direction as a positive aspect, with some negative comments related to a 'fear of approaching senior leaders to discuss change'. There is some understanding that investment in young people early in their career will ensure the culture is set correctly at the earliest stage in their development, which will then set the correct tone as they grow and develop their careers through the organisation.

Both sets of interviews, internal and external, recognise the importance of visible leadership to the success of a change programme, as well as understanding that change can be a difficult and often unpopular process for the employees, especially those who have been in the organisation for a medium to long term period of employment.

One key difference between internal and external perception is that the external parties see a balanced and well thought out approach which is in support of the employees and their commitment to the business prior to the change programme, whilst the internal workshops have a perception more biased toward recognition of need to change, but stating that the culture is now one of blame.

It is easy to take an emotional stance when looking from the inside at this perception, however, one of the key reasons for identifying Michelle and Aran is that their loyalty to the founder is so strong and unwavering, the reserchers would not want to admit that he stated the terms of reference for the change programme and therefore wanted to make the change.

This perception is akin to a familial loyalty which surrounds the Chief Executive and is representative of the loyal and long serving workforce he constructed though previous years. It can be viewed as positive and provides a strong foundation for change to be successful, as without such loyalty the change programme may have failed or slowed based on its complexity and totally holistic approach.

Table 19 – Interview Quotes - Leadership

'It is very difficult to have a conversation with the leadership if you want to challenge the process, or even have a conversation about the process. Workshop A,' Participant 12
'The leadership has been very focused; we all know which direction it is going.' Workshop A, Participant 12
'You all wanted to say it is tough because you know you are going to get a bollocking no matter what you do. But you have to have strong leadership to force that message across.' Workshop A, Participant 1
'I am not saying that there being strong leadership is wrong. I am saying: we have got where we have got to with that leadership and that has been fantastic.' Workshop A, Participant 12
'I think one of the very positive things about that leadership is that it has opened doors

that were never going to be opened.' Workshop A, Participant 12
'All of our commercial discussions and all of our programme discussions were tempered with respect for each other, because we had to have that in the safety leadership programme.' Interviewee A
'The leadership comes from people like Paul at the top, and Don and Bob. They are the people that we know, and absolutely, the management that I have seen are fully committed.' Interviewee A
'I have been along to be a guest at their six-month safety leadership meeting, or whatever it is and talked a little bit about our experience with them. I have not seen too many other subcontractors get everybody in a room like that.' Interviewee A
'They have always been a team player, definitely. They have always had strong leadership from (Chief Executive)' Interviewee A
'It is the whole thing, from top to bottom, about visible leadership. I have been around other sites, where you see, 'That is wrong, that is wrong,' but they have not done anything about it. With the business, if you go round with Michelle and Aran, if they see something, they deal with it straight away. Again, I think the leadership has to be from the top to the bottom' Interviewee D
'They have more leadership and support from above. So they will find the job is easier/harder with Michelle and Aran.' Interviewee D
'I know the time and effort that goes into coaching young members of staff, giving them clear leadership, and setting the right tone so that they are brought up in the (Company) way of doing things, rather than being brought in, having learned good and potentially bad habits elsewhere.' Interviewee E
'I think that, as a group, they need to show group leadership. There are sections of the business that certainly are at a different stage of their development in the health and safety journey' Interviewee E
'One of the challenges is certainly to find that all the business units operate at the same level; and not just simply that but deliver that same leadership message.' Interviewee E
'Within health and safety, leadership is key' Interviewee E
'Obviously we are here talking about health and safety, but most organisations will say that financial success or compliance with things like bribery and corruption all stem from that leadership.' Interviewee E
'I have been impressed during some of my investigations by site leadership in certain instances.' Interviewee E
'My experience in (Company A) is that people have embodied, driven and promoted these issues through clear leadership, which I cannot pretend – I am sure – has not been controversial at times, because clear and positive leadership is a fine line away from just a slightly dictatorial approach. My own take is that that fine line has been worked very carefully, and on the whole it has been achieved, although I know that the soft skills that

some of the people bring to bear are valuable, because they offset against the more rigorous and robust leadership style of others. In (Company A), that has been very effective and they have complemented each other.' Interviewee E

Training **

During both Workshop A and B the internal delegates discussed training as a topic area in question two.

Table 20 – Interview Quotes - Training

Participant 12 said 'I think that the application of the SMSTS and SSTS gives you that degree of confidence that there is a benchmark among all of us. We have all been on it …. And there are not now necessarily gaps in people's knowledge – there might be a gap in how they apply it, but at least you have that comfort. I think our rigour in making sure that is done and how we refresh the training is a positive thing'
Participant 10 'Here, training goes with the territory, you get the opportunity to refresh. It does not do any harm to get refreshed; stand down for a day and remind your-self of what the rules are'
Participant 5 'I think the training has now got to a level that we need different training'
Participant 6 'If they (the operatives) have not had training, they are not allowed to get the equipment out'
Participant 12 'What has made our safety better is maybe not the external training, but the on-site training'
'Three years ago, the attitude was, 'Oh, do I have to do training?' I think now people understand why they are being trained, and it is to help them work in a safer environment, but also to give them job opportunities' Interviewee C
Interviewee E 'Commitment to a training programme is obviously the big change; and the realisation that it is an integral part of any health and safety management' the interviewee goes on to say 'It strikes me that, certainly within certain groups of the company, that training has been very effective and has been embraced. Other areas are very reluctant to see the value of training. They still have a very begrudging approach to being trained'
'You cannot measure the benefit of training all the staff. You can measure some of the benefits, but it has changed us culturally' Interviewee C

The external perception in relation to training is blander than the internal perception. The external interviewees have not all made the link between training investment and business performance improvement. Interviewee B states that he is unsure if 'the whole organisation is becoming smarter, but the people I have worked with seem smarter than they were before', whilst also commenting that 'they are thinking hard constantly about how to generally improve the way they do things' and suggests that the business has asked them to 'present themselves a bit differently to the client' the interviewee then reflects that the business is now perceived as 'right up there' when comparing it to our peers.
Interviewee C reflects that 'we can now be confident and comfortable that they (the company employees) have received the right level of training', as well as 'improving the self-esteem' of some of our workers. The interviewee also comments that 'the behavioural programme that we started was a good thing; it opened everybody's eyes up, so that they started looking around'
Interviewee D states 'Everyone is having more training and more relevant training'
Interviewee D also comments on the relevance of finding ways to train individuals which suit their learning style, 'Not everyone can sit in a classroom environment… it is about personalising training, everyone learns in a different way'
Interviewee E provides further underpinning for this with the comment 'considerable thought has gone into the variety of training methods, and it has paid dividends, too much classroom based training does not support this sector' (construction)

This last comment supports the way that the workshop delegates are thinking with regard to training, and whilst we have acknowledged that as a business, for some time now, it was one of the key drivers when designing the original drama-based training programme we must now focus more on providing appropriate methods for our teams which support their learning style whilst also challenging their comfort zone. As a business we will ensure that we engage the teams in a two way conversation regarding the content and outcomes of any future significant training activity which is linked to change and improvement rather than simply a competency based course, it is important that the teams feel that the training is value adding for them, as well as seeing it as an investment in them. This approach should go some way to alleviate the feeling that was clear from the workshop that training is simply a way of 'covering the business's arse' (Workshop A).

Health &Safety **

When talking about safety, the perception between internal and external was similar, with a more strategic bias to the comments coming from the external parties which can be explained by the distance between them and the business as well as by their level of seniority in their own businesses, whilst the comments from the workshop were generally of a more tactical nature. There is obvious recognition by both parties that the improvements seen in safety have delivered business and reputational benefits.

Table 21 – Interview Quotes – Health & Safety pt1

'It has led us to tender in places where we might not have done before, for instance in the nuclear work. We are involved in rail work now, too, which has been useful, because the market we were in before has changed for the worse' Interviewee C

Improved communication between managers, clients and the workforce;

'The point about it all is that, if you walk around a site, talk to someone and see something, very nearby you will find somebody around who can talk confidently about the issues. If it needs putting right, they will put it right quickly. I did not really find that before' Interviewee C
'Now we have fairly decent results. You can compare yourselves with other people and systems' Interviewee C
'The biggest thing for us is to sit around that board table and receive reports about what is happening. We like to think we know what is going on. There is a good comfort factor from that' Interviewee C

However linking back to the comments made regarding training, there is an underlying scepticism about the tangible benefits to the business; it is seen as intangible and unquantifiable;

'We spend a lot of money and you cannot measure the benefits of getting that back. You cannot measure the benefit of training all the staff' Interviewee C

The potential to introduce some measures using the metrics such as the motivation index as previously discussed will assist the understanding by the Directors and senior teams of

the value, in its' broadest sense , of the training programmes the business has been delivering, and will continue to deliver.

This change in understanding and perception has the potential to assist in taking the next forward steps in transformation, as when people believe in an idea or activity; they will partake of it wholeheartedly and make it successful. Bandura (2010) states that 'unless people believe they can produce desired effects by their actions; they have little incentive to undertake activities or to persevere in the face of difficulties'.

It is possible that because the business has not had metrics around the success or impact of the training programmes that the employees have perceived little or no benefit to business success and that our clients have not made the link. This is because training is currently intangible and with so many other elements of our business being measured using published metrics, training has fallen through the gap and has not been acknowledged as making a tangible difference to business performance.

It is clear that safety has become a high priority in our workers minds following implementation of the transformational change programme.

Table 22 – Interview Quotes – Health & Safety pt2

'Everyone understands that safety comes first - do the job safely' Workshop A, Participant 1
'We do spend a lot of time generally talking about safety, which is a good thing' Workshop B, participant 2.
'In the last five years the safety systems and processes have eradicated a lot of the bad things that we were doing' Workshop A, Participant 8
'The Company is a good company to work for in terms of culture and their attitude to health and safety and quality, which is appealing to engineers' Workshop A, Participant 10
'Well it (safety) has dramatically improved because we are all so much more aware of safety' its implications and the implications of it going wrong as well' Workshop B, Participant 1
'Everyone understands that safety comes first – do the job safely' Workshop B, Participant 1
'The old days of 'just get the job done' have gone by; they are history- You do it safely. You get that message through to your blokes' Workshop B, Participant 1.

‘They certainly have improved things, and the proof of the pudding is the results at the end of it. The number of accidents that we had, which actually we do not have any more, has reduced. So that is a culture, like it or not. We thought it was a paper culture initially, but the end result is fewer accidents’ Workshop B, Participant 1

Black Hats **

The external perspective o Black Hats (was not particularly insightful, apart from one interviewee who discussed the fact that our Black Hats are thoroughly supported by our management teams;

Table 23 – Interview Quotes – Black Hats

‘I really like the idea of the role of management to lead and also support the foremen, the Black Hats, the guys who put men to work’ Interviewee B

The workshop in contrast had a lot to say about Black Hats (supervisors);

‘A good point that has come about is we now encourage the Black Hats to participate; they come to the SLT (Safety Leadership Team)’ Workshop A, Participant 5
‘We said, ‘we cannot get this stuff over if you do not have the Black Hats involved’…. Personally I think that if we had not got them engaged, we would not have progressed in the last four or five years’ Workshop A, Participant 5
‘The Black Hat is taking the time to read the method statement now, because he knows that it covers his arse as well’ Workshop A, Participant 6
‘They (the Black Hats) are much more willing now to buy in to it all’ Workshop A, Participant 11
‘The Black Hats would not say anything because they don’t think they are listened to’ Workshop A, Participant 10
‘We are not perfect as project managers… but the big issues are down at the supervisor level and they do need support’ Workshop B, Participant 2
‘The next lot of energy is going to come from giving some confidence to the Black Hats in the field’ workshop A, Participant 12

The diverse range of views expressed by the internal workshop delegates in relation to the Black Hats proved to be interesting.

There are clearly some project managers who are experiencing significant positive differences in the attitudes, and approach of their Black Hats, and some who are hearing their Black Hats complaining about the changes, the paperwork and the responsibility of the role. We introduced the concept of a supervisor wearing a Black Hat as a symbol of their leadership role in the work place and to ensure visibility of supervision numbers at a glance for the management teams.

After implementation of the initial changes some of the supervisors gave back their black hat and opted to stay as general operatives because they did not want to accept the responsibility that accompanied the role. It seems that there were supervisors who kept the black hat when they were not really willing to accept the responsibility that went along with the changes to the role of supervisor.

In contrast there are supervisors who have taken the changes on board and who are now making a real difference by being in the role and taking more responsibility for their actions and the actions of their workforce, which in turn makes the role of the project manager easier and more productive.

Aran and Michelle **

As insider researchers we have been careful to ensure that our position does not influence the outcomes in any way in either method of research. We appointed an external, independent facilitator to undertake the interviews and the workshops so that there was no possibility of any conflict or of skewing the answers to the questions.

We also took the step of ensuring anonymity for the interviewees and the workshop delegates, we felt this approach would provide the delegates with an additional level of confidence when answering the questions presented to them. As Directors of the business in which the workshop delegates are employed we felt it was important to make them feel as comfortable as possible and to be able to say exactly what they thought.

In taking this approach we also considered the fact that we have jointly been responsible for the changes made to the business during the last 7 years and that they may feel uncomfortable critiquing the changes openly if we were sitting in the room or indeed facilitating the session.

This approach was proven to be appropriate when the qualitative data was coded. There were 102 references made to ‘Aran’ placing it in the top 14% of all words used and

representing 1.08% of all words used. There were 88 references made to ‘Michelle’ placing it in the top 17% of all words used and representing 0.93% of all words used. It is clear from this that had we been in the workshops or interviews the responses may have been significantly different or lacking in some of the information we were able to gain by using an independent third party.

External perception is again in contrast to the internal perception of the impact we have had on the business and the change programme. Both audiences perceive that we have had a significant impact upon the organisation, but the external perspective is positive and the internal perspective is generally negative.

Table 24 – Interview Quotes – Aran and Michelle pt1

‘Aran displays a different level of commitment, which was quite an eye-opener for me personally’ Interviewee B,
‘It was something we had just started to think about before Aran and Michelle arrived at the firm, but it had not had a kick to move it forward, and probably would not have done without those two’ Interviewee C
‘The board particularly is comfortable and confident now with Michelle in her present role, whereas we were not before’ Interviewee C
‘Michelle has earned her stripes, as it were, and so has Aran’ Interviewee C
‘Since Aran and Michelle have joined the Group, the change on the health and safety front has been remarkable’ Interviewee D
‘The number of incidents is right down over the years since Aran and Michelle have joined the Group; it has gone down every year’ Interviewee D
‘Before Aran and Michelle were here, claims were starting to run away with themselves. It is totally different now’ Interviewee D
‘It is about making sure that the people you deal with are used to your standards, and I think Michelle and Aran make sure they vet them more’ Interviewee D
‘If you go around site, and something is on the floor, Michelle and Aran will walk past and pick it up straight away. Years ago, people would walk past… it’s about visible leadership’ Interviewee D
‘Michelle and Aran told some supervisors ‘you need to change. We are changing. This is the reason we are doing it’ I think they explained it to some people, they followed it

through' Interviewee D
'They live and breathe it, Michelle and Aran, they live and breathe it and I think they are always trying to improve it. They are never stopping. They are never thinking 'are we there yet?' They are always thinking of future things' Interviewee D
'I think not only have Michelle and Aran changed things, but they have explained to people why they were doing it: not saying, ' You are doing this because I tell you to'; they came in and said 'Look I think we need to do this ' and they listen to them (the workforce) and they make it two-way' Interviewee D
'Michelle is very good. He (CEO) brought her in from a different sector; not only is she from a different sector, she is a woman' Interviewee F
'What I would say to The Company is: keep bringing the Aran's and Michelle's of this world into your company' Interviewee F

The comments derived from the workshop transcripts are very positive and with several references linking the positive changes in the business to both of us. Our position as insider action researchers is verified by results of the transcripts.

The internal workshops returned a different viewpoint in relation to both of us and our impact upon the organisation, whilst it was recognised that there had been a significant impact, it was not necessarily recognised as a positive one.

Table 25 – Interview Quotes – Aran and Michelle pt2

'Obviously it is Aran and Michelle who have put the systems in place' Participant 5 Workshop A.
'The Black Hats are certainly not going to engage with Aran or Michelle there' Participant 5 workshop A
It has always been a very good company to work for, but that might have changed since Aran and Michelle came here' participant 4 Workshop B
You have to be able to talk to Michelle and Aran….I'm not talking about being someone's best friend, this is for the business' Participant 3 Workshop B
'It could be that when they came in, changes were made, and it maybe took time for both sides to become acceptable and get friendly with each other again' Participant 5

Workshop B
Prior to Aran and Michelle turning up, we were encouraged to talk to (Chief Exec). That no longer happens… that is a major change' Participant 1 Workshop B

The Chief Executive **

The Chief Executive is a 50% shareholder of the business with the other partner being his brother who is a silent partner. He is very hands on, and very visible to the workers, making himself known almost every day on one site or another. He is a non-traditional individual, and does not profess to know 'business' or the language of business; however, he has been exceptionally successful at building a high quality business which has retained its family values despite significant growth.

His values are at the very core of the business and reflect those which have been at the centre of the change programme. It is evident from the comments of both internal and external parties that his commitment to the business and the employees is evident, as well as his commitment to change and improvement.

Table 26 – Interview Quotes – The Chief Executive

'I think (Chief Exec) influence is very strong and very positive….I think he is very enlightened and caring.' Interviewee F
'(Chief Exec) is commended, in my view, for the way he has brought about that cultural change by doing all those right things: training, equipment, people – the Michelle's of this world.' Interviewee F
(Chief Exec) got us in when Michelle and Aran joined and there has just been a change ever since then. Interviewee D
'When Michelle and Aran came in, I think one of the things (Chief Exec) first said to me was, 'I want to make sure everyone goes home safely''. Interviewee D
'(Chief Exec) is supporting Michelle and Aran, from what I have seen, thoroughly on this' Interviewee D
'The culture has been led from the top. (Chief Exec) has followed it through' Interviewee D
'The boss who runs the firm was pretty hands-on. Everybody could see him giving his time to this.' Interviewee C

‘It comes right from the top. It comes right down from (Chief Exec)’ Workshop B, Participant 1
‘(Chief Exec) turns up at all the SLT meetings. He makes it very clear he is completely committed to safety, and that is a great message to give to the Black Hats, to say that the guy at the top says you are doing safety and that the old days have gone.’ Workshop B Participant 1
‘From a positive point of view, you are pretty much 100% sure that (Chief Exec) is behind you. That is very positive. Money is no object; very positive.’ Workshop A, Participant 5
‘I feel I am working for (Chief Exec), the man, rather than anybody else.’ Workshop A, Participant 11
‘I still think that the family connection is there. Obviously I cannot speak for six years ago, but most of us will see (Chief Exec) once a week or every two weeks. Workshop A, Participant 12
‘Nobody ever shuts the door on a new idea. I think that comes from (Chief Exec)’ Workshop A, Participant 1

Whilst internal parties make negative comment about the change they also realise that any change made has been with the absolute support of the Chief Executive. Their loyalty to him may prevent them associating negative feelings or thoughts with him, and therefore is it easier to attribute the negative feelings or thoughts with the two researchers, both of whom were new to the business and from peer or competitor businesses previously.

This long service of employees is unusual in the construction industry where workers tend to be transient, their work being predicated around projects that may be located anywhere nationally or internationally. From the workshops and the individual interviews it is clear that the perception of a strong family feel to the business has been maintained which differentiates it from many other businesses of its scale and in its sector.

This long service profile no doubt contributed to the success of the change programme, as stated by Ashforth, B. E. (1998) 213, 222.

> ‘As more people see themselves mirrored in their organisation. The organisation’s identity becomes more salient, as the organisation’s identity becomes more salient, member identification is enhanced’.

This reinforcing cycle provides a sense of unity that is useful for binding people together in collective change effort, and in particular where there is a strongly identified workforce,

with long standing emotional ties and complex psychological contracts linked to a company, Lewin (1951).

The Chief Executive is still very hands on in the business and despite bringing in new senior leaders for the business, he is still viewed as the patriarch, and the loyalty of the workers clearly resides with him.

Method Statements and Paperwork **

The elements of paperwork and Method Statements were deemed to cover the same issues and as such have been combined for the purpose of discussion.

During workshop B, the delegates spoke in some detail about the method statement process, in particular the size and relevance of them to the actual work being undertaken, as well as their complexity driven by the requirements of the principle contractor and their need to satisfy legislative requirements. This desire to respond to legislation has driven overly cumbersome method statement documents which become counter-productive when they are read to the operatives who switch off to the content fairly quickly in a briefing because of the lack of relevance to what they are actually going to do out in the field.

Table 27 – Interview Quotes – Method Statements and Paperwork

The main change is the fact that, in the last five or six years, the paperwork or the system has changed, so it is a lot more formalised. There is less mist. Workshop B, Participant 1
Participant 12 Workshop B said 'The Black Hats and the lads, they know what the standard is, to a point. I think they get a bit confused; because there is so much paper, they are not quite sure which bit of paper they should look at next. '
'We have to box clever about how we take that document and transfer it to the lads in the field'
The system ties up someone on paperwork, whereas the safety advisor …used to be out on site a lot more. Now, he is in the office most of the time, trying to keep up with the paperwork. Workshop B, Participant 2
Lead-in time can be a big issue especially if it is a big job with a lot of activities, because you have a lot of paperwork that has to be lodged and approved before you can do anything. Workshop B, Participant 1.
It was very paperwork led and I often have to check myself with regards to the amount of

paperwork that we are doing and why we are actually doing it. Workshop B, Participant 3
When we first got it, I thought, 'God, there is so much paperwork in here.' You do not have to use all of it – use a lot of it, but not all of it. Actually, as you have grown up with it, you understand it and everyone else knows how to use it now, as well. Workshop B, Participant 3
It has become 50% a paperwork exercise. My arse is covered more, the company's arse is covered more, but I am not sure it is having the correct… I think it has run its time now; I think it has become a box-ticking exercise. Workshop A, Participant 13
The paperwork is so onerous. Workshop A, Participant 11
There are potentially good guys being put off a) becoming Black Hats and b) taking the next step up because of what they see as the weight of paperwork and the responsibility that comes with it? Workshop A, Participant 11
If the amount of paperwork was dealt with, as we talked about earlier, fine-tuned a bit more and made more relevant. Workshop A, participant 5
The method statement is just a paperwork exercise; it is a system and a process. It has to be done, but that is all it is; we should not try to make it anything else. Workshop A Participant 8
'One of the problems with have with our Black Hats is that they are so hidebound in process by method statements that they have stopped looking to the side and thinking, 'there is actually a better way of doing this' Workshop A, Participant 8
In relation to a discussion regarding systems in Workshop B, participant 1 states 'they definitely work. It is just a question of the level of paperwork; then we are back to that same old argument again that we are too bogged down in paper'
'It (the paperwork) has become unwieldy, and what makes it worse is the principal contractors' Workshop A, Participant 1
'The system ties up someone on paperwork, whereas the safety advisor used to be out on site more' Workshop B, Participant 1
'The Black Hats know what the standard is, to a point. I think they get a bit confused; because there is so much paper, they are not sure which bit of paper to look at next' Workshop B, Participant 12

There is little mention of paperwork in the external interviews. It is clear from the statements above that the project teams perceive paperwork as a chore, and one which is

burdened upon them by us. The use of words such as ‘Onerous’ and ‘arse covering’ imply that the teams feel that the paperwork is required to be completed to satisfy our requirements, and not to satisfy the changed demands of health and safety legislation in the last ten years.

There is no paperwork produced within the Safety Management System which is not constructed to protect individuals or/ and the business in undertaking their activities in compliance with requirements of us as employers under The Health & Safety at Work Act 1974 as well as the CDM (Construction Design & Management) Regulations 2007, both of which govern the construction industry, and which have seen significant change in later years in an effort to improve the safety culture of the industry as well as to reduce the number of preventable incidents and fatalities.

Project Managers **

Table 28 – Interview Quotes – Project Managers

‘We do need that one (The SLT meeting), because we need to be re-focused, but if you really want more engagement, then it maybe has to be in a different forum, maybe with all the Black Hats; it does not have to be project managers. Black Hats will want to get involved.’ Workshop A, Participant 5.
‘I have felt that the project managers have too much to do; too much comes back to our door.’ Workshop A, Participant 11
‘What Participant 11 is trying to say is, as a group of people – project managers – we are doing a massive amount less managing of projects than we would have been doing five years ago. We do not do strategic thinking.’ Workshop A, Participant 5
‘Most of the people in this room see the culture from above them and down, but there is also a culture from the project managers down. You essentially have good project managers in this room.’ Workshop A, Participant 10
‘But there is that perception that it is a good culture – that is from the project managers down – but the engineers do not see what goes on in the board room behind closed doors’ Workshop A, Participant 10
‘The paperwork is actually managed by the site, by the project managers’ Workshop B, Participant 3
‘If you ask most project managers in a room, they would probably say, ‘We are part of a blame culture.’ Workshop A, Participant 1
‘We are not perfect as project managers – far from it, but the big issues are down at the supervisor level and they do need support.’ Workshop A, Participant 2

‘Our audits are carried out on site, as well. It is very different to these guys, but our project managers maintain the system, so they are aware of it.’ Workshop A, Participant 3

The external interviewees did not mention the project managers in the same way as was discussed during the internal workshops. This is to be expected, as the external interviewees are further away from the business in relation to operations and the day-to-day management of staff and teams. They are therefore more familiar with senior managers than the project managers.

The internal comments focus heavily on the increased level of paperwork and workload generally that is now a requirement of a project manager, there is no recognition that as safety legislation has changed, therefore our business and the way we manage projects has also had to change in order to comply. The business has also had to make amendments to stay ahead of our peers and to compete in the very difficult market place which is UK construction. There is no clear recognition by the workshop attendees that ‘paperwork’ is part of good project management controls. There is no clear understanding that paperwork and systems has helped to develop and grow our business as well as enabling the business to step in to different more highly regulated markets such as nuclear, rail and aviation project delivery.

Culture and Change. **

Table 29 – Interview Quotes – Culture and Change

‘With regard to safety, without doubt some fundamental changes for the better have been visible to everybody in this company, since this procedure was started. I do not know whether that was four, five or six years ago. That does not just mean seeing the accident frequency rate going down. Jumping to the last part, it is very much seeing that the culture of the company has changed drastically.’ Interviewee C
‘If you are not prepared to change, we are going to move on without you.’ That is what was said. Then the balance is what it has achieved, and the balance is in favour of the new processes we have, the safety rates and culture.’ Interviewee C
‘Those guys who have stepped up to the mark with regard to the culture that we now have are going to be the future here now.’ Interviewee C
‘The direction of (the company) is now much more concerned with getting everybody on and off site safely, with a culture of safety running through it and systems in place that underpin it all.’ Interviewee C
‘Unfortunately, I have seen some of the people who were not prepared to make that movement flounder and fail. Eventually, those people who were not up to that have moved

out of the company, but that is part of the process of change.' Interviewee C
'All the employees in the company have changed their attitude to safety.' Interviewee C
'There is a list of various issues, which reflect that the world has changed and these things are going to change. Without the input from other people, those things would eventually have filtered or dripped in, but they have been put in place quickly now and with confidence. That has helped everybody. Going back to what I was saying, it is the people and the fact that people have turned around and said, 'This is a good thing generally.' It is also well supported within the employees of (the Company).' Interviewee C
'You have to change and adapt or you are not going to succeed. You have to keep adapting.' Interviewee C
'It is just change, and some people change faster than others, accommodate and accept what is happening.' Interviewee C
'One of the points is that there is a strong 'we will succeed' culture.' Interviewee B 'I do see quite a change in their becoming significantly more sophisticated than their peers, and that is a good thing.' Interviewee B
'I think that possibly there were two factions. There was the Aran one to drive it completely forward to change the culture but then there was the old guard who were saying, 'This business has survived and grown and made money, and provided work for people, and why should it change?' Interviewee B
'Since Michelle and Aran have joined the group, the change on the health and safety front has been remarkable. They have looked at every incident and how they can learn from it. The main thing for me is the safety culture, which does not happen overnight' Interviewee D
'They think you can change the culture overnight. You cannot. It is a few-year process. And from what I have seen, it seems to be working; I go around the sites and the cultural environment looks to be a safe environment, and everyone is moving that way forward.' Interviewee D
'With the health and safety culture, part of the culture change is the training. Everyone is having more training and more relevant training.' Interviewee D
'They got rid of some people who had been there for 30-odd years because they would not change. They explained why they needed to change it – to make it a safer environment – and why they were doing things.' Interviewee D
'It is an ongoing thing; you have to keep people believing. You do change as an industry, you go into new areas, and you do things differently.' Interviewee D
'Yes. I think not only have Michelle and Aran changed things, but they have explained to people why they were doing it: not saying, 'You are doing this because I tell you to'; they came in and said, 'Look, I think we need to do this', and they listen to them and make it

two-way'. Interviewee D
'The culture has been led from the top.' Interviewee D
'In more recent years, the strong enablers have been issues surrounding culture, and making the move from an environment where the training is focused on compliance with a set of requirements to there being a culture within the organisation where health and safety is an everyday aspect of coming to work, and that it is not something that needs to be reminded by reference to a policy, procedure or checklist.' Interviewee E
'My personal view is that a commitment to things like paperwork, documentation or email is reflective of culture and training. If it is something that one automatically does, the building blocks of that training and culture have worked' Interviewee E
'My dealings with the (Company) have been over the last six years. I have certainly seen considerable change.' Interviewee E
'For any organisation that has gone through the level of change that I have certainly seen, finding that way of constantly reminding, without being done in a nagging form and losing impact, is a big challenge.' Interviewee E
'Commitment to a training programme is obviously the big change, and the realisation that it is an integral part of any health and safety management; it is not just the documents and policies, but the understanding.' Interviewee E
'There definitely has been cultural change.' Interviewee E
'I again know that, when (Company) employees are on site, they continue to impress even when, from a (Company) perspective, they may not have achieved the standard required. Unfortunately, we are still in an industry where sloppy standards are not uncommon. However hard we as a sector say that the improvements are there, it is still a sector that kills a lot of people; it is still a sector that struggling to address that issue. Unlike the impression I get from (Company), who have tried to capitalise on the current economic challenges, it is a sector that has become vulnerable to the economic challenges, and vulnerable when it comes to things like culture, and spending time on culture, values and the like.' Interviewee E
'If they did not have a good culture – and I have to believe it comes right from the top of the company – they would not have this sort of organisation.' Interviewee F
'Go back seven years and think of how safety was. It was a massively different workplace. It has changed beyond all recognition.' Workshop A, Participant 5
'Even though we kicked against changes, I can look back now and think 'Actually, they were good changes.' They certainly have improved things, and the proof of the pudding is the results at the end of it'. Workshop A, Participant 1
'It has been a very good company to work for, but that might have slightly changed since Aran and Michelle came here. That is because of the management style, I suppose. Do

not get me wrong, we could not have gone forward with the systems and procedures we had. We needed a change, and that was a change.' Workshop A, Participant 4
'We could not have gone forward with the systems and procedures we had. We needed a change, and that was the change. It came at the right time. I am sure we would not have got the Shard of Glass with the processes we had. I am sure we would not have got Heathrow with the processes we had in the past, and I think those procedures enabled us to bid for those big jobs'. Workshop A, Participant 5
'The change we need is for the guys on site to buy into the safety culture more.' Workshop A, Participant 2
'We do not have to change anything now, because the culture is there. The culture has been there for some considerable time.' Workshop A, Participant 2 'The whole point of the safety culture and the root cause analysis is to learn from the accident' Workshop A, Participant 2
'The difference in culture: you hear about (Other company), and I think, 'Christ, the project managers cannot sleep at night,' with what I hear that goes on in their jobs, in comparison to what is going on in ours'. Workshop A, Participant 2
'Culture is not just about health and safety. It is a part of it, but there is more stuff to it. I think we have concentrated too much on health and safety. Culture is much bigger than health and safety.' Workshop A, Participant 4
'You have to separate the period into a pre-Aran and Michelle culture and an after-Aran and Michelle culture.' Workshop A, Participant 4
'If we are talking about culture, I think the major issue we are faced with is getting them to make sure their guys do not cut corners, and if they do, do something about it.' Workshop A, Participant 1
'Also, it was made clear at the beginning that this is how the company is going to go forward, and this is going to be the culture. If you do not like it, it is time to move on. And there is nothing wrong with that.' Workshop A, Participant 4
'I think what we have to understand here is the industry is changing and we have to change with it' Workshop A, Participant 8
'There is a perception in the industry that Company A is a good company to work for in terms of culture and their attitude to health and safety and quality, which is particularly appealing to engineers.' Workshop A, Participant 8
'At Company A, the culture has always been very much that if you have a good idea or somebody wants to do something – be it training or whatever – the doors always seem to be open.' Workshop A, Participant 1
'There are different cultures (between Group companies) because we are totally different businesses. That is why there is such a clash when we work with Company C and

Company B; we are set up completely differently' Workshop A , Participant 6

It is clear that the change programme is viewed consistently positively by the external interviewees, commenting using words such as 'drastic', 'considerable' and 'remarkable' to describe the change. They also see the programme as ongoing and not a quick fix, and make links between change and a commitment from the business.

The internal workshops also highlight an understanding of why the business had to make change, with comments made in reference to their reticence to engage with the changes initially, such as 'kicking against' change in the early stages. There is an acceptance that the change programme has enabled the business to do work in highly regulated industries and that if change had not occurred this would not have been possible.

There is comment which refers to 'culture being much bigger than health and safety', showing a lack of understanding about the holistic nature of the change programme we have undertaken, which has included all back of house systems such as payroll, HR, invoicing, time-keeper, and many more changes which are not related to health and safety at all.

There is recognition in the workshops that in order to make change successful, it was necessary to lose people from the business who were not willing to change along with it. We would describe this as acceptance and understanding but there is still some residual negative feeling attached to losing some of the longer term employee.

There is an understanding that working for this business and having such robust systems and processes as well as a strong culture of safety provides a level of comfort for our project teams which our competitors project teams do not have.

In relation to culture it is clear that there is a positive approach to success, compliance is a term used to describe the culture also, and a reference to the on-going commitment of the business to pursuing change and best practice even in a highly challenging economic climate.

There is an acceptance that it is not only this business which has undergone significant change in recent years, but the whole construction industry, and that without change the business would not be competitive.

There are comments which relate directly to the difference in cultures between the three key businesses within the Group of Companies. This difference is expressed in relation to times when several of the businesses have worked together or interfaced on a client project. The core business is described as disciplined, whilst the other two business are expressed less favourably, and with less emotional attachment.

System and Process **

Table 30 – Interview Quotes – System and Process

It was a very painful couple of years just to get safety up at the front of the agenda, and systems and processes started to be put in. The good thing was there were a lot of systems and processes brought in to an organisation that was not used to systems and processes'. Workshop A, Participant 8
If you look at the systems we have in place at the present moment, who are dealing with the tendering, take them back a couple years ago, would we get their jobs? No, we would not. Workshop A, Participant 6
If you are in the office constantly battling the paperwork and the system, there is a wealth of experience… Participant 10, how much time do you get out on site, in reality? Workshop A, participant 12
In the last five years, the safety systems and processes have eradicated a lot of the bad things that we were doing. Workshop A, Participant 8
The method statement is just a paperwork exercise; it is a system and a process. It has to be done, but that is all it is; we should not try to make it anything else Workshop A, Participant 8
I think we have a good safety management system compared to most companies. Workshop A, Participant 6
I think we are maybe leading the way with the safety management system, because some of the systems that we have in place the principal contractors (PC) do not have in place. On most of the jobs you have been on, Participant 11, you have told the PC what you are doing, because you have led the way. Workshop A, participant 6
When I first came to Company A, it was very much a family business and it had those family values. Over the last six years they have become diluted, to a certain extent. But also in those six years, there has been a huge evolution in systems, processes and discipline, to a certain extent, which was not there before, or, if it was there, was not well managed. It has moved from being a family business to being a strategic business – that is probably not the right word, but I think people know what I mean. As a result, it has lost some of that family atmosphere. Workshop A, Participant 8
Because project management has now become so process-driven – and this is not just

about safety management – the project manager is now 90% managing the process. The problem with process is it stifles initiative. Workshop A, Participant 8
Because you are managing a system and a process, you have to delegate more and you have to manage more. Workshop A, Participant 8
We get it some ways, but I think a lot of people have had the initiative and spark driven out of them, not just by the safety processes Workshop A, Participant 8
Some of our clients see us as very arrogant about the application of our process; come hell or high water, it is our process and we are not going to go around it. Workshop A, Participant 8
The whole method statement process has become totally unwieldy and discredited Workshop A, participant 8
It is good, but the system is fairly enormous, and it takes a lot of operating, which ties up the safety guys Workshop A, Participant 2
If something goes wrong, then I am happy that it (the safety management system) is there behind me. Workshop B, Participant 2
To be honest, the SMS is a huge system, but I also think it is a very good system. When we first got it, I thought, 'God, there is so much paperwork in here.' You do not have to use all of it – use a lot of it, but not all of it. Actually, as you have grown up with it, you understand it and everyone else knows how to use it now, as well. Workshop B, Participant 3
We have the Group system. If we operate that properly we will have minimal incidents and accidents. Workshop B, Participant 1
One thing which has been a massive help is we have an automated system for logging training. Workshop B, Participant 6
In a nutshell, I think the system has been developed very well. There is still a lot to do on it, but I do not think there is as much to do. We have a team, comprising myself, Sean and others who would get involved. We would meet regularly to look at the different procedures: occupational health, critical workers and all sorts of things. Workshop A, Participant 3
There is no doubt that it is a good system Workshop B, Participant 1
They put a lot of systems and procedures in place for everybody to follow, because as you said, we have grown in terms of turnover. I mean, we had a turnover of £69 or £70 million, and now we have a turnover of £140 or £150 million. We could not have gone forward with the systems and procedures we had. Workshop B, Participant 4
We have to make it work. That is the tough bit. You can have any system you like in place, but if you cannot operate it, it is worthless. Workshop B, Participant 1
With this Black Hats meeting, we are trying to get more involved. I do not think they feel

like part of the process at the moment. It is very much them and us, from their perspective. They have been dragged kicking and screaming into this process. Workshop B, Participant 2
In detail in terms of their processes and procedures, no doubt they will have improved their risk assessments and method statements, and their daily activity briefings, if you call that a process. They have committed to that and I think that that helps tremendously. Interviewee A
If somebody comes to see me and says, 'I have these fantastic systems and processes,' I say, 'That's interesting.' My philosophy is that, if you have really good people and crap systems and processes, you still have a fair chance of doing a good job. If you have crap people and fantastic systems and processes, you will not get a good job. If you have both, you are motoring. Interviewee B
It has come to the point that I now see my surveyors concerned about safety, watching things going on at the site, looking after each other and generally making comments about it, which they never did before. In terms of systems and processes, we have seen lots of processes and discipline come about because of those processes. Interviewee C
We are supported by all the systems we have in place. Interviewee C
You have to manage a company that way around. You have to look after it and direct it. You need to give it some sort of direction. The systems in place are doing that now. Interviewee C
The direction of (Company A) is now much more concerned with getting everybody on and off site safely, with a culture of safety running through it and systems in place that underpin it all. Interviewee C
Again moving forward, processes seem to be a lot safer than they used to be. The number of incidents is right down over the years since Aran and Michelle joined the group; it has gone down every year. Interviewee D
I do think that things like quality management systems certainly played their part. Interviewee E
Certainly the systems, the procedures and commitment are much higher than one would see in the industry. Interviewee E
It is your people who actually live and breathe those management systems that make a difference. I do not think that management systems, of their own accord, unless somebody can do produce some empirical data to prove me wrong, are capable of making a significant difference. They are an integral part of the whole but to me I think that the difference has been achieved in the people: the people who lead and then the people who implement. Interviewee E
Certainly when I am involved in looking at why something has happened, there is a

willingness to be more open, less protectionism, a greater degree of comfort and ease to be self-critical, knowing that the consequences are not going to be instant dismissal of somebody who has potentially fallen slightly below the standard required, or knowing that a particular investigation is not a witch-hunt. That openness comes with the cultural change; it does not come with the processes and procedures, or the policies. Interviewee E

The internal workshop revealed that there is recognition that without the introduction of new systems and processes, the business would not have been fit to compete in the highly regulated sectors in which it now works. There is also recognition that change was required to grow the business.

There is further reflection regarding the amount of paperwork and reinforcement of a disconnection in their minds between paperwork and project management. There are comments regarding the size and complexity of the safety management system, but supported also by comments stating that when used the system becomes easy to navigate.

There are also references to the disconnect between the Black Hat supervisors and the use of the safety management system, in particular expressing their lack of comfort in using it, although it should be noted that most Black Hat supervisors are uncomfortable with any computer based system, including email.

The external interviewees comment on their distance from the day-to-day systems and processes which run the business but acknowledge that there has been change and improvement along with the cultural aspects of change, often commenting that the two things complement each other. There are references to how the change in approach to safety has reflected in other areas of the business too. There is recognition that system and process change alone will not produce results and that people are central to making them work. There is an understanding that the changes have not simply been related to safety systems but to the wider company systems which has been likely to have contributed to the success of the change programme.

Sub-Contractors **

Table 31 – Interview Quotes – Sub-Contractors

Our project managers maintain the system, so they are aware of it. That has filtered throughout all of the managers and, actually, down to the sub-contractors on site. All they say, every single time, is that there is too much paperwork. Workshop B, Participant 3
We monitor our subcontractors differently from ourselves. That might be because there are more accidents involving subcontractors. Interviewee C
We do class the steel fixers as subcontractors; they are distinct from us. The concrete men are labour-only people who come in. We work with them; they all used to work for us directly at one time anyway. I see them as part of them all. Workshop C
Certainly from my experience of visiting sites, in the last few years, where (Group Company) people work – predominantly I must say (Company), because that is my greatest experience – and other subcontractors, without even looking at the label on their hardhats or jackets, you could pick out who was a (Company) person and who was not. I found that very obvious on a visit to the Shard, towards the latter part of (Company's) involvement on the Shard, when other contractors were coming in and they are sharing a workspace. Interviewee E
Once you subcontract you lose control. You tend to rely on the subcontractors to provide the supervision, rather than providing it yourself; and everything suffers: your product suffers; delivery suffers; relationships with the client suffer. Interviewee F
A big issue in the industry – it is not specific to (Company); I actually do not know how (Company) manage it – is subcontracting and loss of control due to subcontracting. Interview F

It is clear that our clients recognise the benefit of a directly paid workforce in relation to improved safety performance, and the aspects of increased control which it offers when thinking about quality of product. There is recognition that the directly employed workforce behaves in a safer way, with an obvious safety culture in operation when compared to other sub-contractors working around them.

The internal perspective describes that the sub-contractors think there is too much paperwork. There is recognition that as a business we do not treat sub-contractors any differently to our own directly paid employees, this creating an all-encompassing safety culture.

6.2 Quantitative – Data Analysis & Findings

The surveys were designed to utilise the Likert scale, consisting of a series of written statements which expressed a clearly favourable or unfavourable attitude towards the statement. Respondents indicated how much they agreed or disagreed with each statement in each case *(Appendix 6)*.
The response categories were 'Strongly Disagree', 'Disagree', 'Neither', 'Agree', and 'Strongly Agree'.

The questions contained 30 false positive questions within the 102 overall question set across the three core areas.

- In the People section these were; 1, 2, 5,12,14,16,20,22,26.
- In the Safety section these were; 35,36,41,46.
- In the Culture section these were; 58,65,66,69,70,71,74,75,81,82,82,84,91,92,96,97,98

When we looked at the detailed questions, most of them were answered as expected (i.e. most people disagree that their supervisors are NOT concerned about health and safety). When it's then turned into a score, the 'disagree' only counts for a low number, which on the normal questions is a sign that there is a problem. On the false positives it is a positive not a negative. It did not therefore reflect the true meaning in the answers.

These questions were recoded as they contained false positive so that higher numbers always meant a positive statement towards health and safety throughout the survey questions. Thirty questions were recoded as they constituted 'false positives' e.g. I do not know anything about safety – (options, disagree strongly/disagree /neither/agree/agree strongly) so that higher numbers always meant a positive statement towards health and safety throughout the survey questions.

We considered leaving some answers non-recoded but decided against doing so as it had the potential to be viewed as massaging the data to what we would like to/expect to see.

The first set of data which is prior to recoding and reflects the false positives is shown in *Figures 26, 27 and 28*. We recoded the data set allowing for the false positives so that the bar charts in *Figures 29,30 and 31* allow for a quick check of which areas respondents disagreed with most and which might thus constitute areas of concerns.

Question 16 is an example of the recoding, shown adjacent to the red arrow in *Figure 26.* In the original survey the statement was 'I don't have confidence in speaking up'. This shows that a total of over 75% strongly disagree or disagree with the statement shown in red.

When you reverse this out in the recoding the statement becomes, 'I have confidence in speaking up' *(Figure 29)* and the result changes to 75% Agree and strongly Agrees, which marries up with non-recoded data, suggesting that this is the correct interpretation.

The questions marked in yellow are the 'reversed out' false positives, numbered as per the original survey question *(Appendix 6).* Counting up from the bottom line spacings and questions numbers in yellow gives the correct original question number *(Figures 29, 30 and 31).*

Table 32 – People Score

People Score					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	.2	.3	.3
	Disagree	12	1.2	1.5	1.8
	Neither	336	33.9	42.1	43.8
	Agree	410	41.3	51.3	95.1
	Strongly Agree	39	3.9	4.9	100.0
	Total	799	80.5	100.0	
Missing	System	193	19.5		
Total		992	100.0		

Table 33 – Safety Score

Safety Score					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	.1	.1	.1
	Disagree	7	.7	.9	1.0
	Neither	171	17.2	22.0	23.0
	Agree	554	55.8	71.3	94.3
	Strongly Agree	44	4.4	5.7	100.0
	Total	777	78.3	100.0	
Missing	System	215	21.7		
Total		992	100.0		

Table 34 – Culture Score

Culture Score					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	.2	.3	.3
	Disagree	8	.8	1.1	1.3
	Neither	302	30.4	39.8	41.1
	Agree	418	42.1	55.1	96.2
	Strongly Agree	29	2.9	3.8	100.0
	Total	759	76.5	100.0	
Missing	System	233	23.5		
Total		992	100.0		

The full survey can be viewed in Appendix 6.

People Questions Non Recoded

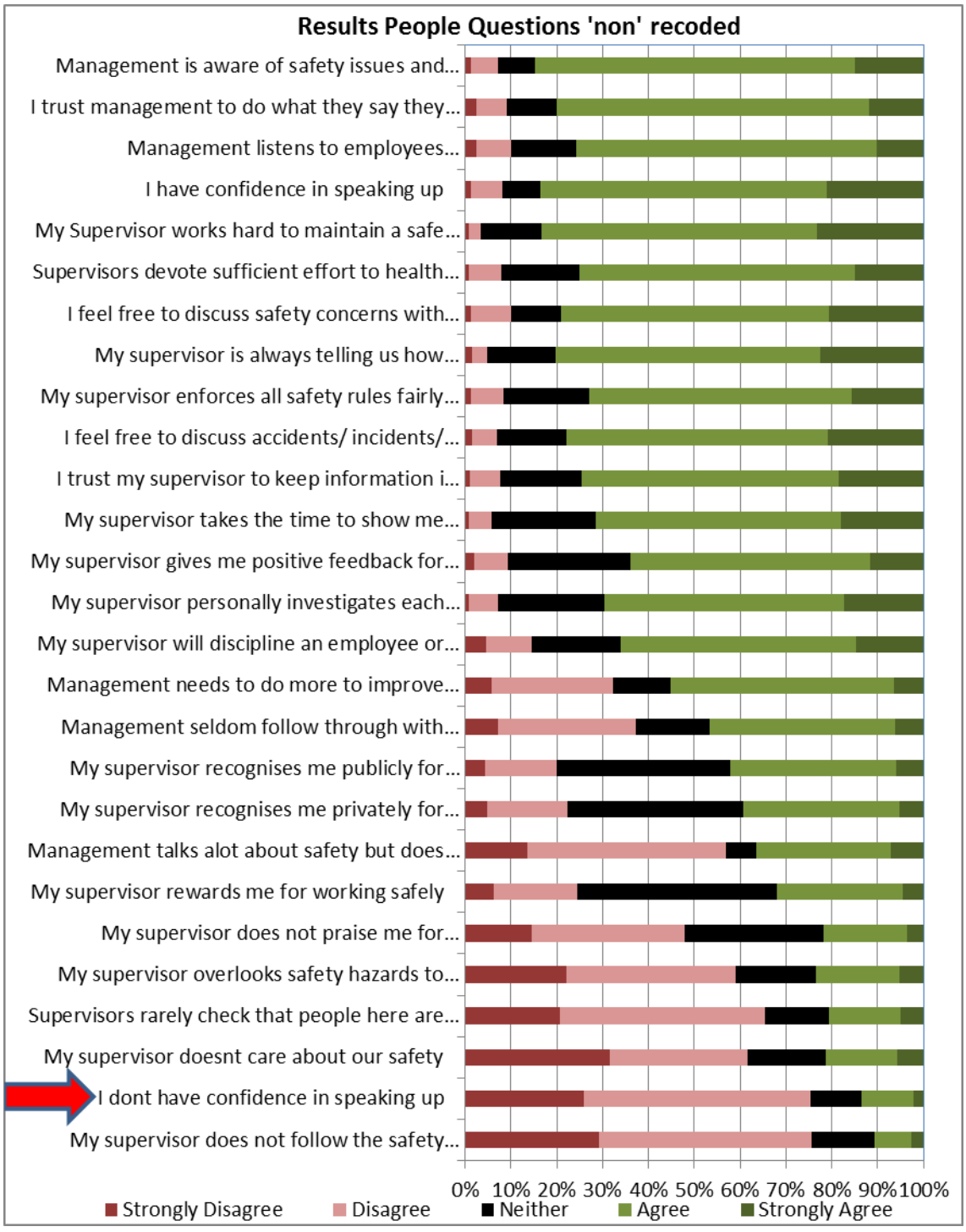


Figure 26 – People Questions Non-Recoded

Safety Questions Non Recoded

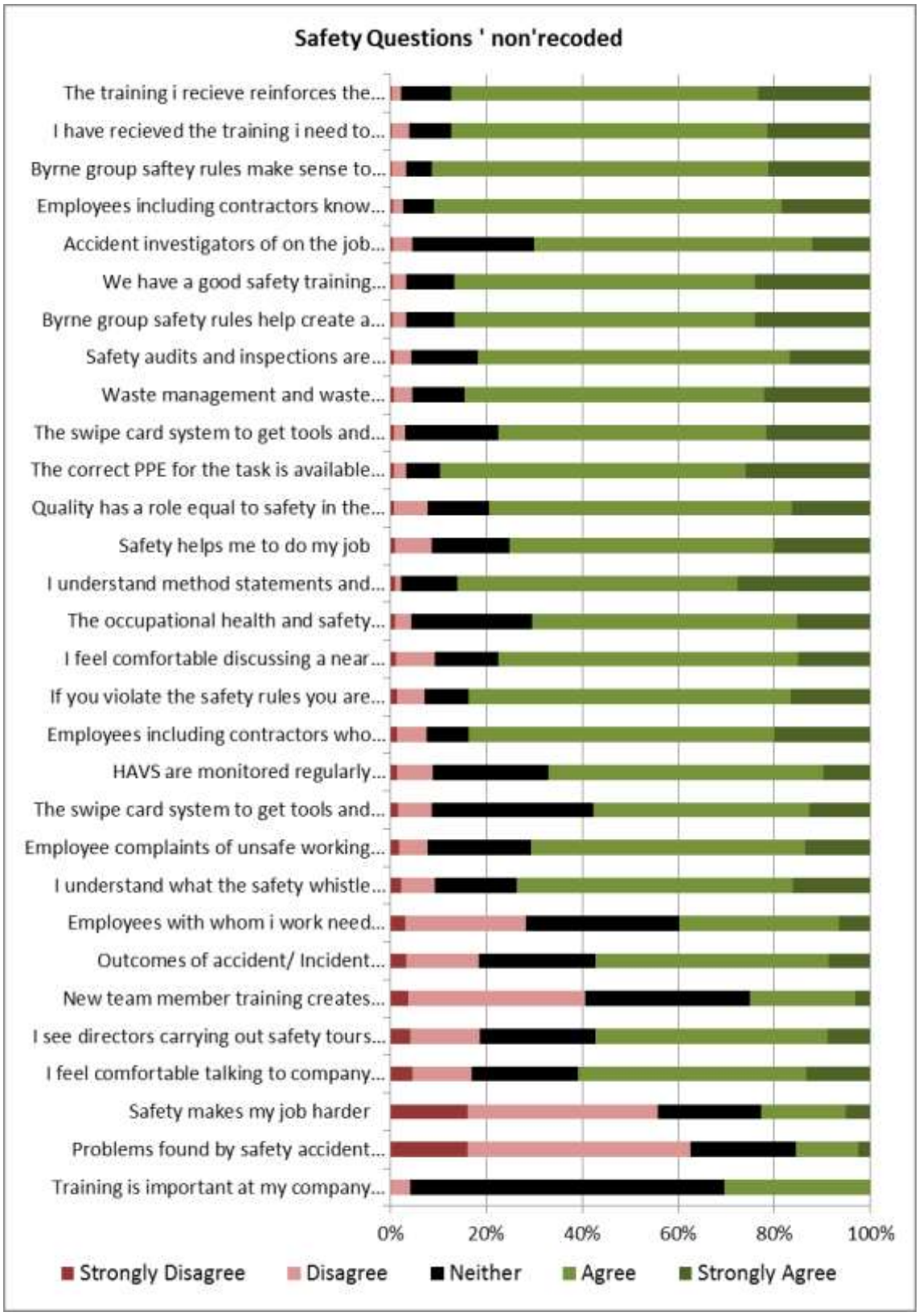


Figure 27 – Safety Questions Non-Recoded

Culture Questions Non Recoded- SEE APPENDIX 6

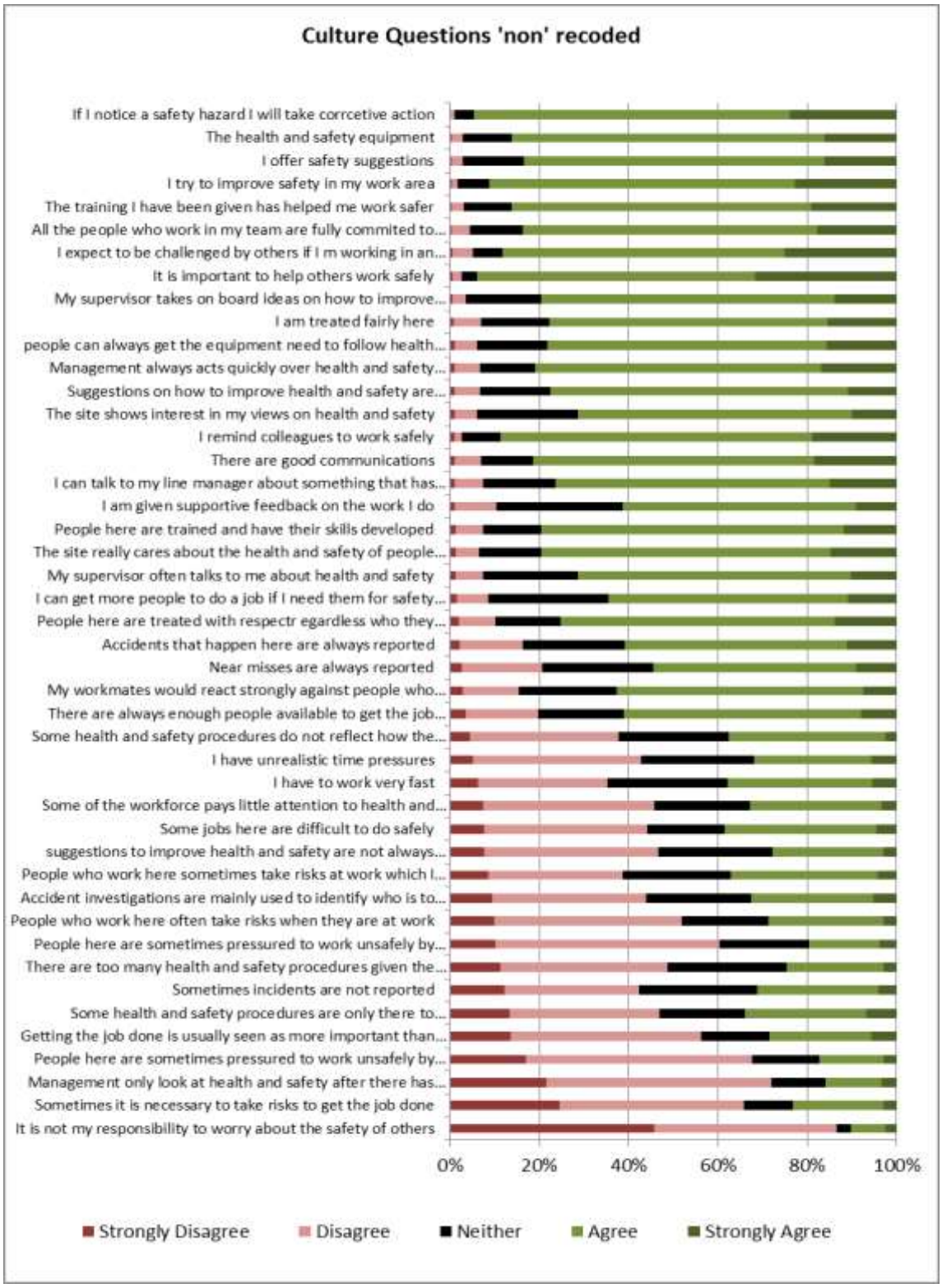


Figure 28 – Cultures Questions Non-Recoded

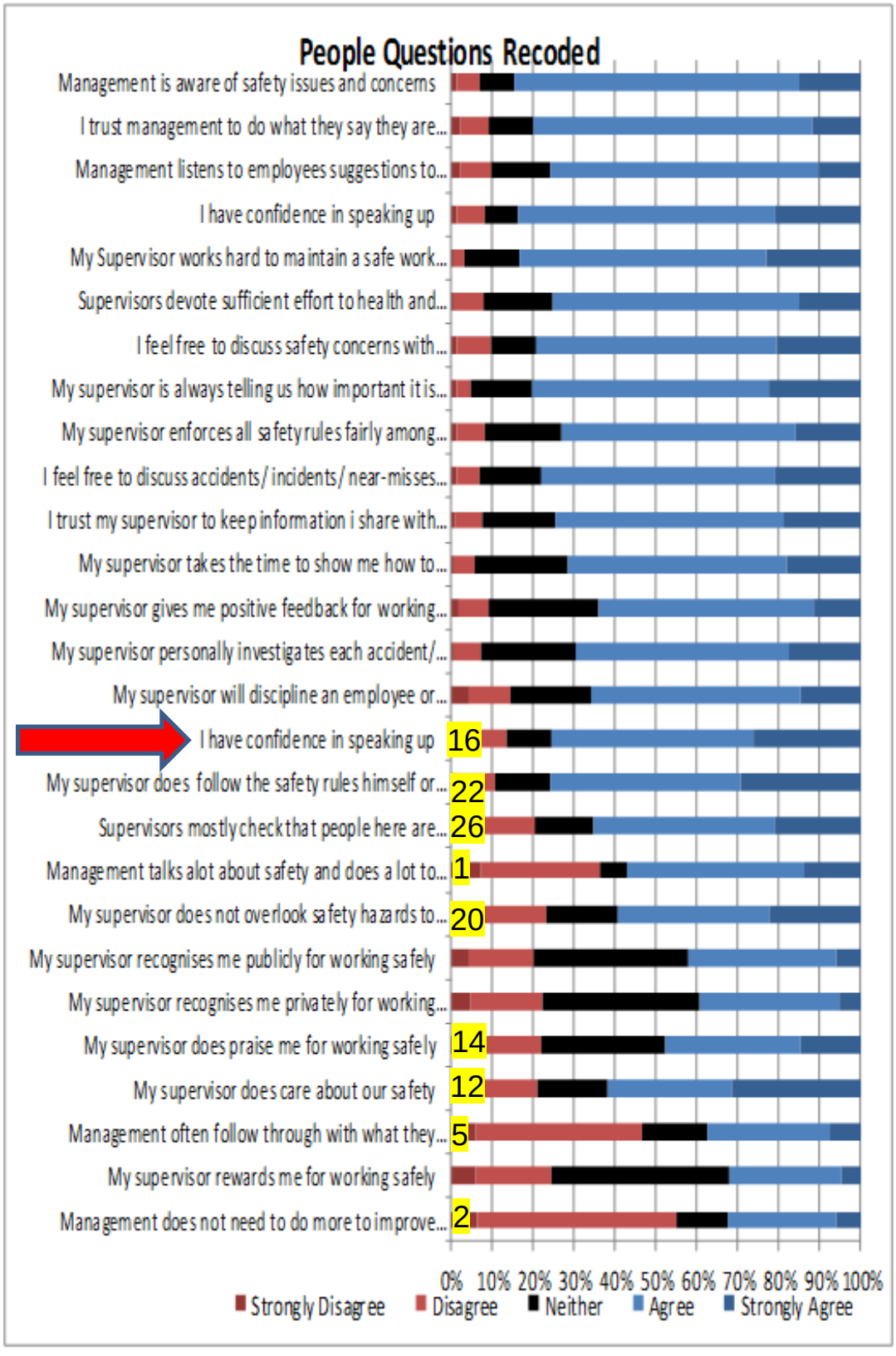


Figure 29 – People Questions Recoded

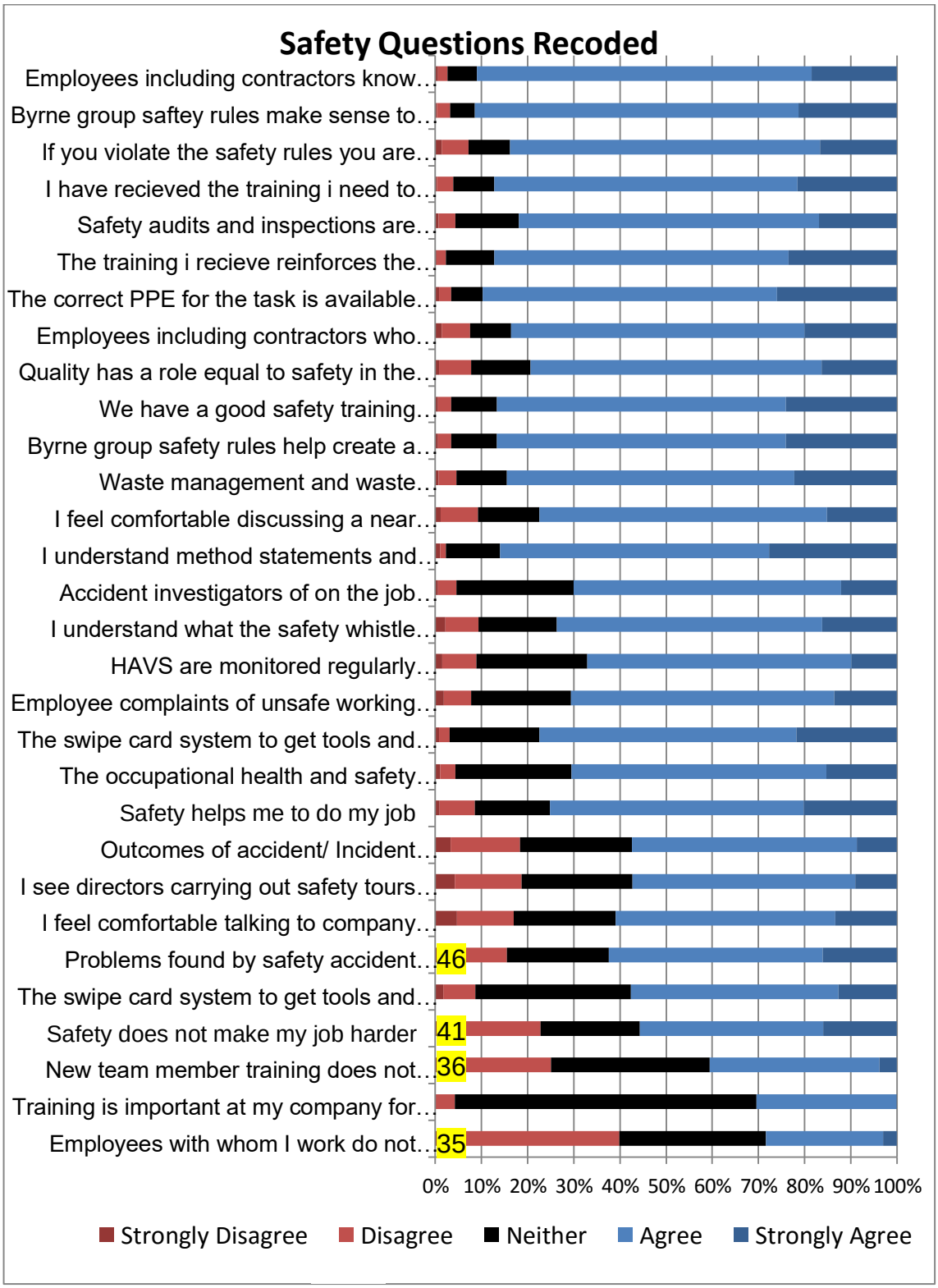


Figure 30 – Safety Questions Recoded

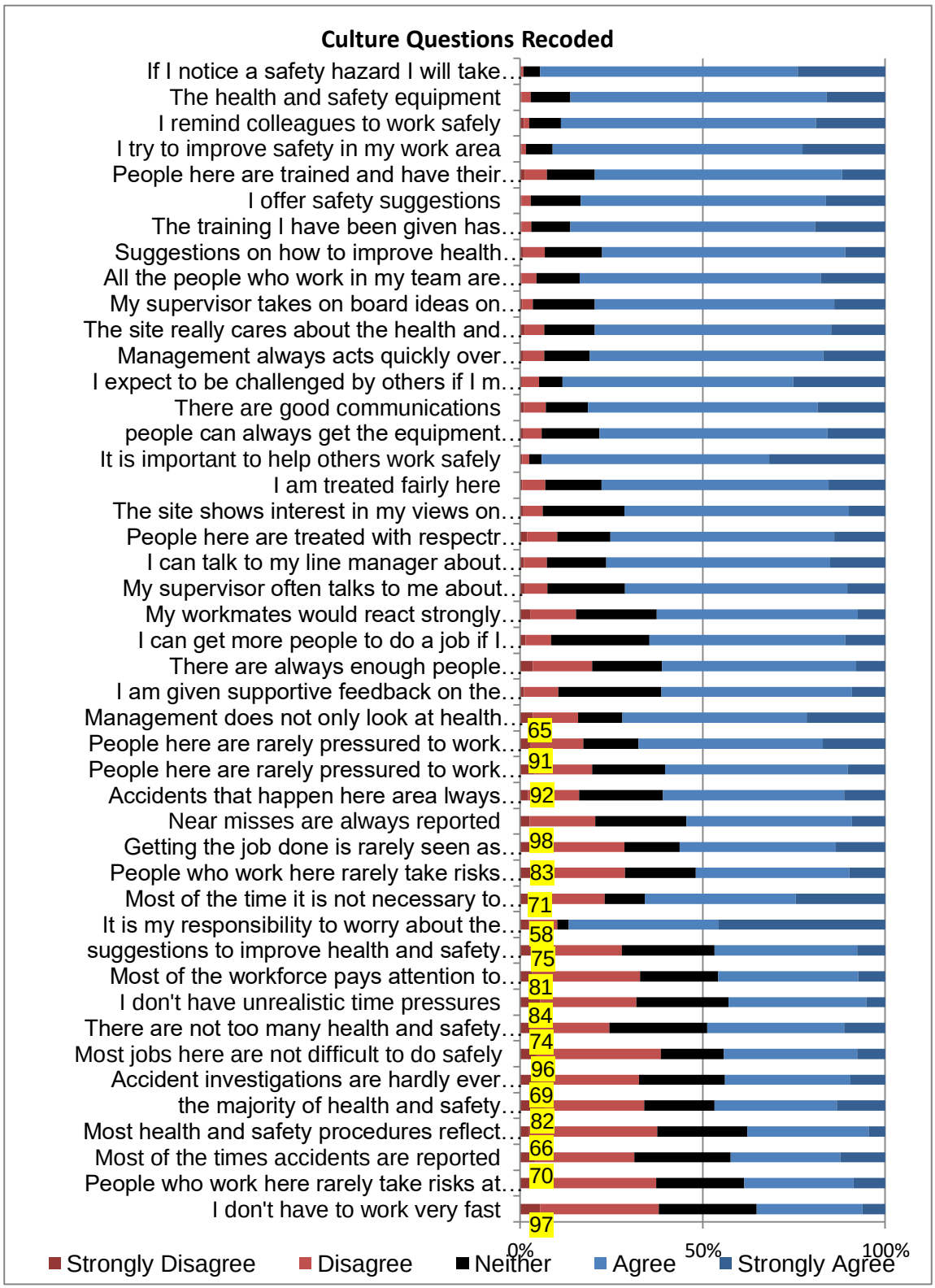


Figure 31 – Culture Questions Recoded

Profile of Answers

In order to have a summary score for each sub-section, the values of the questions were added and then divided by the number of questions (to achieve the average). They were then categorised into the same five categories. The results for the composite scores are discussed below.

The following descriptive statistics always use the valid percentage of respondents, i.e. those that answered each question. Missing values range between 8 and 14% depending on the value measured.

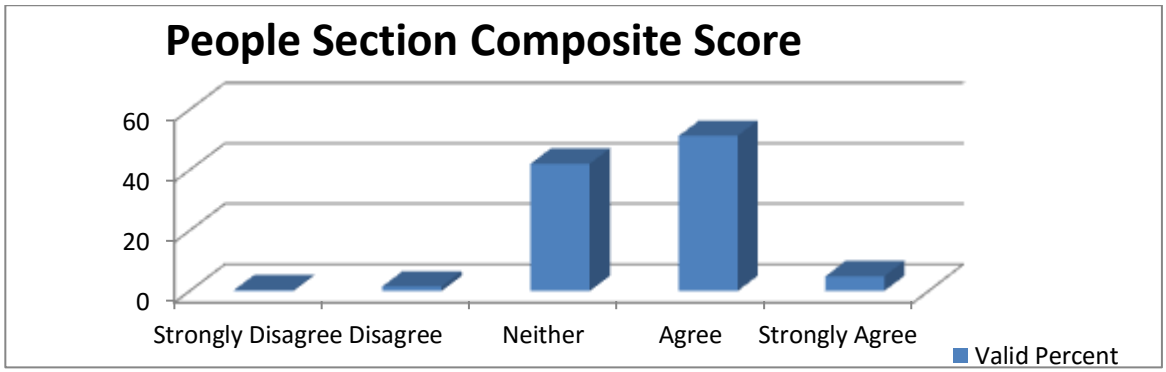
When using a boxplot *(Figure 32)* slight differences in the median (the thick black line) for each category can be observed, with slight differences in the lower and upper quartiles (the yellow box top and bottom line) and the top 25% and bottom 25% (the line with the cross bar on either end of the yellow box).

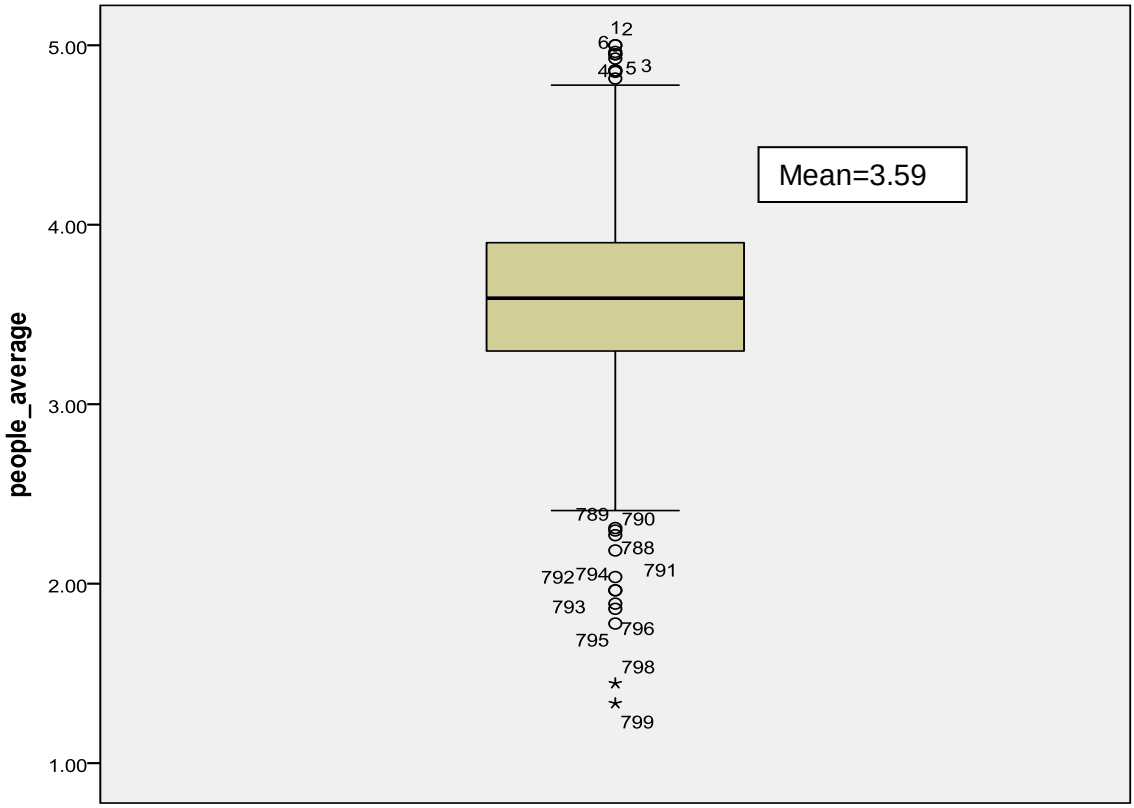
This is partially due to different outliers (the circle is an outlier and the star is an extreme score.) The grouping in the centre closer to the centre mass of the middle box represents 50% of the respondents and the top and bottom lines (cross bar) represent 25% each.

77% of respondents agreed or agreed strongly with the safety statements, while 59% and 56% of respondents agreed with all culture and people statements.

The tighter grouping in safety in *Figure 33* shows greater subject knowledge and is another example of the key element from the cumulative data that safety is the most important factor from the data set.

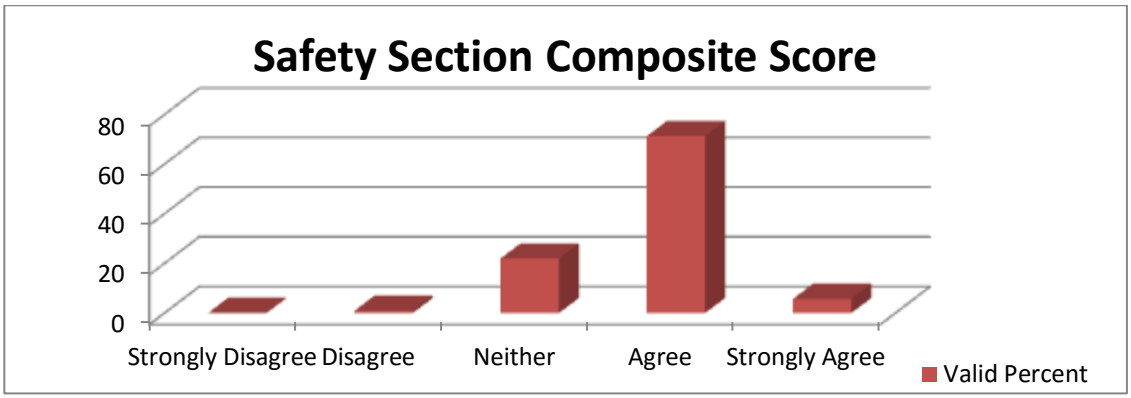
The distribution of the overall score for the questions can be seen in the bar charts, histograms and boxplots below. Comparing the 3 scores, the Safety score has the highest level of average agreement (mean = 3.81) whereas the average of the Culture (mean= 3.61) and People (mean=3.59) profiles are very similar.

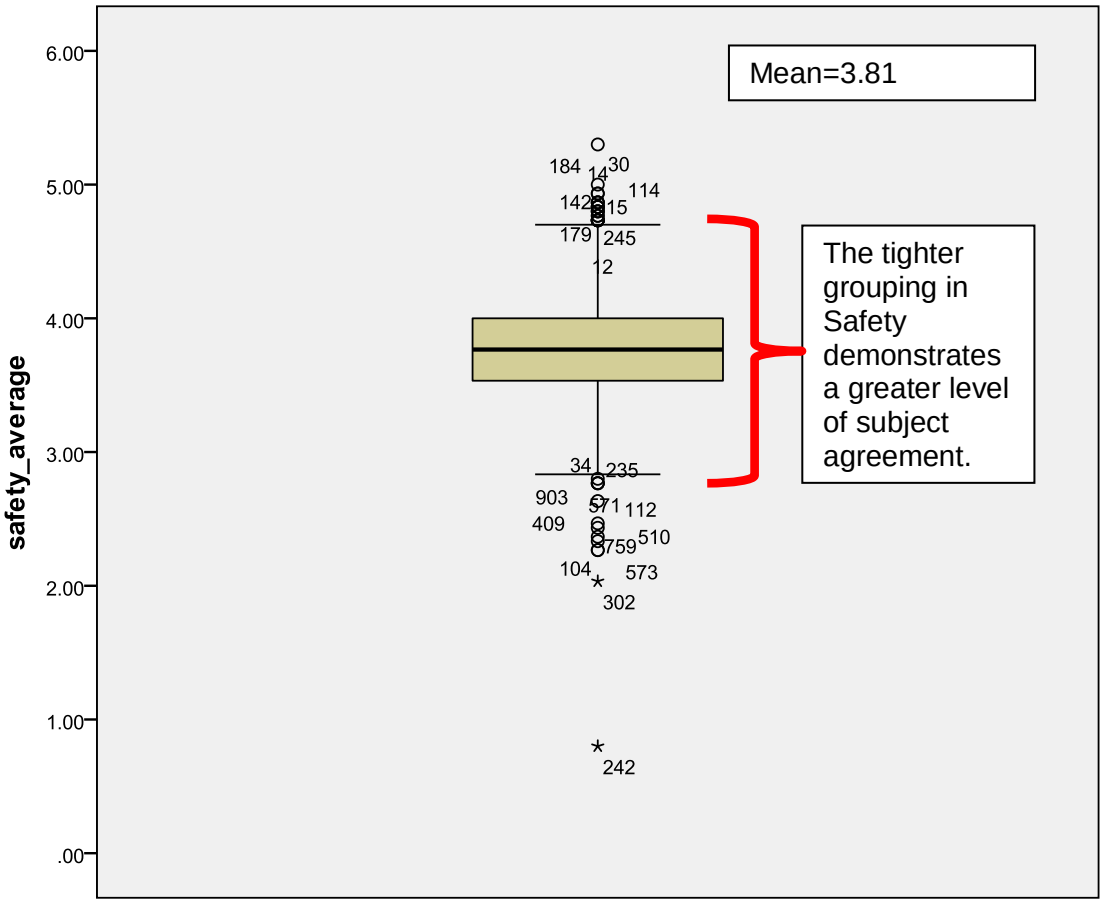




People Score					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	.2	.3	.3
	Disagree	12	1.2	1.5	1.8
	Neither	336	33.9	42.1	43.8
	Agree	410	41.3	51.3	95.1
	Strongly Agree	39	3.9	4.9	100.0
	Total	799	80.5	100.0	
Missing	System	193	19.5		
Total		992	100.0		

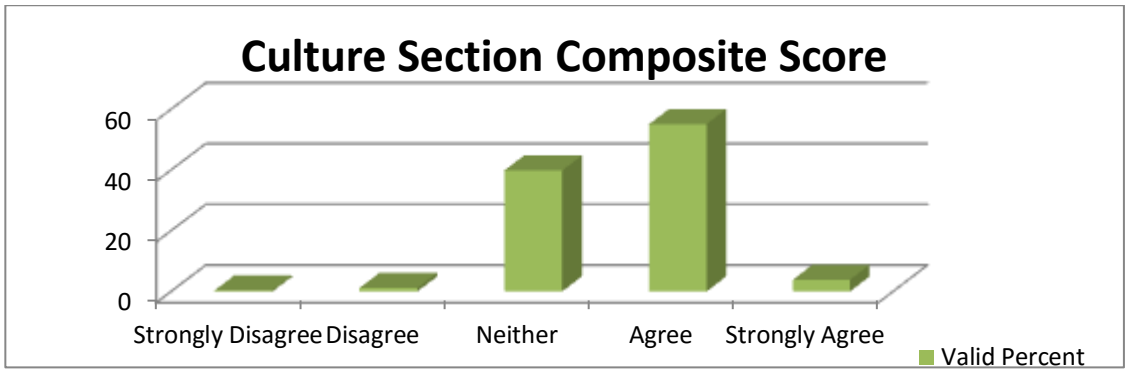
Figure 32 – People Section Composite Score

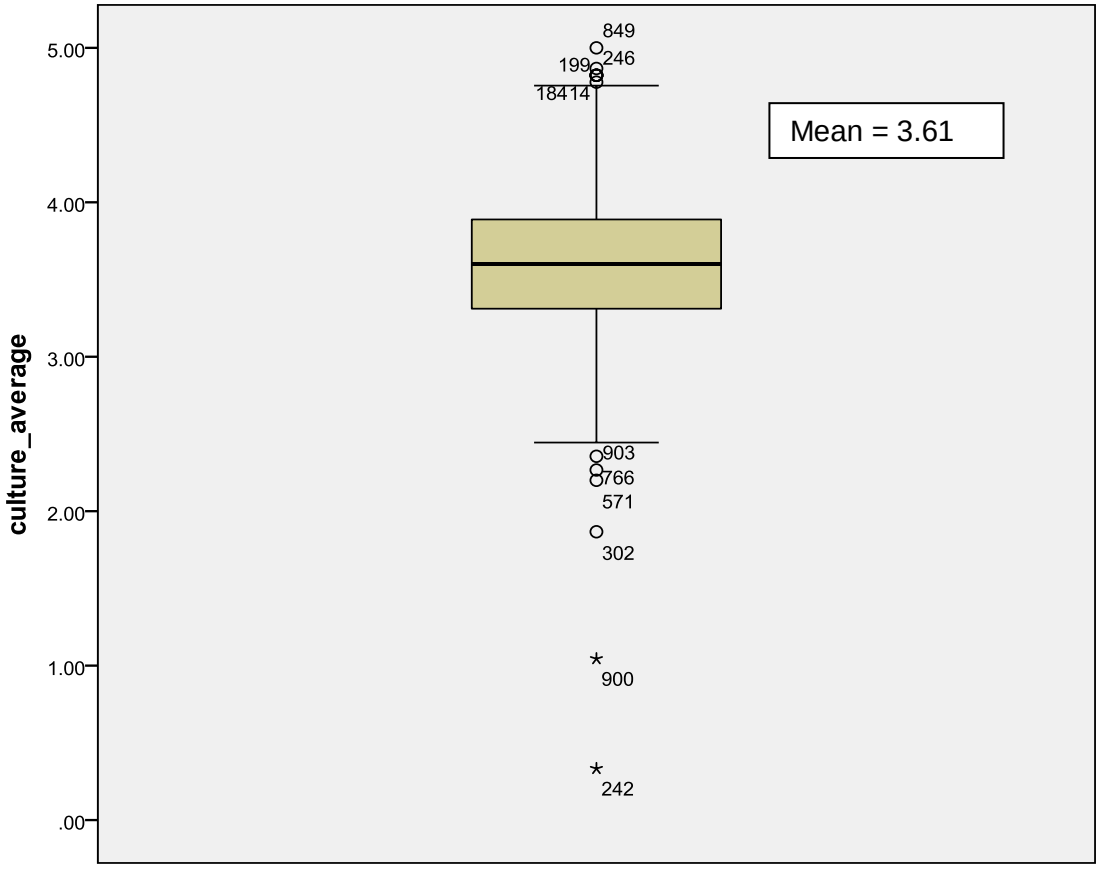




Safety Score					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	.1	.1	.1
	Disagree	7	.7	.9	1.0
	Neither	171	17.2	22.0	23.0
	Agree	554	55.8	71.3	94.3
	Strongly Agree	44	4.4	5.7	100.0
	Total	777	78.3	100.0	
Missing	System	215	21.7		
Total		992	100.0		

Figure 33 – Safety Section Composite Score





Culture Score					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	.2	.3	.3
	Disagree	8	.8	1.1	1.3
	Neither	302	30.4	39.8	41.1
	Agree	418	42.1	55.1	96.2
	Strongly Agree	29	2.9	3.8	100.0
	Total	759	76.5	100.0	
Missing	System	233	23.5		
Total		992	100.0		

Figure 34 – Culture Section Composite Score

Binary outcome Variable (Agree/Disagree Only)

We decided to just select **Agree** and **Disagree** only, in order to narrow the fields in search of any statistical anomalies.

In order to achieve a summary score for each sub-section, the values of the questions were added, then divided by the number of questions (to achieve the average) and then sorted into two categories with anything up to 3.50 or less being categorised as 'disagree' and every average above 3.51 up to 5 being categorised as 'agree'.

The distribution of the binary variables (0 = disagree and 1 = agree) can be seen below. Comparing the 3 variables, the safety score has the highest level of agreement (nearly 77% agreed to all the safety related questions) whereas the culture and people scores are very similar with about 60% of respondents agreeing to all questions relating to each topic.

Table 35 – People Binary

People binary					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	disagree	350	35.3	43.8	43.8
	agree	449	45.3	56.2	100.0
	Total	799	80.5	100.0	
Missing	System	193	19.5		
Total		992	100.0		

Table 36 – Safety Binary

Safety binary					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	disagree	180	18.1	23.1	23.1
	agree	598	60.3	76.9	100.0
	Total	778	78.4	100.0	
Missing	System	214	21.6		
Total		992	100.0		

Table 37 – Culture Binary

Culture binary					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	disagree	312	31.5	41.1	41.1
	agree	447	45.1	58.9	100.0
	Total	759	76.5	100.0	
Missing	System	233	23.5		
Total		992	100.0		

For the People questions the mean was 3.59 and the average between strongly agree and agree was 56.2 %. For the Safety questions the mean was 3.81 with an average between strongly agree and agree of 77%. The Culture questions provided a mean of 3.61, with an average of 58.9% between strongly agree and agree.

The profile of responses relating to the questionnaire clearly showed that when using quantitative research and considering the areas of people, safety and culture, the key area of importance to the responders was Safety.

We also found we had a balanced safety culture which has enabled the results of the survey and allowed the honesty in the feedback from respondents.
The efforts in continually adapting the systems and process across the seven businesss areas while maintaining business continuity and promoting the respondents to have comfort in speaking up has paid off.

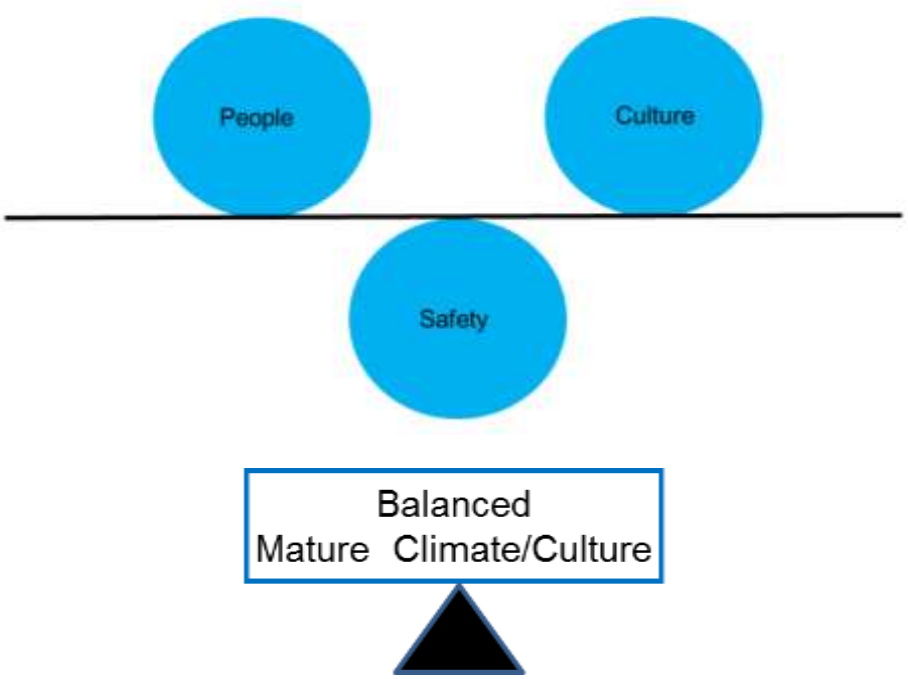


Figure 35 – Balanced Safety Culture

Profile of Respondents

The construction industry is unique in its blend of project delivery teams with both highly qualified white collar and highly skilled, general operative blue collar workers working in a dangerous dynamic team environment. The construction industry is a known killer; there are more deaths per annum in the construction industry than in any other industries, with construction being as high as 105 in a single year within the last 10 years. There are more people killed in the construction industry since 2001 (659) than in the UK armed forces in the whole Afghanistan conflict in the same period (444) Op Herrick (2013).

The sample audience, involved a given point and time in the business cycle (November/December 2012), and reflects the staff and labour make up at that specific time. While the data set reflects the workforce, it is representative of the people who filled in the forms and the valid percentage of the results available for consideration.

The construction industry has an industry-wide problem with 'image' which makes both men and women reluctant or uninterested in the industry (Bennett et al. 1999; Fielden et al 2000).

The UK construction industry is attempting to fill this gap in the short-term by hiring workers from low wage economies, rather than recognising the longer-term business case advantage of expanding the recruitment of women Gurjao (2006). Although there has been a numerical increase in the numbers of women and Black and Minority Ethnic groups (BMEs) entering the industry, this is only in line with the overall growth of the industry sector.

Chan and Dainty (2007) argue in favour of a conceptual move towards a 'knowledge economy' based upon principles of lifelong learning to improve the skills shortage. However, they point out that the organisational culture and make-up of the industry sector is hampering attempts at progress due:

> '…the small firms who make up the vast majority of employers within the sector, normative labour market and taxation policies and quasi-regulatory attempts to control the industry's employment and training practices have seemingly done little to safeguard the long term sustainability of skills provision.' Chan and Dainty (2007)

In real terms, diversity-based percentiles have remained relatively unchanged, consisting of between 10-12% of women and 2-4% of BMEs, since the year 1990.

The low numbers of women in the UK construction industry, 12.07%, lie in stark contrast with the current all-industry employment standard of 46.54% for women. This is further compounded by the fact that when women are expressed as a percentage of the total available construction workforce they are only at 11.06%, compared to men at 87.93% (ONS 13th August 2013).

This statistical representation of females in construction is relevant to the business survey as the administrative staff are predominately female with very low numbers of representation in either blue collar workers or heads of function. The samples in relation to gender differentials have been discounted as they are representative of a very small sample audience due to the nature of the UK construction industry and the make-up of the business being sampled.

The data sets were accessed and the results tabulated into a range of graphical representations. The following descriptive statistics always use the valid percentage of respondents, i.e. those that answered each question. Missing values range between 8% and 14% depending on the value measured.

The following graphs have been selected based on their relevance to the core findings of Safety as the predominant factor within the qualitative data set or where there is a difference worthy of attention.

We also ‘selected’ Agree and Disagree only, in order to narrow the fields in search of any statistical anomalies.

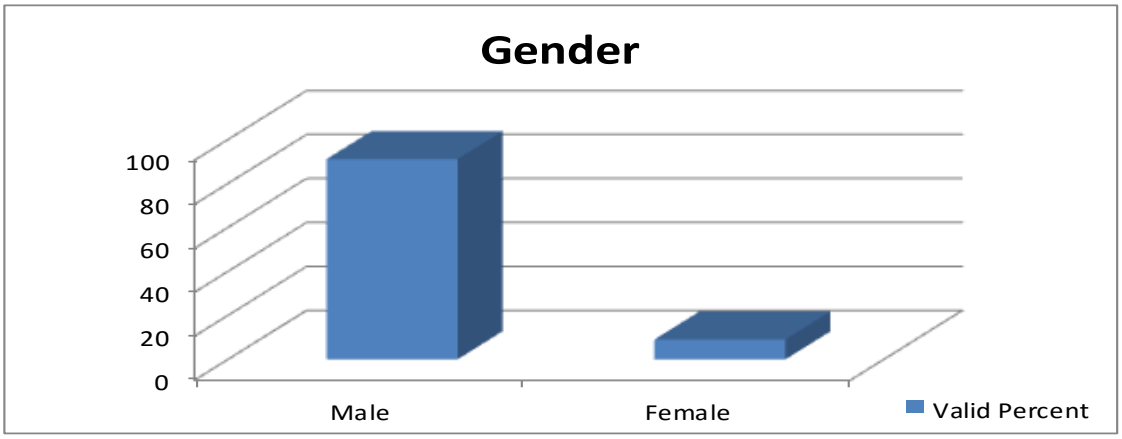
In order to achieve a summary score for each sub-section, the values of the questions were added, then divided by the number of questions (to achieve the average) and then sorted into two categories with anything up to 3.50 or less being categorised as ‘disagree’ and every average above 3.51 up to 5 being categorised as ‘Agree’

While the data set that proved the most significant was that in relation to Nationality we have included the others only in respect to safety as this was the key element identified in the Quantitative data set and proved the most significant.
The other data sets are interesting as they provide an understanding of the surveyed audience and helps to define the profile of the respondents for future consideration or research areas conducted by other research parties.

A1 – Gender

As can be seen from the table and graph below *(Table 38)*, the overwhelming majority of respondents were male (91%) with a very small percentage of female respondents (9%). This is reflective of the construction industry as a whole, and of our business in which most site-based female employees are employed in administration roles or support function roles rather than delivery roles.

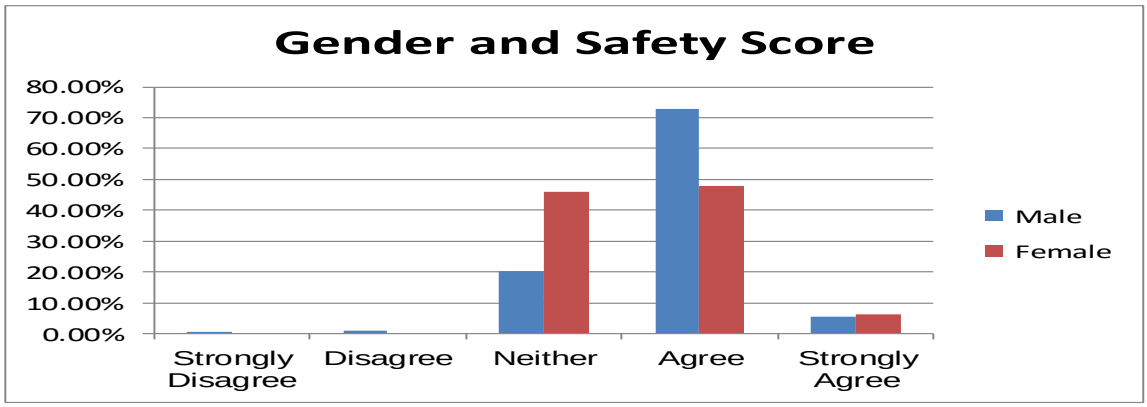
Table 38 – Gender



A2 – Gender – Relationship between gender and Safety

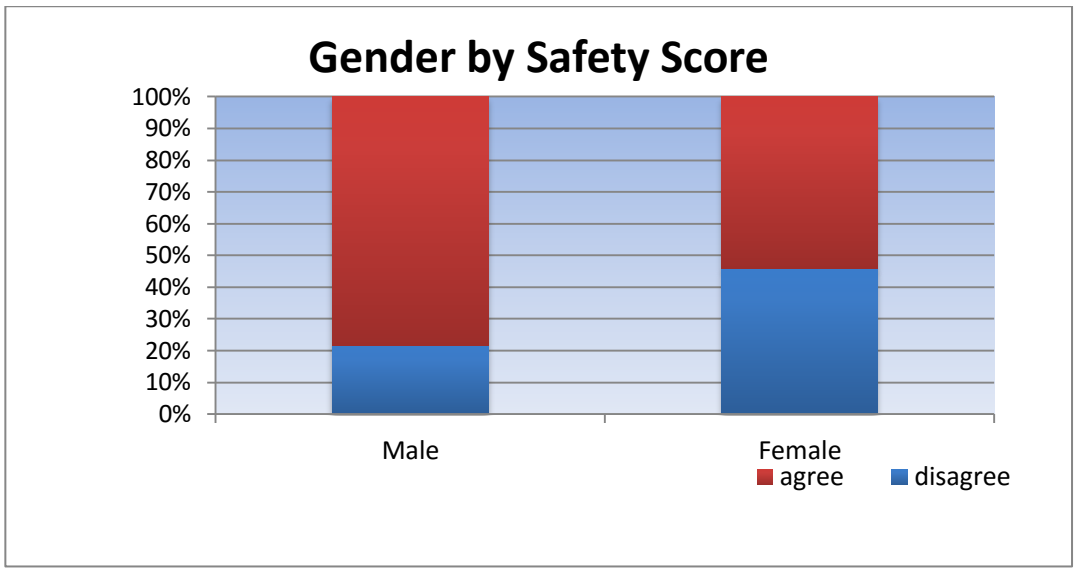
The difference between male and female respondents is particularly visible for questions relating to safety, where a considerably higher percentage of males agreed with the statements than females. This was further compounded by the fact that the majority of female respondents were in an administration role and do not have a direct relationship to safety.

Table 39 – Gender and Safety



The difference between male and female respondents is particularly visible for questions relating to safety, where a considerably higher percentage of males (80%) agreed with the statements than females (55%).

Table 40 – Binary Gender by Safety



Findings

Women make up 11% of the construction workforce in the UK and are not represented well in the blue collar trades.

The predominant image of construction is that of a male-dominated industry requiring brute strength and a good tolerance for outdoor conditions, inclement weather and bad language (Agapiou 2002: 697-705).

The image problem discussed above, which makes both men and women uninterested in the industry, is compounded by a general lack of knowledge and information about the industry, the career opportunities it can offer and the qualifications that are required (Fielden et al. 2000).

EMP13: Employment by industry ONS 13th August 2013

Table 41 – Employment ONS 13th August 2013

United Kingdom (thousands) not seasonally adjusted

People	All in employment	Construction	
Apr-Jun 2013	29,157	2,188	7.36%
Apr-Jun 2013	29,721	2,154	7.25%
Men			
Jan-Mar 2013	15,799	1,859	11.77%
Apr-Jun 2013	15,890	1,894	11.92%
Women			
Jan-Mar 2013	13,801	242	1.75%
Apr-Jun 2013	13,831	260	1.88%

11.06%	Women as a % of total construction workforce
87.93%	Men as a % of total construction workforce

This organisational culture undervalues both the industry itself and the women who work in it (Bagilhole et al. 1997). Chan and Dainty (2007) argue that the issue of skills and people covers two areas: shortages in quantity; and shortages in area, i.e. gaps.

Women in construction initiatives have been slow to show progress in increasing the percentage of women in construction, especially on site. There are still few women in senior positions (de Graft-Johnson et al 2009; Campayne et al 2007).

B1 – Nationality

With regard to nationality, we found we had 39 nationalities with just over half of the valid percentage stating that they were British (53%). Other sizeable groups included Irish (13.9%), Romanian (13.1%), Indian (9%) and Lithuanian (3.1%). All other groups constituted less than 1%.

The ‘other world’ category included respondents from diverse places such as Nigeria, Australia and Bangladesh.

Table 42 – Nationality Category

Nationality Category					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	British	456	46	53.8	53.8
	Irish	118	11.9	13.9	67.8
	Indian	76	7.7	9	76.7
	Portuguese	4	0.4	0.5	77.2
	Romanian	111	11.2	13.1	90.3
	Lithuania	26	2.6	3.1	93.4
	Polish	13	1.3	1.5	94.9
	Albania	12	1.2	1.4	96.3
	Other European	13	1.3	1.5	97.9
	Other World	18	1.8	2.1	100
	Total	847	85.4	100	
Missing	System	145	14.6		
Total		992	100		

B2 – Nationality – Relationship between nationality the three composite scores

Nationality had given us unique challenges in communication and in training, in the context of developing a culture within a multicultural business and city environment. We ensured that we had a 1:4 ratio of competent English speakers to non-English speakers and that nationalities were to a large extent segregated by trade to avoid the 'Tower of Babel' effect. Where you have a team of people working on a common structure or problem but all speaking different languages and unable to communicate, to achieve a single constructive outcome. We coupled this with translating the RAMS into the operatives' native language.

The survey results for nationality became a focus because of the data set and its potential indicators in relation to perception between nationalities when we reviewed the information.

Considering the different nationalities of respondents in the survey, across all nationalities more respondents agreed with the statements relating to safety, than to people or culture.

Looking at individual nations, whilst Albanians had the largest percentage of respondents agreeing with safety and people statements, Irish nationals had most respondents who overall agreed with culture statements.

A minority of Lithuanians, Romanians and Indians disagreed with the statements about people; a minority of Romanians and Indians also disagreed with the statements about safety and culture.

In the largest group of employees, British, 60% agreed with statements on people and culture, with a somewhat higher percentage of about 75% agreeing with statements on safety.

Table 43 – Nationality by Safety

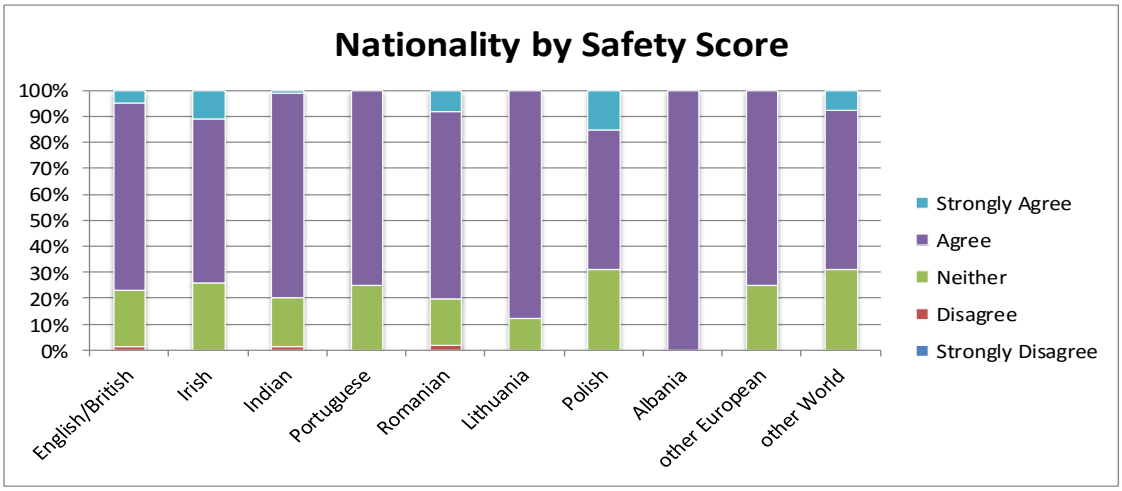


Table 44 – Binary Nationality by Safety

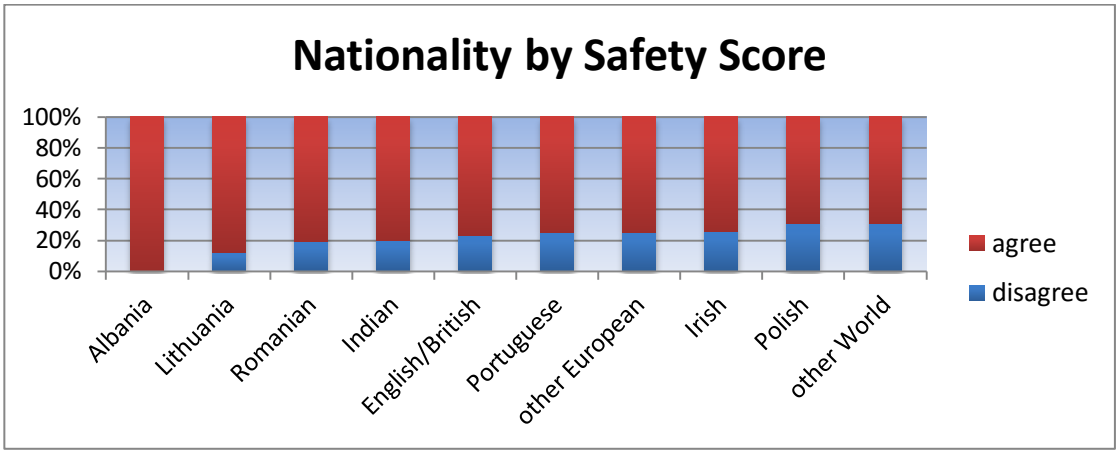


Table 45 – Nationality by Culture

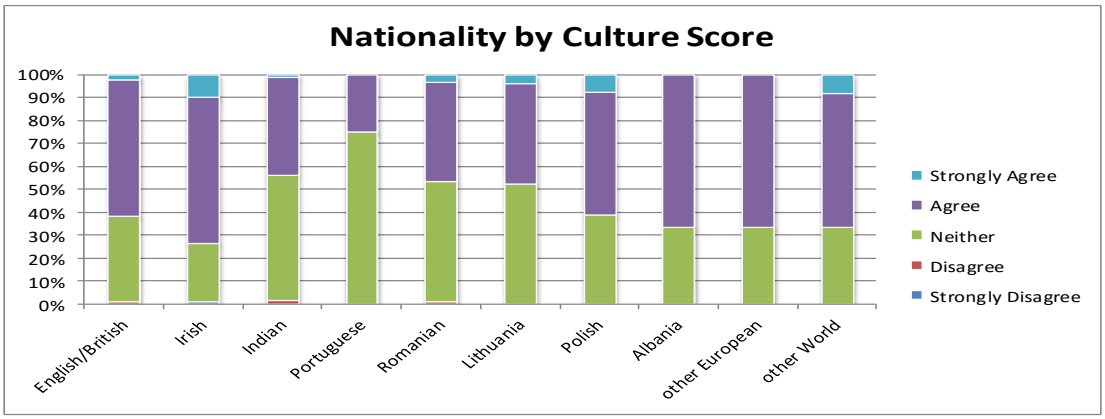
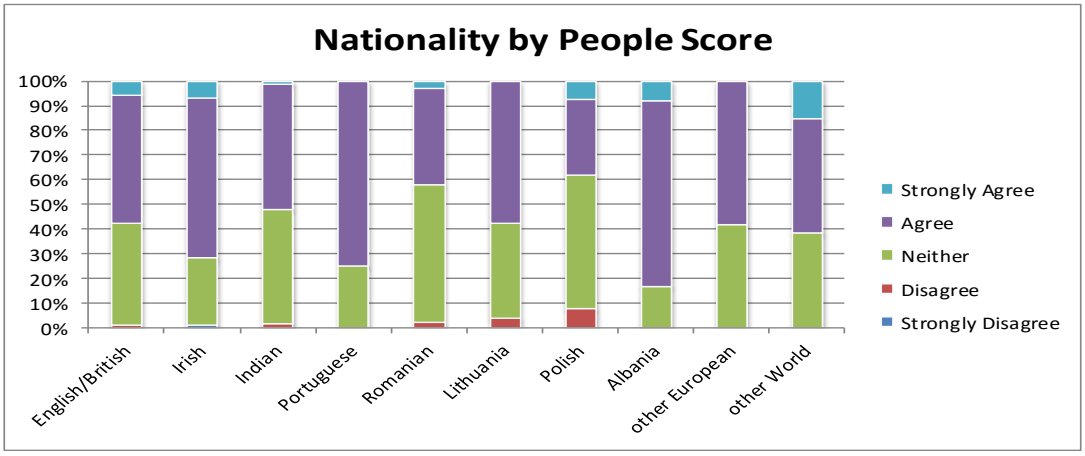


Table 46 – Nationality by People



In reviewing the data further we established that patterns emerged in relation to groups of nationalities and a potential clustering in their perceptions of People, Safety and Culture.

When we consider the data sets and the highest scores indicated in red in the tables below and then review the relationship between this high score and the others, it leads to bandings of scoring in groups of particular nationalities which was not consistent across the three survey areas.

In the safety score *(Table 47)* the results firstly showed bandings, with commonality between British, Irish, Indian, Portuguese and other European.
Secondly it showed bandings between Romanian and Lithuanian.
Thirdly it showed bandings in relation polish and other world.

Table 47 – Bandings by Safety Score

				Safety Score				100.00%
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Total		% Difference from Highest
British	0.00%	1.10%	21.90%	72.20%	4.80%	100.00%	77.00%	23.00%
Irish	1.00%	0.00%	24.80%	63.40%	10.90%	100.00%	74.30%	25.70%
Indian	0.00%	1.30%	18.70%	78.70%	1.30%	100.00%	80.00%	20.00%
Portuguese	0.00%	0.00%	25.00%	75.00%	0.00%	100.00%	75.00%	25.00%
Romanian	0.00%	1.90%	17.60%	72.20%	8.30%	100.00%	80.50%	19.50%
Lithuania	0.00%	0.00%	12.00%	88.00%	0.00%	100.00%	88.00%	12.00%
Polish	0.00%	0.00%	30.80%	53.80%	15.40%	100.00%	69.20%	30.80%
Albania	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%	100.00%	0.00%
other European	0.00%	0.00%	25.00%	75.00%	0.00%	100.00%	75.00%	25.00%
other World	0.00%	0.00%	30.80%	61.50%	7.70%	100.00%	69.20%	30.80%

In the People score *(Table 48)* we firstly found correlation between British, Lithuanian, other European and other world.
Secondly correlation between the Irish and the Portuguese.
Thirdly correlation between the Romanians and the Polish.

Table 48 – Bandings by people score

				People Score				
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Total	Total Agree	% Difference from Highest
British	0.00%	1.10%	41.40%	51.60%	5.90%	100.00%	57.50%	25.80%
Irish	1.00%	0.00%	27.20%	65.00%	6.80%	100.00%	71.80%	11.50%
Indian	0.00%	1.30%	46.70%	50.70%	1.30%	100.00%	52.00%	31.30%
Portuguese	0.00%	0.00%	25.00%	75.00%	0.00%	100.00%	75.00%	8.30%
Romanian	0.00%	1.80%	56.00%	39.40%	2.80%	100.00%	42.20%	41.10%
Lithuania	0.00%	3.80%	38.50%	57.70%	0.00%	100.00%	57.70%	25.60%
Polish	0.00%	7.70%	53.80%	30.80%	7.70%	100.00%	38.50%	44.80%
Albania	0.00%	0.00%	16.70%	75.00%	8.30%	100.00%	83.30%	0.00%
other European	0.00%	0.00%	41.70%	58.30%	0.00%	100.00%	58.30%	25.00%
other World	0.00%	0.00%	38.50%	46.20%	15.40%	100.00%	61.60%	21.70%

In the Culture score *(Table 49)* we firstly found correlation between Indian, Romanian and Lithuanian.

Secondly correlation between the British, Polish, Albanian, other European and other world.

Table 49 – Bandings by Culture Score

				Culture Score			
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Total	% Difference from Highest
British	0.00%	0.90%	37.20%	59.20%	2.60%	61.80%	11.70%
Irish	1.00%	0.00%	25.50%	63.30%	10.20%	73.50%	0.00%
Indian	0.00%	1.30%	54.70%	42.70%	1.30%	44.00%	29.50%
Portuguese	0.00%	0.00%	75.00%	25.00%	0.00%	25.00%	48.50%
Romanian	0.00%	0.90%	52.30%	43.10%	3.70%	46.80%	26.70%
Lithuania	0.00%	0.00%	52.00%	44.00%	4.00%	48.00%	25.50%
Polish	0.00%	0.00%	38.50%	53.80%	7.70%	61.50%	12.00%
Albania	0.00%	0.00%	33.30%	66.70%	0.00%	66.70%	6.80%
other European	0.00%	0.00%	33.30%	66.70%	0.00%	66.70%	6.80%
other World	0.00%	0.00%	33.30%	58.30%	8.30%	66.60%	6.90%

The correlations discovered in this data set forced us to consider the impact on nationality on the scores and the outputs from the quantitative survey.

These correlations and bandings became indicators and started us to consider the impact of nationalities and this research brought Hofstede into consideration.

Findings

The business is not like the general UK construction make up and is considerably more diverse because of the majority of its workload based in London. Hence, 47% of the workforce sampled audience were non-British or Irish.

> ‘Overseas workers are valued in the UK construction industry, providing skills and filling labour shortages. Many are experienced trades people and some enter the workforce through the Highly Skilled Migrants Programme. Overseas workers make up about 6% of the workforce in construction in the GB. The proportion of

foreign or migrant workers on larger sites in the bigger cities such as London, Birmingham or Glasgow, may rise in excess of 25 %' HSE (2010).pp18 with London having seeing this percentage rising to over 60%

The difference in the nationalities and there perspectives in relation to the three surveyed areas along with the increased number of non-British and Irish workers in the UK is worthy of further research by others.

Why are the Albanians prepared to agree 100% with the safety statements?
Why do 60% of British relate and agree to statements on people and culture is this because of a UK-based business delivering a change programme that is being delivered from a British and Irish perspective and is getting lost in translation?

These issues were the unasked questions at commencement of the study and our project work started to distil and expose the differentials only after the field work and analysis commenced. This then led us back to explore it in terms of the literature and to consider the implications for the future which we discuss in Chapter 7.

C1 – Age Groups

With regard to the age group of respondents, few respondents were younger than 24 years old (6%) or older than 56 years old (9%). The majority of respondents (31%) were between 25 and 35 years old.

Table 50 – Age Bracket

Age Bracket					
		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	16-24	53	5.3	5.9	5.9
	25-35	279	28.1	31.2	37.2
	36-45	251	25.3	28.1	65.3
	46-55	228	23	25.5	90.8
	56+	82	8.3	9.2	100
	Total	893	90	100	
Missing	System	99	10		
Total		992	100		

C2 – Age Group – Relationship between age group and safety

With regard to the different age groups, there is an observable trend (particularly with regard to culture statements) that older employees tend to agree more with the statements. With regard to safety questions, over 80% of employees above 56 years of age agreed/agreed strongly with the statements).

Table 51 – Age Group by Safety

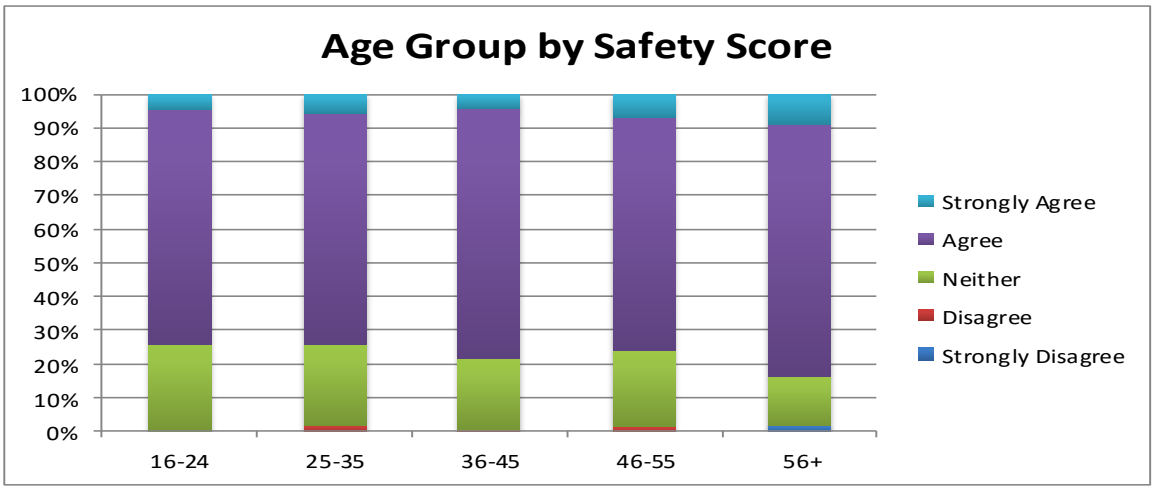
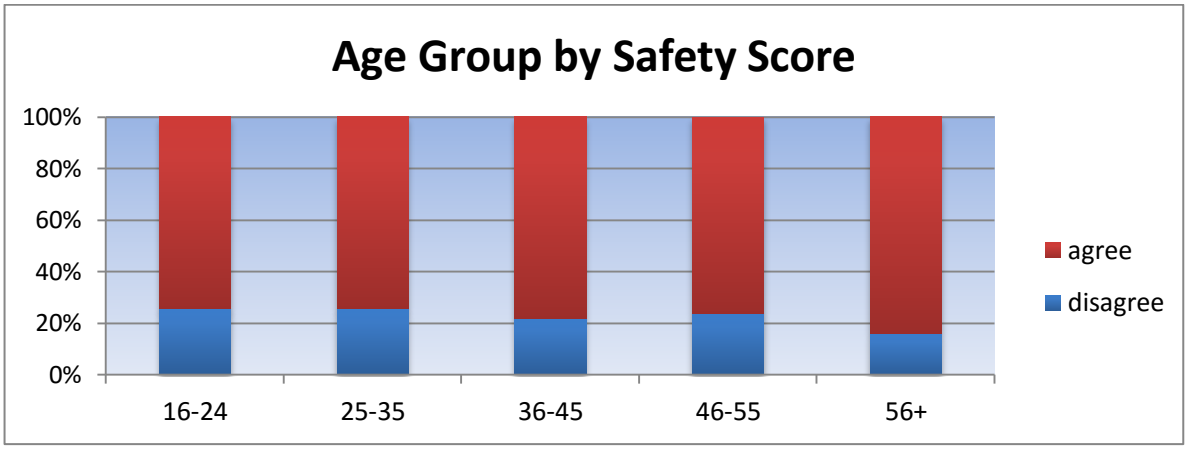


Table 52 – Binary Age Group by Safety

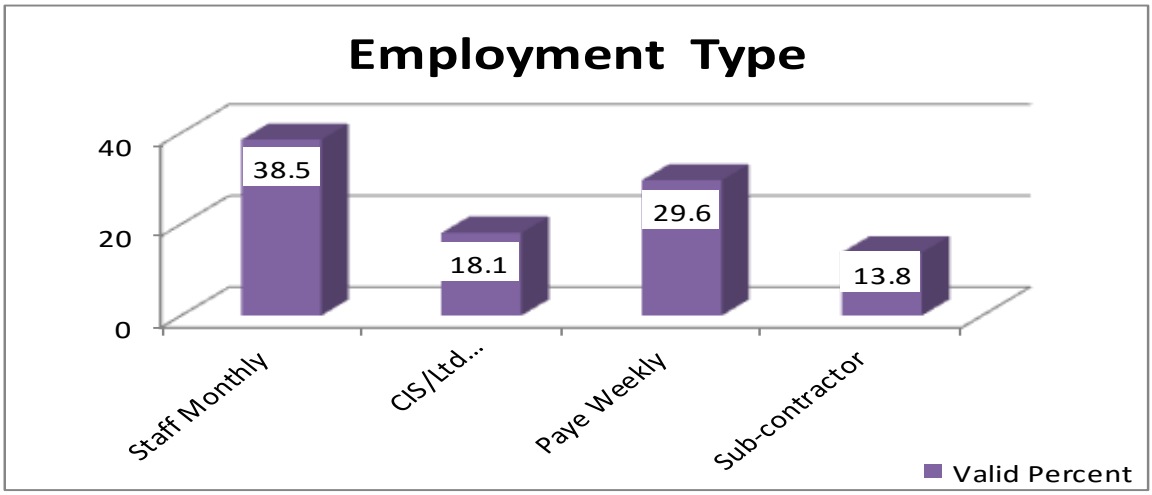


D1 - A) Employment Type
B) Job Function
C) Employment Status

D1 – A – Employment Type

With regard to different positions and status of employment, over a third of respondents were working as Staff Monthly (38%), another third as PAYE Weekly (29%), less than a fifth were working for CIS/Ltd Company (18%) and even fewer were working for sub-contractors.

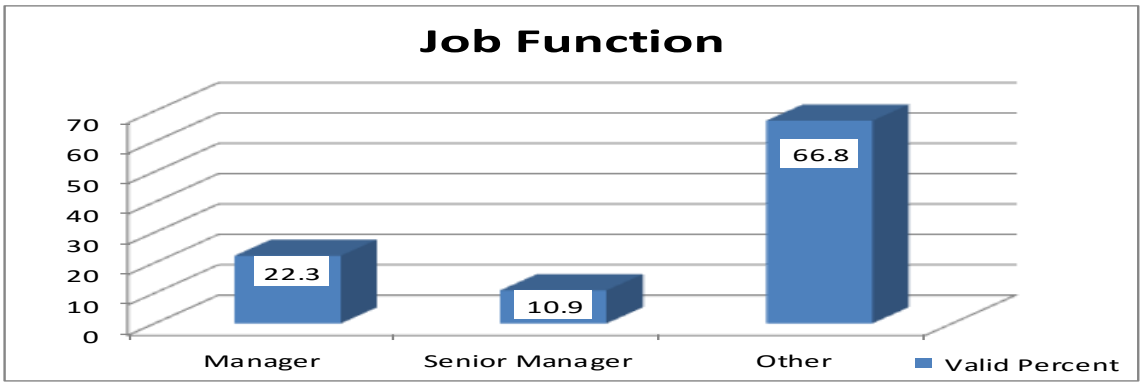
Table 53 – Employment Type



D1 – B – Job Function

When displaying the data with respect to the job function/level, two thirds of all respondents were not in a management position (67%), whilst managers constituted 23% and senior managers 11% of valid responses.

Table 54 – Job Function



D1 – C – Employment Status

There was also a difference in the data relating to two groups, where only the first group had answered questions 1-5. This group was described as predominantly blue-collar workers and constituted around 56% of respondents, whereas the white-collar group constituted 45% of respondents.

Table 55 – Employment Status – Graph

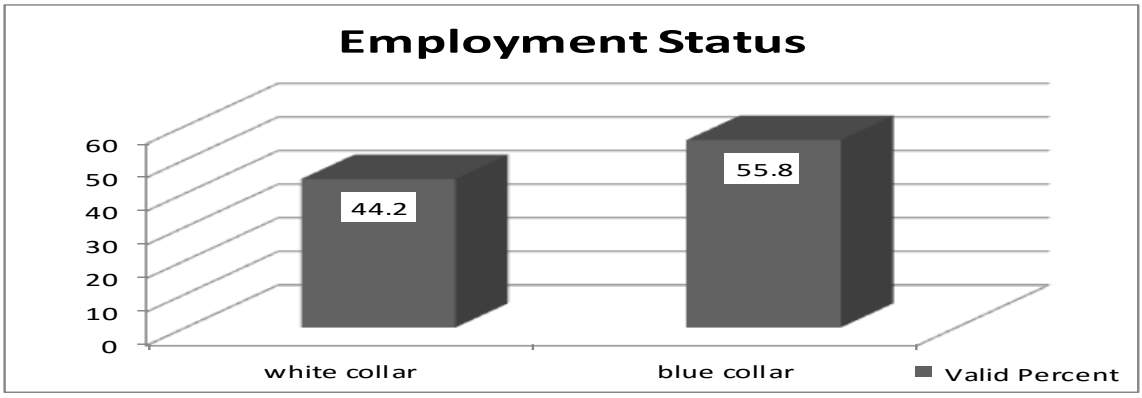


Table 56 – Employment Status – Numbers

Group					
		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	white collar	400	40.3	44.2	44.2
	blue collar	505	50.9	55.8	100
	Total	905	91.2	100	
Missing	System	87	8.8		
Total		992	100		

D2 – A – Employment Type

With regard to the different form of employment, a smaller percentage of Sub-contractors and CIS/Ltd Company respondents agreed with the statements on people, safety and culture than people categorised as staff monthly or paid weekly on PAYE basis.

Table 57 – Employment Type by Safety

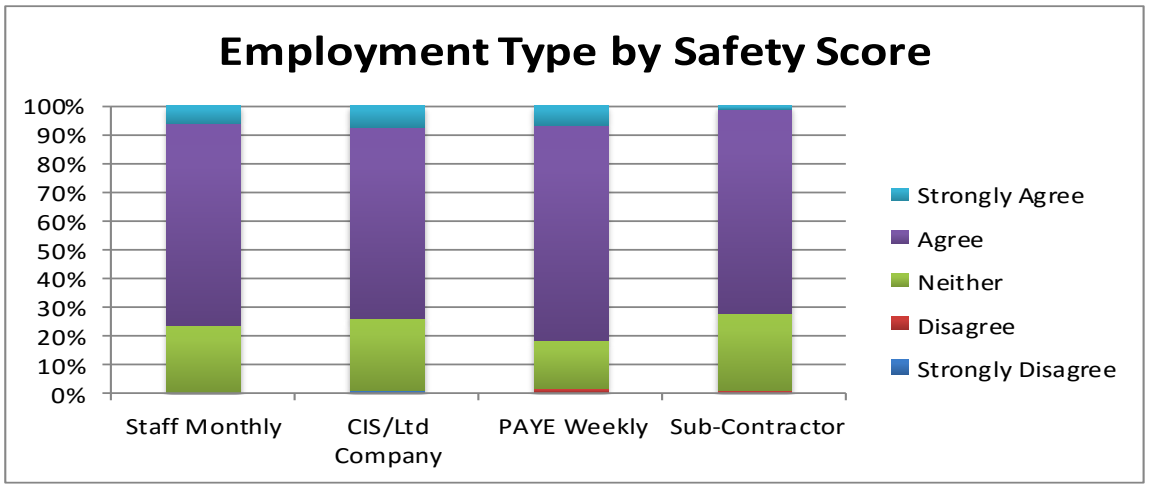
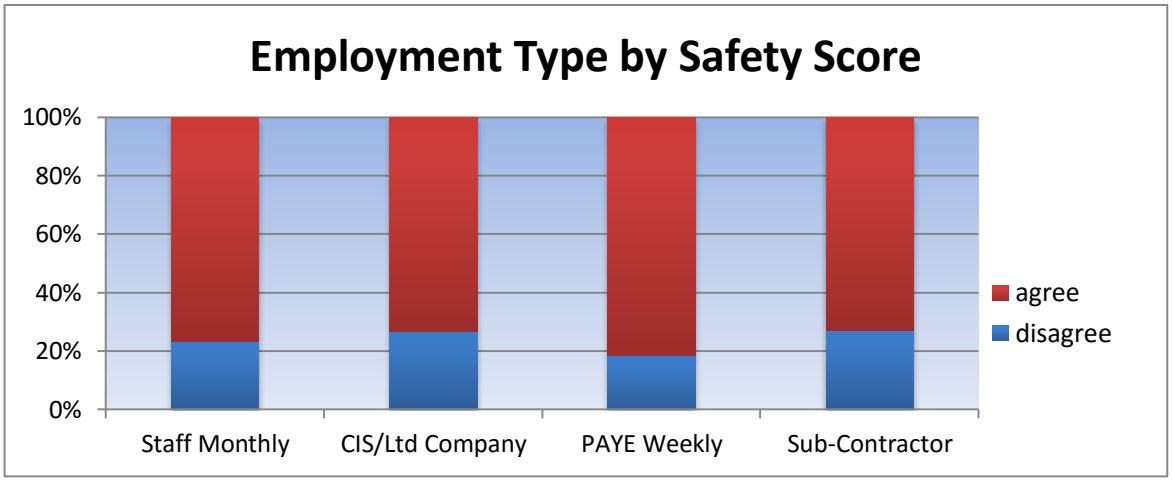


Table 58 – Employment Type by Safety



D2 – B – Job Function

With regard to the employment levels, agreement with the statements across all three categories increased with the level of seniority.

Table 59 – Job Function by Safety Score

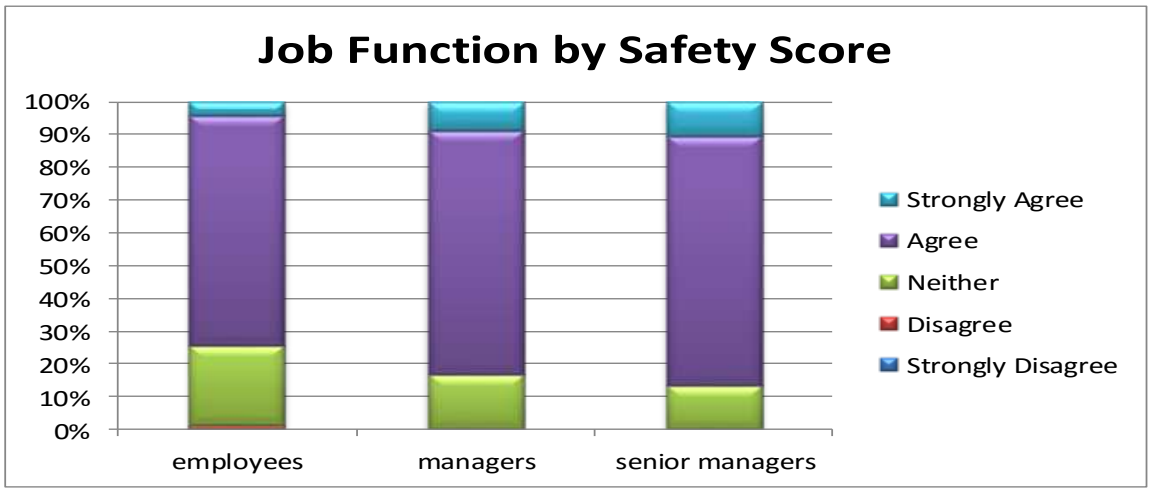
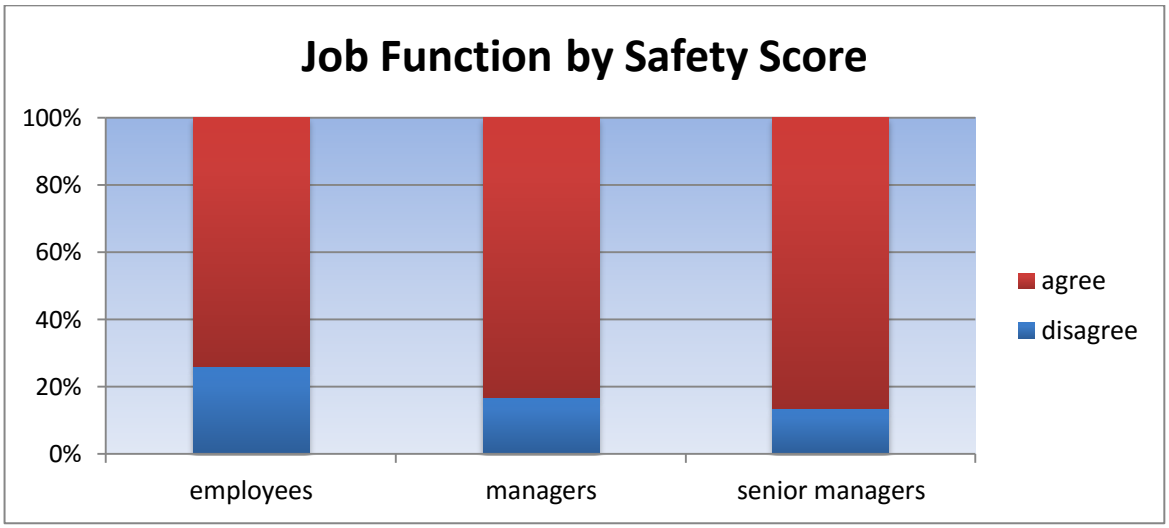


Table 60 – Job Function by Safety Score



D2 – C – Employment Status

Within the dataset, the first 500 respondents had filled in questions 1-5 and are described as mainly blue collar workers whereas the remaining 404 were described as white collar workers. Comparing both groups, their responses were almost identical with regard to safety questions, but fewer blue collar workers agreed with the people and the culture score. This is fairly similar to the results on employment level (above) which is not surprising, given that the two groups and their level of seniority were fairly strongly correlated, with over 64% of the white collar group consisting managers or senior managers and but only 5.8% of the blue collar group.

Table 61 – Worker Group Cross Tabulation

Job-level * Worker Group Cross Tabulation					
			Worker group		Total
			white collar	blue collar	
Job level	Employees	Count	142	432	574
		% within worker group	35.6%	94.1%	66.9%
	Managers	Count	166	25	191
		% within worker group	41.6%	5.4%	22.3%
	Senior Managers	Count	91	2	93
		% within worker group	22.8%	.4%	10.8%
Total		Count	399	459	858
		% within worker group	100.0%	100.0%	100.0%

Table 62 – Employee Status by Safety Score

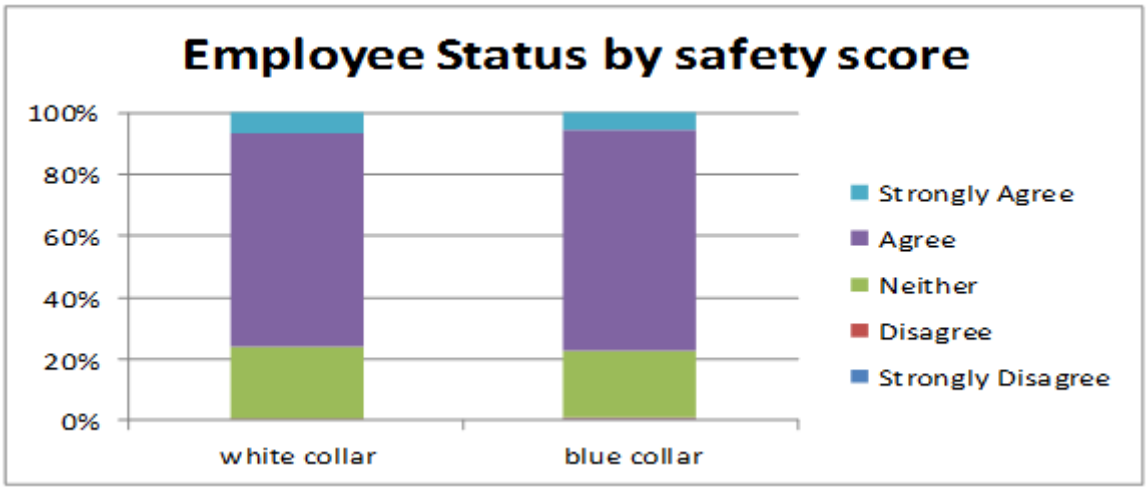
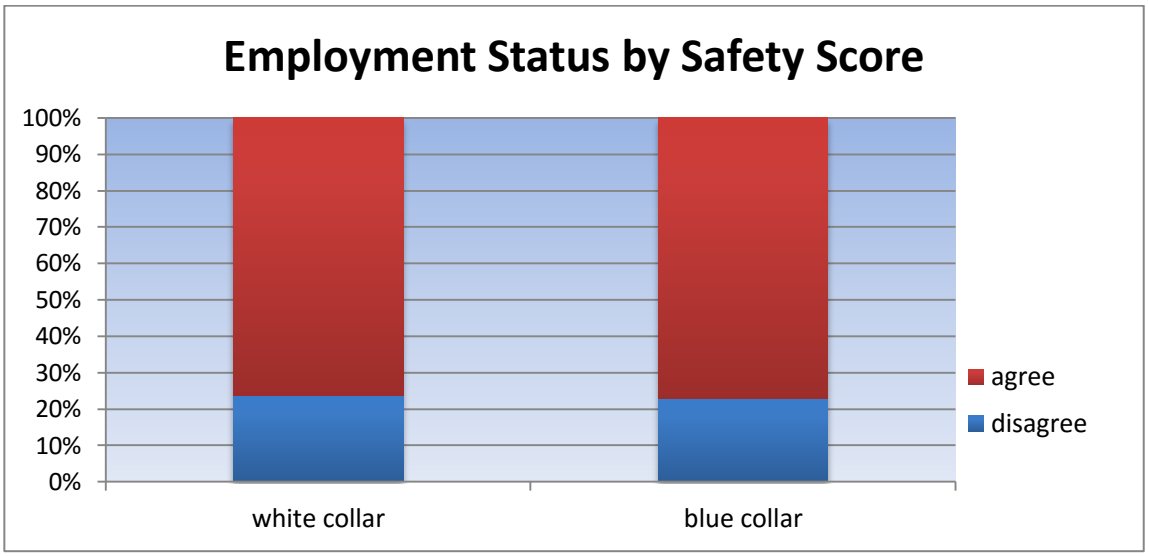


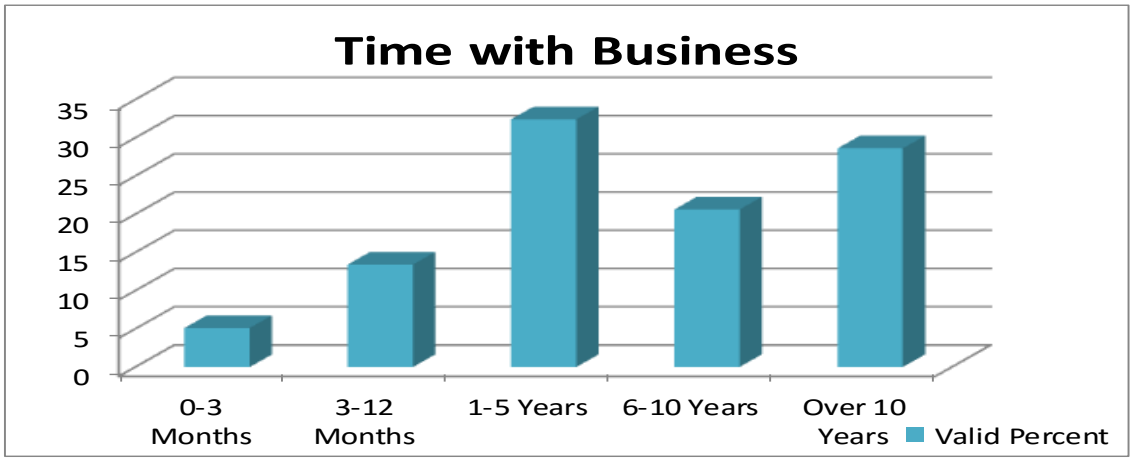
Table 63 – Binary Employment Status by Safety Score



E1 – Time with the Business

Length of time they had spent working for the business. Just over a third of respondents had been with the business for 1-5 years and another large group (29%) had been with the business for over 10 years.

Table 64 – Time with the Business



E2 – Time with Business – relationship between length of service and safety

There is only a weak correlation between age and time spent within the same business. Fewer respondents who had spent a medium length with the business (between 1 and 10 years) agreed with the people and culture statements than respondents who had been longer or shorter with the business.

Table 65 – Time with the Business by Safety Score

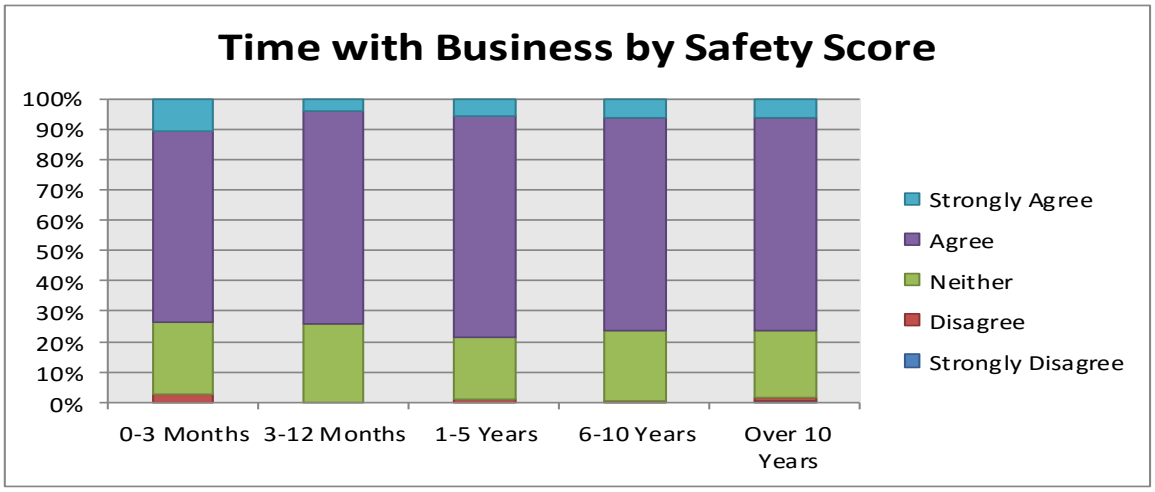
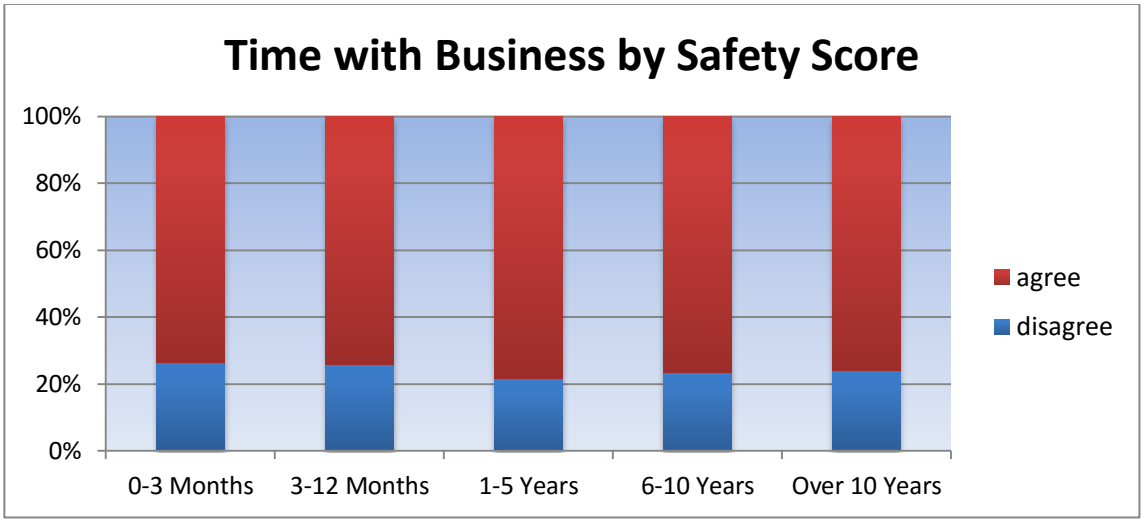


Table 66 – Binary Time with the Business by Safety Score



F1 – Employee Company by Safety

With regard to the three companies for which respondents worked, Company A had a small percentage of respondents who disagreed on each score, whereas Company B had none. The largest percentage of respondents agreed with the safety scores (72% Company A, 66% Company B and 69% Company C), and respondents from Company B also had a very high percentage of respondents agreeing with the culture scores (69%) with lower percentages at Company C and Company A. Considering the people score, again Company B respondents had the highest percentage of agreement out of the three companies (62%).

Table 67 – Employee Company by Safety Score

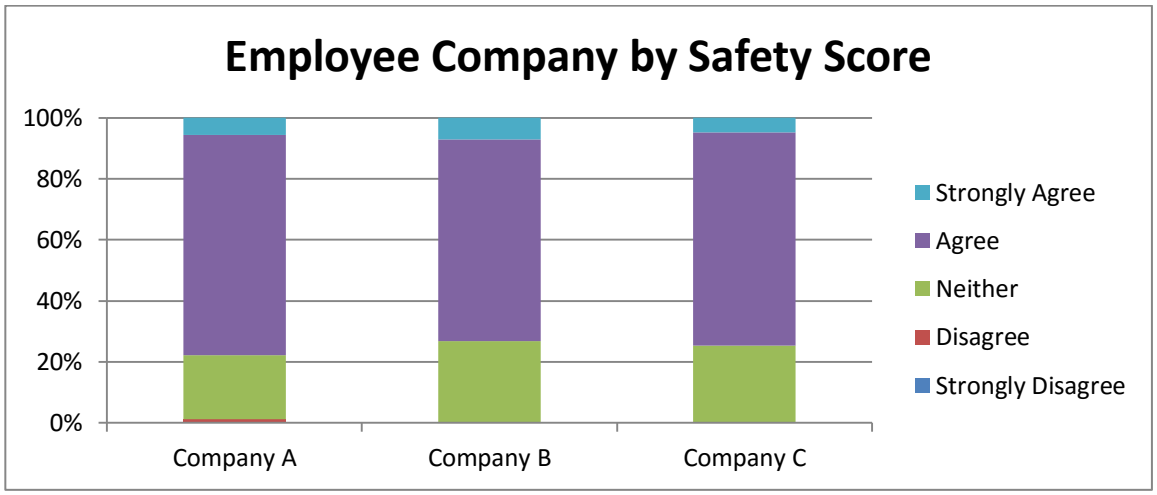
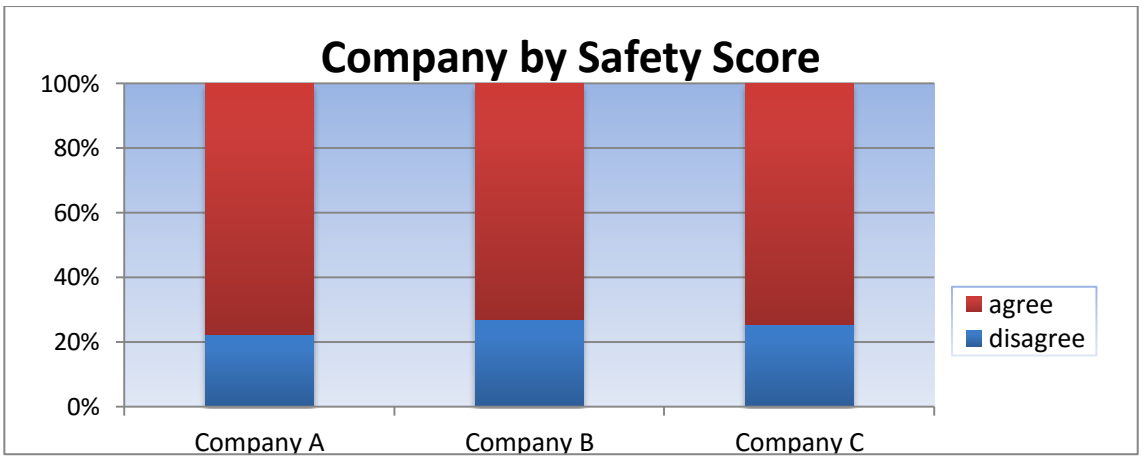


Table 68 – Binary Company by Safety Score



7.0 Discussion

The business has utilised the Integrity Matrix or 'The seven things that matter – seven attributes influence a company's culture and values' *(Figure 3)* which was developed by The Corporate Executive Board Company in 2011. None of the extant literature seems to measure values, which one would have assumed to be at the core of safety culture. Mearns & Yule (2009). To assist in structuring the cultural change in the business over past years, this research was collected data from one organisation with a flat management non-hierarchical structure and lends itself to the implementation of an Integrity Matrix. Most businesses consist of eight levels of hierarchy in their organisational structure, whilst our business consists of just three.

The results of our research are influenced by our company's flat management structure and the use of the Integrity Matrix: workers have confidence in speaking openly and are willing to honestly express opinions in relation to their perception of the safety culture in our business. This is an important consideration when undertaking research such as this, in order to end up with a data set which is both valid and useful for analysis, but also in considering the degree of extrapolation to the wider industry and lessons that can be transferred beyond the company under study.

The findings from both the qualitative and quantitative research have demonstrated that the utilisation of our model provides a validated framework that has worked well in the business and continues to be of value going forward.

It is clear from the quantitative data that the change programme has been successful in achieving 'direct manager leadership', 'clarity of expectation', 'openness of communication' and 'comfort in speaking up' as defined by the Integrity Matrix.

The qualitative data reflects success in the areas of 'tone at the top', 'comfort in speaking up' and, 'organisational justice' yet despite this success there is still evidence of negative perception by the employees in particular in relation to 'they' and 'accountability' leading to the perception of a blame culture by our teams.

The quantitative survey measured internal psychological factors, which provided us with a perceptual audit. The results of the survey proved that the change programme has produced a balanced business, with balanced agreement across each of the sections: people, culture and safety.

This shows a relatively well-balanced position for the business in all three key aspects of a safety culture change programme (Cooper 1996), which has encompassed all aspects of the business including purchasing, supply, human resources, finance and legal, all of which affect safety culture Cooper (2000). This endorsed the programme's success and gave the business a strong platform for making future change.

The key point here is that the business used for this research was fit enough, following iterations one and two to take more complex steps in relation to change. This may not be the case, however, for other businesses who may not have undertaken a change programme and whose safety culture is not in a balanced position.

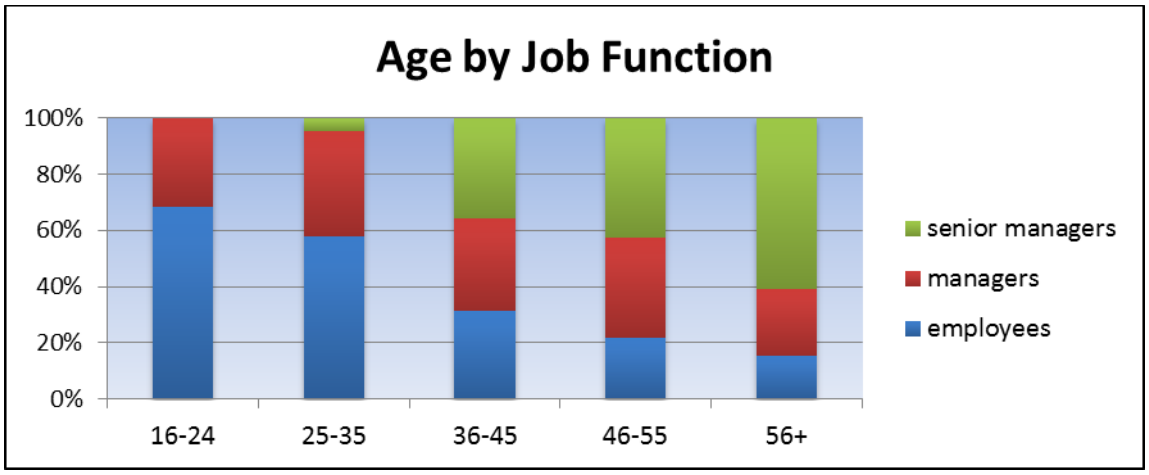
ACSNI Human Factors Study Group (1993) defines safety cultures as follows: 'The safety culture of an organisation is the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation's health and safety management. Organisations with a positive safety culture are characterised by communications founded on mutual trust, by shared perceptions of the importance of safety and by confidence in the efficacy of preventive measures'.

Based on this definition, it is therefore essential for a business with an unbalanced safety culture, or indeed for an unknown safety cultural position, to undertake a similar climate survey to enable them to understand which of the three key areas they need to work on to achieve balance – and it may be that all need work prior to commencing the next steps *(Figure 36)*.

Figure 36 – Safety Culture Balancing Model

Our data shows that more mature employees agreed more with the statements in the quantitative work put to them. This is also confirmed by the type of employment whereby there are more managers and senior managers in the older age groups (as would be expected). It is not surprising that both variables show increased agreement with age and seniority of the position. More than 40% of our senior managers are aged 56 and over, whilst 20% of managers are also aged 56 and over.

Table 69 – Age by Job Function



The construction sector stands to lose valuable skills and experience with the retirement of the older generation in the next five to 10 years (CIOB 2010). The Strategic Promotion of Ageing Research Capacity (SPARC) research programme (Leaviss, Gibb & Bust 2008) noted not only the void left behind from lost experience, but also how older workers reluctant to retire can still add significant value to the workforce. Older workers in the construction industry were found to be committed, valued and appreciated for their skills, but as they age they slow down and become less productive.

Leaviss et al (2008) points out that some studies suggest that construction work is not suitable for the ageing worker but it is important to note that accommodations can be introduced to enable older construction workers to remain in work. These include the provision of more power tools and handling equipment, and utilising skills and experience in safety, supervisory or training roles (Leaviss et al. ibid)

In one study of men working in construction and industrial work, no relationship was found between physical fitness and work performance (Sorensen et al. 2008), although mining and construction industries have been shown to have higher work-related injury rates for older workers (Zuhosky et al. 2007; Arndt et al. 2005: 559-56; Paul et al. 2005).

A challenge our business faces in moving this forward is age demographic, which is expressed by the more experienced worker also being the more mature worker – 29% of our managers had been in the business for more than 10 years. It is now not possible to retire out individuals at age 65 because of changes in legislation, and it is not palatable to our business to do so due to their extensive and currently irreplaceable tacit knowledge, which is proving hard to capture and pass on.

This phenomenon is made more significant as new entrants to the industry lack core skills such as business enterprise and communication, as well as fundamental English, Maths and ICT skills. With more computerised diagnostics systems anticipated within the industry in the future, the need for a solid base in ICT is becoming increasingly important. It is now evident to us through the process of this research that we must begin to create a support network for our more mature blue collar knowledge workers that involves the younger graduate teams working with them in a 3D environment enabling knowledge transfer between the two groups and creating a symbiotic relationship where the more mature worker benefits from the use of technology provided by the younger, less experienced worker, and the younger worker benefits from the transfer of the experience to (virtually) build structures.

This combination of up-skilling our graduates' knowledge, building confidence in our more mature workers and their use of technology and ICT, and general developmental training investment will assist us in bridging the skills gap which is apparent in the industry, in the areas of both the experienced worker and the new entrant. According to research carried out in 2009 by Aldersgate Group, one in three firms reported skills gaps in relation to:

- Installation of new technology
- Engineering
- Higher level skills – adapting to new technology
- Development of new business models

The Gibson Review (2009) also highlighted insufficient numbers of skilled construction engineers – particularly those with skills in design, planning and project management. This benefits our business by enabling the more mature worker to stay in the company much longer because the element of virtual build negates the need for them to be so involved in the physical build, while the younger worker begins to provide the sustainability required to ensure that the business itself can continue successfully into the future. It also begins to bridge the skills gap to which Gibson alludes whilst providing a de-risked solution to business continuity. It identifies the risks and removes the perception of the

role of Black Hat being daunting to the team and high risk for the individual taking on the role of controlling mind by developing a shared understanding of the requirements of the role and how to successfully deliver it.

Referring to the concepts in the Hofstede G. et al. (2010) model again we can see that it is pertinent to ensure that there is representation from each of the quadrants when selecting our mature and younger teams. This coupled with the use of the Integrity Matrix to provide each party with 'comfort in speaking up', and 'trust in colleagues' as well as 'openness in communication' should provide a platform for success in improving communication generally.

Method Statements & Paperwork **

As a result of our survey in 2009, we worked extensively as a business to slim down the paperwork surrounding method statements, however, the feedback in this session suggests that further work is required in that area. As a business we introduced the concept of a daily task briefing which interpolated the key risks and activities of the method statement into a condensed process-based briefing document. However, this was developed in addition to the method statement, which was still briefed to the operatives and submitted to the client for approval. Teams worked hard to ensure that the daily task briefing was embedded into their projects and some benefit was seen from them.

The next step for us as a business was to try and alleviate the issue completely and be a little more radical with our approach to eradicating some of the weight of paperwork contained within a method statement, and to propose a solution led by the Black Hat supervisors and the construction delivery teams rather than to impose the improvement. The rationale for driving change through the supervisory and delivery teams was to support the uptake of the proposed change, as well as assisting with the issues of ownership and responsibility for the change. Any change made would have been developed bottom-up, and fed into the business systems from the teams at the workface; an approach designed to encourage adoption of and buy-in to the system developed.

The work teams were developed using a combination of young new engineers and older supervisors and the general foremen, whose thoughts and views were interpreted by the younger engineers and then played back to them so that they could approve or amend as they see fit.

The intention was to end up with a document that satisfied legislation, played to the strengths of our business and our supervisors, responded concisely to the element of risk management around the identified tasks, and used visual cues – rather than lots of words – to prompt workers about what they are doing.

> Workshop A, Participant 8 said 'that is where we should be going: towards a visual, story book type approach that you can give to someone on-site. It does not matter what language they speak, because they can see in pictures what they are supposed to be doing'.

When this is finally developed it will be communicated by the work teams across all projects to obtain buy in and it will be piloted to ensure that it can work; then the work teams will gain the explicit support of all those at supervisor and general foreman level before it is presented back to the senior leaders of the business as a proposal for adoption, see Appendix 7. This bottom-up approach will assist in solving the issues to which the workshop attendees allude, and may also alleviate some of the cultural 'them and us' issues.

A number of the comments in *Tables 18-31* supported the change in 'hearts and minds' and seemed to point to an intrinsic belief in doing the work safely and in sending workers home safe each evening, but there was a disconnect in the workshop delegates' thinking with regard to the paperwork element of safety. They regarded it as time-consuming and cumbersome; there are even examples of contradiction by Participant 1 in relation own his view of paperwork, which would also support the groupthink theory, Janis I.L. (1982).

There was no recognition by the workshop delegates that there is link between excellent health and safety and paperwork systems as a management structure support tool in the successful delivery projects, especially those that are high risk. Delegates appeared to separate paperwork from the physical safety performance they see on site. This enabled them to criticise the systems and processes that related to them spending time, planning, communicating, and thinking about how the activity will be undertaken safely from the outcome of a safe activity.

Once the workshop delegates had separated the paperwork from the physical activity, we perceived that they did not feel that they were being negative about a safety issue but simply about a paperwork issue. It is almost taboo in the construction industry to speak with a negative attitude about health and safety – one of the reasons we used it as a change management driver for our business – so we concluded that delegates did not

want to be perceived to be criticising health and safety but they did want to get their point across regarding workload.

It was important that we helped the teams to understand that the paperwork supports and promotes excellence in delivery and that it is necessary for success by providing management, controls, consistency, thinking, planning and quality across what had become a large organisation with a significant number of accreditations to maintain.

This is another area where we have not published the impact of achieving the accreditations through the implementation of the systems and processes in use, or the causal link between winning work and having those systems and processes in place.

It could be that we needed to provide some underpinning evidence to our teams that there is indeed a link between being a successful business and 'the paperwork'. Our teams need to be able to undertake the paperwork tasks in a positive way, and to contribute proactively to making them relevant and effective. Their buy in can only enhance what the business already has by ensuring that it is as task relevant, efficient and effective as possible and their involvement should improve the quality of output.

As a business, we had focused heavily on improving physical safety, supporting and underpinning it with systems and processes that are backed off by accreditations. It may now be that focus should shift to encouraging work teams from the projects to undertake change on specific parts of the safety management system themselves. This should, however, be underpinned by extensive and supported involvement from the supervisors (Black Hats), and endorsement from the professional safety teams prior to embedding any change into the business's accredited systems.

In reviewing the data set it also became clear that, over the years, we had not taken account of any potential cultural differences created between multinational teams when delivering the change programme, using training and communication as well as direct line management and the concept of Black Hat front line leadership.

The construction industry is based around a traditional project hierarchy not dissimilar to that of the Army where management exists in groups of 1-10 or 1-5 dependent upon the risk profile of the work being undertaken. Milgram (1970) states that:

> 'When the individual is working alone, conscience is brought into play. But when working within a hierarchy, authority replaces it.'

‘They’

The qualitative survey also assists with identifying who ‘THEY’ are, as was raised in the internal workshops. The challenge for this business is to move the perception of ‘THEY’ being the Board Directors, through the middle managers, and into the Black Hats who represent our controlling minds at the workface.

By engaging with the Black Hats and the middle managers to create a new way of delivering the SSOW collectively, we encouraged them to share the ownership. The teams had inadvertently become the ‘THEY’, where ownership of, and accountability for the processes by which projects are delivered, sat fairly on the shoulders of the project teams and not with the Directors of the business.

Thompson et al (1998: 15-24) found that while managers influence safe behaviours through communication of what is brought to their attention, supervisors do so through how fairly they interact with workers. Our managers needed to realise that ‘THEY’ were the first line of interface and contact and that they were influential through their actions and the gravity with which they treat the workers issue.

This model will be supported and nurtured by the senior managers and Directors of the business but decision making will remain at project level. Accountability for processes is currently not accepted by the middle managers or the Black Hats, and whilst they accept responsibility, there is reticence to step in to the realms of accountability: they perceive accountability as blame.

‘We do not have a no-blame culture we have a ‘blame somebody’ culture’. (Workshop A Participant 8).

Training

One of the areas for future focus will be training based on the feedback from the workshops, where our participants discussed the training that we provide and described it as job role training rather than management or developmental training.

There is a theme through the quotations which picks up the element of perceived plateau, or stagnation, in relation to the training and development aspects of health and safety, and in particular in relation to the behaviour-based safety training which focuses on people, and changing their intrinsic beliefs. One of the key reasons for undertaking this piece of research was to establish what to look at next and where to invest the businesses time,

effort and financial resources to achieve the best results in alleviating the plateau effect we are currently seeing in health and safety performance. Without prompting, the delegates have highlighted this area of training as an area that needs refreshing.

> 'I think the training has now got to a level that we need different training'. (Workshop B Participant 5)

There was a feeling that as a business we did not invest in individuals beyond ensuring that they were competent to undertake the role for which they were put to work.

One of the interesting perspectives put forward by the delegates was that the on-site training has improved safety more than the external training. This observation links to the requirement to approach the training programme in a different way, and perhaps provides a solution for one of our next steps.

The business has previously worked with a drama group who would come to site and develop drama-based training, a very interactive and inclusive type of on-site training, the style of which is designed not to exclude any individual no matter how literate or technology competent they are. It overcomes the language barrier faced by our multinational workforce because so much of the communication is delivered in the way it would be in a site-based situation, therefore not placing an excessive bias on the need to speak fluent and technical English.

The workshop delegates were supportive of that kind of interactive and site-based training, more so than the traditional training, which we also have to deliver to comply with legislation and the requirements of our various clients.

The business has now approached the drama-based training company to develop a suite of training that focuses primarily on the skills which our Black Hats require to do their jobs with more confidence. This will help them to better approach the role of leadership and to assist them in delivering the training and imparting the benefit of their tacit knowledge and experience to their workforce in ways that they are comfortable with.

This training will focus on the values contained within the Integrity Matrix using the 'seven things which matter' to influence the way in which they lead their teams, whilst also involving aspects of the technical areas of the role such as accident investigation, audits or daily task briefing activities. The drama-based training company will then work with the same model but with a brief to design the content to support and assist the project

management teams to do the same but with an approach that will suit this different audience – that of white collar work integrated work teams.

The next logical step is to then provide another layer of training where we work with the two different team types, white collar and blue collar workers, in an integrated training session, still using the Integrity Matrix to underpin the required values outcome of the session. This should assist in providing a consistent approach to how our knowledge, information and shared experiences are passed on to other workers, to our teams, clients, and to other contractors.

We are hopeful that it will also provide a platform for our supervisory and management teams to be more confident in speaking to their colleagues, in delivering a consistent message which aligns with the values of the business, and which challenges their perception that the business operates a blame culture. We have already learned that it doesn't work for the leadership teams or for the researchers to attempt to challenge that belief directly; the approach of helping the workforce to establish that for themselves will be more powerful and will underpin the next step in culture change from within.

One of the areas which we will explore to ensure learning is delivered in the most effective way for our teams is to undertake some evaluation of their individual learning style prior to finalising the next drama-based training course. It is easy when designing a course to consider the use of auditory, visual, and sensory learning techniques, which will provoke learning and improve retention of information by the learner, as well as encourage knowledge sharing and knowledge transfer.

The improvement area flows naturally into metrics which the business does not currently utilise to understand how successful it is in capturing and sharing knowledge. Metrics are needed to further convince management and stakeholders as to the value of knowledge management (Liebowitz 1999; 2000; Von Krough et al. 1999).

It is currently not visible to the business what level of tacit knowledge is in the business, or how it is transferred, or indeed if it is transferred.

Introduction of the redesigned drama-based training, with a focus on identification of learning styles prior to delivery, with some measures and metrics, should not only prove to be value in its own right but also improve knowledge retention and knowledge sharing on an ongoing basis. It will also be possible to put in place metrics which look at such areas as savings shown from implemented employee suggestions, new solutions or processes suggested, and through the motivation index (Roos 1998), all of which will give us a measure of improvement, success or indeed of failure.

This opportunity will give us an additional way to measure how the business is doing, and how change is being received alongside the traditional survey methods used previously. It is possible that it will also be instrumental in creating a stronger sense of belonging and community for instilling trust between colleagues (Liebowitz 2009).

We reviewed the key literature in the area of followership which led us to this quote from Litzinger, W. & Schaefer, T. (1982), 'who would learn to lead, must as men say, first of all learn to obey'.

There is a school of thought that leaders are only able to emerge from the ranks of able followers (Litzinger and Schaefer 1982). There is strong evidence that followership contributes to organisational success and is linked to promotion decisions. Thompson (2006) notes that followers can develop 'goodwill capital' that affords them the latitude to pursue new initiatives. He draws a link between taking accountability for your environment and successful job performance.

Having a proactive personality is also linked to improved career satisfaction and mobility. Thacker and Wayne (1995) assert that building a strong relationship with a manager:

> 'Has a positive effect on an individual's performance evaluation and hence career progression'.

As business leaders and action researchers we soon established that followership would be key to our own personal success and building a team of great followers became our top leadership imperative. We took an approach supported by Collins, J. C. (2001) who said that:

> '[A leader's] first job is getting the right people on and the wrong people off the bus'.

And we made sure that the people we employed, had the right fit, personality, openness and lastly qualifications to succeed in delivering our goals.

One of the reasons that followers have not been as well-researched as leaders is that there is a stigma attached to being a follower, being linked to words like, passive, weak, and conforming. According to Alcorn (1992), followers have been systematically devalued. There is also a perception that leadership is more important that followership, according to Meindl (1987) management and organisational behaviour have been dominated by the

concept of leadership; yet the effectiveness of any great leader is to a great extent dependent on the willingness and consent of the followers. Depree (1992) asserts that leaders only really accomplish something by permission of the followers.

The matching of followership and leadership styles reinforce themes identified in the literature on the relationships between followers and leaders (Cole 1999; Goffee and Jones 2001; Chaleff 1995; Ehrhart and Klein 2001; Cunningham and Macgregor 2000; Hanges et al 2001; Mumford et al 2000). Whilst the matching of leaders and followers does not imply that leaders will only hire followers who work and think in their own style, (Chatman 1991) it does, however, raise the possibility of groupthink (Janis 1982) although Lau and Marnigham (1998) found that having differing viewpoints or similar styles has not revealed any consistent effects on performance our outcomes. Hersey and Blanchard's (1982) situational leadership theory argued that successful leadership is achieved by selecting a style based on follower readiness.

By implementing an integrated model of followership and leadership styles in our business, as well as linking clearly the purpose to strategic organisational goals, we were able to be more effective because of our improved understanding of the follower-leader relationship. In addition, the increased commitment of followers resulted in a talent bank for future leaders in the business; as followers were mentored by the leadership teams in the development of learning to match styles in working relationships.

We were careful to employ 'active followers' as defined by Kelley (1992) because they take initiative in decision making as opposed to a passive follower whose involvement is limited to being told what to do, which can create stagnation and difficulty in succession planning. We felt that it was imperative to employ followers who 'speak up', in line with one of our critical seven values for the organisation. According to Bennis (2000) the irony is that the follower who is encouraged and is willing to speak out shows what kind of leadership the company has instituted.

Research by Gilbert and Hyde (1988) shows that not only is it important for the organisation to know what followers think, but effective leaders also need to respect followers who will speak up and share their points of view rather than withhold information. This level of openness encourages trust, which is another key requirement in a successful leadership followership model.

The training now required will add value to the managers and Black Hat supervisors by improving their confidence levels and therefore supporting improvement in the areas of often faced with peers, friends (outside of work) and sometimes even their own family.

This famirilaity can be off-putting and embarrassing for them particularly because 29% of the workers have been in the business for more than 10 years, and often have second generation family co-workers in their teams, so sometimes it is easier for them to simply go through the motions in order to save face. Whilst wearing the black hat they must adopt an authoritarian role in order to become a leader rather than a friend, which may present a barrier to them in their social lives. The black hat needs to become the psychological trigger for them to step out of their patriarchal or familial role and into the role of a team leader willing to ignore any personal hierarchical or 'clan' culture or status Heffernan (2011).

The soft skills training could consist of things such as presentation skills and confidence building aspects, as well as Institute of Leadership and Management (ILM) courses which invest in developing the management skills of the individual at a working level. Lee & Halpin (2003) depict that supervision and training are related to safety performance; therefore investment in these courses will provide underpinning confidence in the individual as well as helping them to understand that they are valuable to the business, not only for the specific job role which they perform, but also for their wider tacit knowledge.

The training should include elements which assist them in identifying particular individuals who are 'prisoners' as aposed to tourists or exploreers or those people who are going through the learning/change process, and who are in the 'denial' or 'resistance' stage before moving into exploration, commitment *(Figure 37)*. This will enable them to spend more time focussing on those individuals to ensure that they receive adequate instruction and perhaps mentoring to enable a smooth and speedy transition into commitment to our cultural safety norms.

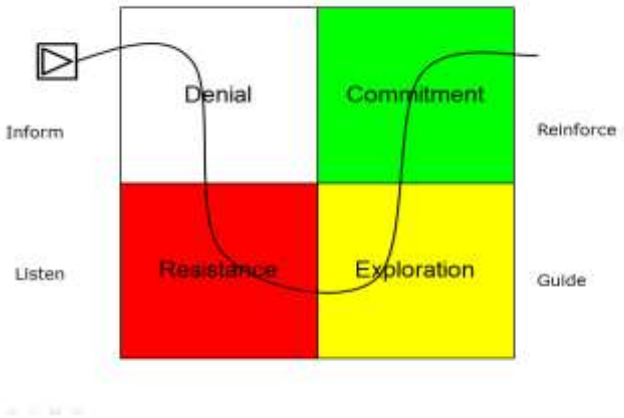


Figure 37 – Moving Through Change (Adapted Combined Hay McBer, 4 Quadrant Model, 'EI' Competency Framework and Dr Kubler-Ross)

As a further learning point we need to consider conducting more personality profiling for our worker teams. We have previously considered this relevant only to high-risk activities such as the construction of the core at The Shard. It now seems appropriate that we should look at the benefits of conducting this profiling on a wider basis across our blue collar and white collar teams separately and then as mixed teams.

Hofstede (2010) discovered that:

> 'Patterns of correlation at the country level could be strikingly different from what was found at the individual level, and needed an entirely different interpretation. One of the weaknesses of much cross-cultural research is not recognizing the difference between analysis at the societal level and at the individual level; this amounts to confusing anthropology and psychology'.

Dimensions of national culture distance and uncertainty avoidance (UAI) in particular affect our thinking about organisations. Organising always requires answering two questions: (1) who has the power to decide what? and (2) what rules or procedures will be followed to attain the desired ends? The answer to the first question is influenced by cultural norms of power distance; the answer to the second question by cultural norms about uncertainty avoidance (UAI).

Research by Bulgarian scholar Michael Minkov (2007) using data from the World Values Survey, allowed a new calculation of the fifth, and the addition of a sixth dimension to Hofstede et al. (2010). The six dimensions are labelled:

1. Power Distance (PD), related to the different solutions to the basic problem of human inequality;

2. Uncertainty Avoidance (UA), related to the level of stress in a society in the face of an unknown future;
3. Individualism versus Collectivism, related to the integration of individuals into primary groups;
4. Masculinity versus Femininity, related to the division of emotional roles between women and men;
5. Long Term versus Short Term Orientation, related to the choice of focus for people's efforts: the future or the present and past;
6. Indulgence versus Restraint, related to the gratification versus control of basic human desires related to enjoying life.

Of Hofstede's cultural dimensions (2001) perhaps the most interesting for our business is what he calls the Power Distance Index (PDI). Power distance is concerned with attitudes towards hierarchy, specifically with how much a particular culture values and respects authority. Hofstede asks questions like: How frequently in your experience, does the following problem occur? Are employees afraid to express disagreement with their managers? To what extent do the less powerful members of the organisations and institutions accept and expect that power is distributed unequally? How much are older people respected and feared? Are power holders entitled to special privileges?

These are questions very relevant to our workforce who are dependent on a hierarchical structure of management from a range of different nationalities and cultures, each of whom has his or her own distinct personality. But overlaid with that are tendencies and assumptions and reflexes handed down to us by the history of the community we grew up in, and those differences are extraordinarily specific.

Below are some of the ways in which national power distance (PDI) and uncertainty avoidance (UAI) affect planning and control processes in organisations (Hofstede 2001):

- Higher PDI supports political rather than strategic thinking.
- Higher PDI supports personal planning and control rather than impersonal systems. The higher in the hierarchy, the less formal the planning and control.
- Lower-PDI control systems place more trust in subordinates; in higher-PDI cultures such trust is lacking.
- Higher UAI makes it less likely that strategic planning activities are practiced because these activities may call into question the certainties of today.

- Higher UAI supports a need for more detail in planning and more short-term feedback. Higher UAI implies leaving planning to specialists.
- Higher UAI implies a more limited view of what information is relevant.

There is empirical evidence for the relationship between a country's position within the PDI-UAI matrix and models of organisations implicit in the minds of people from those countries that affect the way problems are tackled. One of these is the study into the aviation industry and the interaction of Pilots/Co-Pilots in the cockpit, and how there is a correlation between incidents and accidents and countries PDI, (Gladwell 2008). A National Transportation Safety Board review of thirty seven aeroplane accidents concluded that up to a quarter of all plane crashes were caused by 'destructive obedience' inside the cockpit (Tarnow 2000).

The application of Hofstede's Dimensions to airline pilots was carried out by Helmreich and Merritt (2000: 283-301) after a number of aviation incidents.

> 'When comparing the top five pilot highest PDIs below, by country, to the ranking of plane crashes by country they match up very closely'. (Gladwell 2008) chapter 7.

Table 70 – Country PDIs

The five highest PDIs by country are:	The five lowest PDIs by country are;
1. Brazil	15. United States
2. South Korea	16. Ireland
3. Morocco	17. South Africa
4. Mexico	18. Australia
5. Philippines	19. New Zealand

When applying the findings of Power Distance (PDI) versus Uncertainty Avoidance (UAI) Matrix model (Hofstede et al. 2010), which details national cultural differences in risk profile, family and hierarchy to the data collected, we recognised a fundamental flaw in the strategy of our previous change programme, specifically in the way we had developed and deployed a common communication and leadership strategy to facilitate the change. Hofstede's model clearly identifies the different needs and requirements of different nationalities, which showed us what was actually required was a much more tailored programme based on the requirements of the specific cultural differences of our multi-cultural and diverse workforce.

Johnson (1992), amalgamated both Schien's (1990) and Hofstede's (1990) culture models to present a model of the culture web and examined various levels and forms of

communication between cultures. Buchan (1999) has applied this culture web many times in different situations and countries but never in the UK construction industry and in particular in an environment as polymorphic as the London construction industry demographic.

This is evidenced when we consider that there are 39 nationalities spread across our workforce but with seven key nationalities providing the balance of the existing workforce which are as follows:

Table 71 – Business Nationalities

Nationality	Percentage of workforce %
British	53.8%
Irish	13.9%
Romanian	13.1%
Indian	9.0%
Lithuanian	3.1%
Polish	1.5%
Albanian	1.4%
Portuguese	0.5%
Other EU Countries	1.5%
Other World Countries	2.1%

When we placed the seven key nationalities circled in red and tabulated scores below, in the Hofstede PDI/UAI Model *(Figure 38)* we discovered that they spanned four different quadrants reflecting quite different cultural ways of problem solving, perceptions of and responses to hierarchy in giving and receiving instructions (such as delivering and receiving safe systems of work briefings).

It also became apparent that as leaders of the change programme, we had devised the strategy from our own cultural perspectives: that of British and Irish, both of which sit alongside each other in the same quadrant with the same PDI/UAI relationship, whilst unknowingly excluding any other conflicting dimension.

Each country has been positioned relative to other countries through a score on each dimension. The dimensions are statistically distinct and do occur in all possible combinations, although some combinations are more frequent than others.

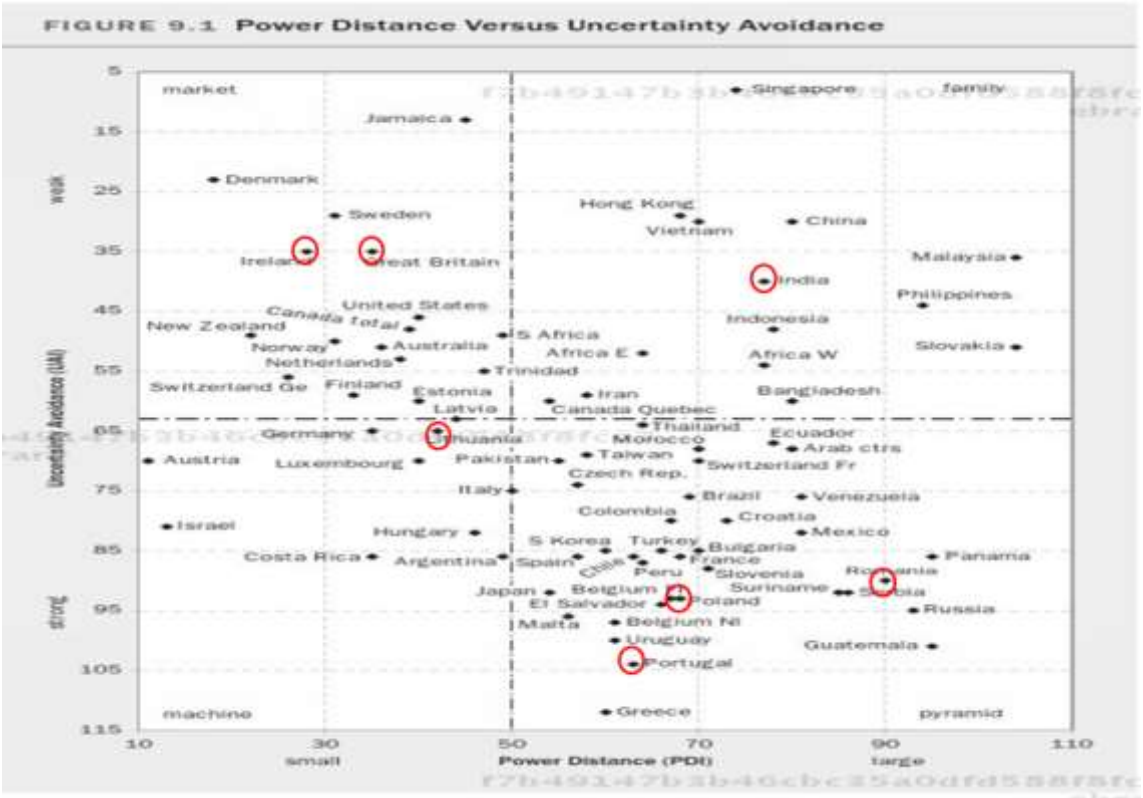


Figure 38 – Seven Key Nationalities

Table 72 – PDI/UAI Indicators

Code	Country	PDI	UAI
ALB	Albania	0	0
GBR	Great Britain	35	35
IND	India	77	40
IRE	Ireland	28	35
LIT	Lithuania	42	65
POL	Poland	68	93
POR	Portugal	63	104
ROM	Romania	90	90

This cultural variance is also reflected statistically in our survey data which showed us that British and Irish workers had the most respondents who agreed overall with the culture statements. Irish employees are 1.8 times more likely according to the data than British or English employees to agree across all people statements while Romanian employees were only half as likely to agree as British or Irish employees. This result is in complete support of the work of Hofstede's PDI/UAI model.

When comparing the analysis and findings in section B2 of our quantitative data supports Hofstede's theory, with different nationalities agreeing with the statements in relation to people, safety and culture. Until we had competed the data collection survey, we had not identified the issue of differing nationalities having different PDI/UAI profiles, and therefore had no concept that there was any difference in how a British or Irish person compared with how a person of another nationality might need to communicate, learn or take instruction.

Critique of the findings of Hofstede

We did not follow blindly the findings from Hofstede's research over many decades, but also reviewed the critical literature, which related to his early and later work.

Hofstede's dimensions of national culture were constructed as they suggest at the national level. They were underpinned by variables that correlated across nations, not across individuals or organisations (Minkov & Hofstede 2011: 12) and they continue to be regarded as the leading models of cross-cultural differences (Venaik & Brewer 2010), although there is criticism that there is a probable western, male, managerial bias in the survey design (Ailon 2008) as well as the neglect of considerable intra-country cultural variation (McSweeney 2009) and there is a failure of replication studies to support the models (Spector, Cooper & Sparks 2001).

There is an additional area of challenge to Hofstede's cultural dimensions model, which lies in the nature of the application of the dimensions: they were developed conceptually and applied and interpreted empirically at the individual and organisational levels. The assumption that these national-level dimensions exist at the individual or organisational level is possibly an incorrect assumption that represents a form of 'ecological fallacy' (Hofstede 2001: 16; House & Hanges 2004: 99), which can be defined as 'inappropriately assuming that cultural- level characterisations and relationships apply to individuals within these cultures. There appears to be a lack of appreciation of this issue in much of the related critical literature.

Hofstede himself makes the point that 'cultures are not king-size individuals: They are wholes and their internal logic cannot be understood in the terms used for the personality dynamics of individuals' (Hofstede 2001:17). In relating national culture with individual behaviour, Hofstede, (2001) states that:

> ‘A culture does not produce one single type of psychological reaction; it can produce many alternative, complementary, and even conflicting types of reaction in individuals’.

As Hofstede’s dimensions are meant to be a test of national cultural behaviour and not of individual personality types or traits, it is important when applying the ‘dimensions’ to this surveyed populous, that we, as researchers, did not confuse the behaviours of our workforce with those of individuals, but apply the thinking around the worker population as groups of representatives of national culture. This approach works because our workforce is organised in gangs based on the same nationality for language and safety reasons; therefore the use of cultural dimensions applies.

Baskerville in her critique of his work recognises that Hofstede’s cultural dimensions indices correlate with the results of other cross-national studies, but that they are not cultural dimensions, yet:

> ‘They reflect mechanisms of social organisations or strengths and opportunism of different nations, which may be epiphenomenal to historical origins’. (Baskerville 2003: 10)

Indeed Chapman describes the link between business studies and anthropology as follows:

> ‘It is not possible to deal with ‘culture’ in the area of business and management without becoming aware of the long shadow cast by the work of Geert Hofstede (1980, 1991). Hofstede’s work is often regarded as ‘ anthropological’ by those within the business and management communities…I found Hofstede’s work to be central to academic dealing with cultural matters in the business and management arena’. (Chapman 1997: 18)

Unlike the critique of Hofstede’s dimensions by House and Hanges, (2004: 99) this study does not reflect only the responses of middle managers but reflects those of all tiers of the workforce equally, and yet through analysis it is possible to see the differences in response of the middle managers, in contrast to the blue collar workers. It is our view that this provides an underpinning authenticity to our work by providing the reader with an understanding from both perspectives, whilst viewing the business through the lens of Hofstede’s cultural dimensions model, as well as many other applicable observations collected through the process of analysis.

There is criticism surrounding the validity of Hofstede's cultural dimensions relating to the length of time elapsed since his original study in 1980, and his further work in 1991. 'One of the key concerns is that the dimension indices were calculated decades ago, and may no longer be valid' (Kirkman et al 2006).

Our research focuses on all of the work conducted by Hofstede including the original study and his more recent work in 2001, 2002 and 2003, in which various researchers reported replications of each of these dimensions across other narrow matched samples (Mc Sweeney 2002).

The new edition of 'Cultures, Consequences: comparing values, behaviours, institutions and organisations across nations' is bigger, heavier, and more comprehensive in the discussion of each dimension with a summary of applied research on that dimension since the 1980 edition' (Hofstede 1980, 2001). Additional countries were also added into the study work, with re-formulated arguments, new literature and all calculations re-done, with much of the out-dated material having been removed to provide a significantly more modern baseline for the data.

This updated work still has its critics, in particular McSweeney describes Hofstede's approach as:

> 'De-valuing of organisational culture in his research paper 'Human Relations'. (McSweeney 2002: 89).

McSweeney identifies four characteristics of Hofstede's concept of culture and then challenges its definitions: treating culture as implicit, core, systematically causal and shared. Mc Sweeney challenges Hofstede's responses as valid in any of those aspects.

Hofstede responds to the criticism of Baskerville (2003) in this regard in his paper 'What is culture? A reply to Baskerville' in 2003, defending his research and describing his early work as 'exploratory research not a finished theory' (Hofstede 2003). Also commenting on the work of Geert Hofstede (1980), Peterson made the following statement:

> 'Perhaps the first edition of 'Culture's Consequences did not create the field of comparative cross-cultural studies but it certainly shaped the field's basic themes, structure and controversies for over 20 years'. (Peterson 2003: 128)

Whilst the work of Hofstede has its many and varied critics, it is clear that his work not only provoked further research, but provided a platform from which all other research in this area of cultural dimensions has evolved. It has provoked debate and discussion in this area, and Hofstede himself has continued to further evolve his own work. This in itself provides a clear foundation for our research; good research should provoke discussion, as well as a desire to push the level of understanding or challenge further than the original study did. Hofstede's research has all of those characteristics; proven by the number of critiques his work has received from other renowned empirical researchers, and indeed by himself.

The initial work of Hofstede was conducted in 1980, with further significant research undertaken in 1998 and 2001 and 2002, where he capitalised upon 20 years of application of the ideas in the 1980 edition. In 2010 Hofstede again updated his research, this time working along with his son Gert Jan Hofstede and Minkov. The initial study could be argued to be out of date, but his ongoing work to test that research underpins the use of his work as valid, and the 2010 work is up to date, being only three years old at the point in which we tested this hypothesis. The nature of a prolonged study period by one critical researcher, Hofstede, strengthens the validity of his work, rather than weakening it.

Despite the number of critics, we believe that there is foundation to Hofstede's findings when related to our business and more importantly to our mix of workers. This element of learning from Hofstede has been fundamental to the way in which we develop our strategy for continued change going forward and we consider it to be a key finding from this research, as well as one which will be useful to other construction businesses regardless of their ownership model. According to Helmreich & Merritt (1998), safety is a 'universal value' which every culture should endeavour to hold an there is little doubt that people will react unfavourably to their family, friends and colleagues being harmed at work.

This insight led us to consider the way in which we have been presenting our method statement briefing (MSB) and our task briefing sessions (TBS). We are now looking at how to assist the Black Hat workforce in being successful with their briefing sessions by using much more visual representations in their communication with the general worker population.

We need to consider that we ask the Black Hats to carry out briefings (MSB)/(TBS) under time pressure, every day, when we now know that high power distance communication works only when the listener is capable of paying close attention and the two parties in a conversation have the luxury of time in order to unwind each other's meanings.

This situation becomes compounded when we review the nationalities of the white collar managers who instigate the instructions, and find that they are predominantly from western cultures. Western communication has what linguists call ‘Transmitter Orientation’ (Gladwell 2008). That is, ‘it is considered the responsibility of the speaker to communicate ideas clearly and unambiguously.’ This requires us to review how we up-skill the communication skills across the business.

We have to consider that the Black Hats and blue collar operatives are also suffering from a familiarity with the people they are managing and that because of the various cultures and nationalities they are having to use ‘mitigated speech’ (Gladwell 2008), which refers to any attempt to downplay or ‘sugar-coat’ the meaning of what is being said. We mitigate when we’re being polite, when we are ashamed or embarrassed or when we are being deferential to authority.

Combating mitigation has become one of the great crusades in commercial aviation in the past 15 years. In the cockpit, checklists are in English and when talking to air traffic control anywhere in the world all conversations are in English.

English allows the pilots to take on an alternate identity, which allows them to step outside their country’s cultural legacies when they are in the cockpit. Language is the key to that transformation. In English, they are free of hierarchy, formal deference, and informal deference. Pilots can participate in a language and culture with a different legacy (Choudhry 2007).

Our business, and the whole industry, needs to consider that the way to resolve the issues in relation to a multicultural workforce is to follow the example of the aviation industry and to make English the common language of communication and instruction in the UK. This use of English needs to be right down to gang level?

This has vast issues and considerations and may well be a syllogism. Is English the answer? Who trains and pays to train the required standard of English and it has the potential to cause great offence? It is a subject for further consideration within the business and will be part of a further research piece.

As a result of the data set findings and considering communication generally we have mapped out construction workflow processes using the skills and tacit knowledge of our foremen, and ensuring their engagement in a way which feels comfortable for them. We

have been careful to use the specific nationalities relevant to the particular work activity, for example in our business Indian workers mainly deal with the concrete processes whilst the Romanian workers generally have expertise in the erection of formwork and false-work. We have assisted the teams in developing these workflow processes into a safe system of work (SSOW) to sit within the overarching method statement, and which will form part of the legally recognised method statement and risk assessment.

These workflow processes have been translated into a pictorial representation of the mapped workflows, which now enables the Black Hats of various nationalities to communicate more simply and which ensures no loss of translation. These SSOWs form a section of the overarching method statement which means that if a field change occurs this can be accommodated quickly and with a minimum of administrative burden, using simple methods.

This method is designed to accommodate a range of different tools including technology, hand drawn changes/sketches or 3D models for visualisation. It is essential that we develop a way of checking that the comprehension of the content of the SSOW has been properly understood.

This comprehension check has not been evidenced previously either in our business or in the industry generally and there is an assumption by management teams that having delivered a method statement briefing, it has been understood properly by the worker. This exercise has highlighted that this has not been the case and it is important for us to follow the example we set previously on the complex London based engineering project The Shard, where we developed a SCORM-accredited online test system to establish total comprehension by our teams.

We developed a similar approach to the company induction which was previously a DVD with no test after completion. The revised induction covers the syllabus and then tests the individual using the same SCORM-based randomised testing arrangement. It then provides a certificate proving the competence and comprehension of the individual taking the test. The challenge going forward for us and the industry is to use this approach for the more repetitious activities covered by SSOW’s and task briefings, whilst also keeping pace with technological platforms, as well as recognising the abilities of our teams and the blue collar workers or more mature workers, to whom technology itself is often a barrier.

National cultural differences also remain important in undertaking the developmental training with our black hats. It can be the cases where different nationalities work together,

sub-cultures exist, which may or may not be obvious. The Indian nations for example have a well-established caste system which we recognise and respect but which we had not realised would affect how they give or receive instruction either from their peers or from other colleagues.

We also uncovered a difference in cultures between Businesses A, B & C. Despite the fact that all businesses have been exposed to the same culture change programme, the same systems change, with employees being immersed in the same behaviour-based training, different outcomes were found in the areas of people, safety and culture between the three businesses.

Looking at culture as an example there was a 30% difference between business A, B and C; Company C was less than half as likely as Company A employees to agree across all culture scores. Van Maanen et al. (1985) state that:

> 'Unitary organisational cultures evolve when all members of an organisation face roughly the same problems, when everyone communicates with almost everyone else, and when each member adopts a common set of understandings for enacting proper and consensually approved behaviour'.

This knowledge will help us to focus on the areas in each particular business which needs more work or a different method of delivery, this will entail further detailed research or survey work to establish the reasons for the differences but at least in understanding that there are differences we can proceed to look differently at how we resolve them.

This finding in relation to different business responses is important for other business undertaking a similar programme of change, in particular those which have a divisional structure or who often make mergers or acquisitions or who have multi-national operating boundaries.

Any business conducting a change programme must be aware of the Hofstede PDI/UAI index (2010) and also recognise that there could be sub-cultures within the overarching culture particularly in family or long-standing businesses, and culture postulations can act as constraints, and prevent people from considering alternative ways of acting (Alvesson 2002)., Pigeon (1998) however, argues that sub-cultures actually serve a useful purpose, as they provide a diversity of perspectives and interpretation of emerging problems in safety.

This diversity of view suggests that knowledge of any sub-culture is imperative so as to establish if it can be utilised positively in the change process or indeed if it will prevent a barrier to change.

Schein (1990) observed that an organisations' culture actually consists of several sub-cultures including executive culture, engineer culture, and operators' culture. This also has a significant impact upon how information and direction is delivered and received between the blue and the white collar workers and how the executive of the business must be aware of those sub-cultures and of how to best influence the other two cultures. According to Hofstede (1990):

> 'Organisations' culture is considered the top management business'.

Visible Leadership

Other behavioural measures could encompass leadership behaviours (Komaki (1998), whilst Marsh et al (1998) found that management's commitment to improvement process influenced the commitment of the workforce, which in turn affected actual performance. Cohen et al. (1975) and Smith et al. (1978) found that top management's commitment to safety is a feature of low-accident companies. With these findings in mind it is clear that we must also focus on specific training for our leadership teams and the Executive to help them understand the relationship between visible leadership and improvements in general safety performance. Leadership is a key ingredient to driving successful cultural change.

Leaders need to both guide the organisation through cultural change and serve as role models for new ways of working. Most investigators (Thompson et al. 1998; Sawacha et al. 1999: 309-315, Flin et al. 2000: 177-192; Sorensen 2008) appear to agree that the elements of safety culture include: senior management's commitment to safety; good communications; organisational learning; a working environment that rewards identifying safety issues; and participative management leadership style. Safety culture is always concerned with the determinants of the ability to manage safety and hence is a top-down organisational attribute approach (Mohamed 2003: 80-88).

Langford et al. (2000: 133-150) found that when employees believe management cares about their personal safety, they are more willing to cooperate to improve safety performance, whilst Hinze (1997) describes that a safety culture begins at the top and if it is pure it will be felt at the level of workers.

Although we have invested resources previously in this area, we have not pursued it with our white collar managers in the same consistent and repetitious way as with our Black Hats and blue collar workers, who we have trained with dogged persistence to ensure that the correct message regarding safety is conveyed.

On reflection we could have spent more time with our leadership teams previously and perhaps we wrongly made the assumption that the higher level of academic education coupled with managerial experience of our leadership teams would enable them to espouse the values we had trained them in. This is reinforced by Mohamed,S.(2001) who states that safety culture is always concerned with the determinants of the ability to manage safety, and hence is a top-down organisational attribute approach.

It is our assertion from this that as a business we must now invest in our white collar workers in a different way, specifically focussing on their leadership skill, time management, presentation skills, communication as well as testing their emotional intelligence quotient, providing knowledge in the areas of people management, recognising how to build high performing teams using a variety of soft skills as well as their technical direction skills. We will undertake an analysis of the available management training provisions which exist in the marketplace such as ILM courses and MBAs, which will enable us to select the most appropriate course or courses as we recognise that one course may not be the whole solution or may not suit all individual needs.

The issue of 'They' is also closely related to training, and this level of investment in soft skills for our white collar managers will also assist in resolving their flawed perception that they are neither accountable nor responsible for the change made to the business. The element of acceptance of the role of a manager in building high performing teams, influencing culture and behaviours will encourage their thinking to be more rounded in relation to their own role in the business and their own sphere of influence with the workforce. This soft skills training will also enable the middle managers to manage and communicate upwards as well as down to the workforce and will generally improve their communication skills and understanding.

It is also clear from this work that as a business we must communicate the vision and values of the organisation to all our workers, to ensure that everyone in the organisation understands the direction of travel for the business. This is important in order to anchor the business again as it is recognised by us that there has been significant and continual change for more than seven years and whilst the business will continue to make change, the workers need to understand that the business transformation programme has not in

any way undermined, de-valued or even changed the original vision and values of the business, which has remained current and constant throughout.

Many of our longer-serving project managers have risen through the ranks of the business and were engineers when they started out in the company, then they began delivering small project and they ended up as project managers by default through their experience and delivery capability.

Employees and workers have become very used to change and adaptation, through the life of the change programme, and as such making change is easier for the business now that it was seven years ago. Reinforcing the fact that the vision and values have not changed may provide some element of comfort for the employees and workers that the values and vision determined by the CEO many years ago, have not moved in any way and therefore they are still working to fulfil his values and vision.

There is 'limited' acceptance by the project managers that as engineers their role was much more about well-defined and focused areas of the project with a specific role and outcome. As project managers the responsibility is much broader, and project management controls must be applied through a project manager into their team. Many are not delegating and are therefore trying to take on all the requirements of the business on their own.

Not having been formally trained in project management but rather having grown into it, there are some clear gaps in capability particularly in the areas of delegation, up and down, leadership and in the formal aspects of the 'project management' as opposed to managing a project.

Time with the business

It is also relevant to other businesses to consider the length of time their employees have worked for them. The business which is the focus of this research has 29% of employees who have been with the business for more than ten years, 19% for between six and ten years, and 33% or between one and five years. In the survey fewer of the respondents who had been with the business for a shorter time period agreed with the people or culture statements than those who had been with the business for a longer period.

This stable workforce is unusual in the construction industry, which is generally constructed of businesses that have a transient and largely transactional workforce Tilley, M.(2006). This is ultimately important to the success of change making as it allows a more

built up layering of change on change, training and a consistent level of expectations on performance and behaviours

Richter et al. (2004: 703-722) find that culture is not ‘frozen’, but that safety culture is continually being created and recreated in confrontation with social reality, as people interact with cultures of internal and external factors. They conclude that safety culture should be understood within a specific context, and that it may change as the material conditions and social relations develop.

8.0 Summary

Choudhry et al. (2007) state that after more than two decades of research in the field, researchers remain at the starting point with a long way to go before measurement of safety can truly begin to progress in a meaningful way to the benefit of its major stakeholders, including employees, workers, and concerned industries. It appears useful to examine the degree to which safety management systems actually influence people's behaviours and vice versa. Investigations could also be undertaken into whether people's commitment to safety determines the existing safety culture, or whether safety culture actually persuades people to become committed to safety (Choudhry 2007).

Companies need to be able to change continuously to remain competitive – 'success depends on responding successfully to constant change rather than copying 'best practice' from others'. This also means maintaining a balance between focusing on capabilities required for the present and those that will be needed in the future. University of Loughborough et al. (2009):pp1

> 'Developing organisations where change is a fundamental part of the culture is pivotal to identifying and co-creating positive futures'. University of Loughborough et al. (2009)

It is important also for other businesses to recognise that any work undertaken to improve the safety culture is not undertaken in isolation and that it must be delivered as part of a wider change programme to achieve success.

9.0 Reflexive learning

Michelle Tilley

Reflecting upon where I commenced this Doctorate in Professional Studies journey, I would comment that it has been a little like being in a relationship. There have been highs and lows; times when it has felt a little humdrum and frustrating, and times when it has been extremely exciting and taking me down pathways I had not been before, not knowing what was around the corner. It has been a test of patience and of discipline and of learning that whilst I may have fixed my own view in a certain area, there is always an underpinned academic view to counter my argument, and that in uncovering that viewpoint you see that area from a different perspective altogether.

Like relationships, it has been a challenging process at times, and I have had to measure myself against my own performance – which can be hard when as a human being I am naturally prone to defending my own shortcomings. I have had to learn to share; the joint nature of the research project has presented an additional dimension to the learning journey, and has provided huge benefits as well the inevitable moments of challenging debate, artful discussion, and the odd eureka moment.

Establishing a rapport with the tutor was an area of significant learning for me. I have always been able to form relationships easily and am a naturally articulate and confident communicator, used to building strong and successful teams. It came as a shock to me then that I was finding it immensely difficult to establish a relationship with the initial tutor provided to us by the University. I found myself unable to identify with his comments, and unable to accept his criticism or even understand what he required of me on several occasions. This was new territory to me; to be unable to deliver what was being asked of me was not the norm, and no matter how I tried to break it down, using process flow charts, simple language or even practical examples, the first six or seven sessions became increasingly confrontational.

Aran was finding the same issue and so we discussed it with the course managers at the university. I am relieved to say that they were both understanding and unsurprised. Not, I hasten to add, because the tutor was not good at his job, but because my research partner and I are such similar individuals to each other yet radically different to the tutor and with opposing backgrounds. I had not considered that the tutor would play such a large part in how I felt about wanting to complete the process and this was quite a surprise to me.

We discussed our learning style, and our approach to delivery, and the university then matched us with another tutor who had an engineering background and who understood

the language and culture of an engineering delivery business as well as two intensely goal-oriented people. The key learning for me following this process was that this journey was a very intense and personal one, and due to the duration of study and the level of reflexivity required in the early part of the learning journey, it is essential to unpack your individual characteristics prior to commencing on a piece of research-based study and to discuss your working style and expectations with the university prior to commencing the course.

By unpack I mean to be honest with yourself and to establish your own learning style, how you work best, how you receive information and importantly your own strengths and weaknesses. It was clear to me once I had done that process of unpacking, I was better equipped to embark up this research journey with so many changing landscapes through its course.

As human beings we respond best to those who are like us, and whilst in normal day-to-day business I am adept at working with all kinds of different and challenging individuals who are quite unlike me, I am certain in my subject field. I have a track record to call upon, and experience in failures as well as successes in those areas, and that is what has given me the ability to elevate myself to the position of Director in a multi-faceted company.

This track record provides self-confidence and an ability to accept others because I am on firm ground, it enables me to be assertive but not to challenge unhealthily; to listen, and to compromise because I know that is what delivers great projects and builds strong teams.

The key difference in the initial phase of the Doctorate programme was that I was not on firm ground, I did not have a track record and I was working in a relatively exposed way with a colleague in front of whom I did not wish to look foolish or inadequate. I believe that these aspects also contributed to my inability form a relationship with the initial tutor.

This level of reflexivity meant that by working in a partnership with another researcher I had to be able to be self-critical in a way that would not be the norm in a standard working relationship, to analyse my failings and also to be strong enough to critique his work too. The key learning is that in order to speed up the process of establishing a relationship with the tutor it is important to first know yourself.

I suggest that due to naivety on my part, the first three months of study were wasted, with painfully slow progress, frustrating meetings and a real uphill struggle for me to commit to several years of such a difficult process. It is important to find the right tutor, and I learned that their guidance and support along with the ability for both parties to be able to

communicate openly and with honesty is essential to promoting a good relationship, which in turn cements a positive learning journey for the duration of the Doctorate.

My next important learning point on the journey of the Doctorate was just how difficult it is to be reflexive. As a highly atypical construction/engineering industry worker, I have spent my career of twenty-seven years focusing on delivery; goal and action-oriented with a no nonsense direct approach.

Being female in the construction industry does not help reflexivity as I have had to develop a direct and assertive approach which enables me to do my job to the best of my abilities when faced with being the only woman in a room full of men. This has led me to naturally focus on outputs and requirements, and not to stop along the way to reflect on my learning; I have quite a masculine approach to project delivery and the business of managing the construction process.

My use of language tends to lean toward the factual, and there is little room for reflection, which in the construction industry presents itself as being 'soft'. I therefore had to battle with how to be reflexive, how to discuss learning, and how to compare what went well, with what did not in a non-critical, evaluative way; and more importantly recognise how I might change things if doing something similar again.

This proved to be quite a challenging aspect of the Doctorate for me, and in the first two modules, I got it completely wrong. It is a hard thing to teach yourself or to be taught, there is no great recipe for success and it is very dependent upon your own individual learning style and of course how much you like to talk about yourself – which is not meant to be a trite comment – I learned that it is really difficult to talk about myself, especially when I have a background where the culture is that any success is a team success or everyone has failed.

At first I thought that reflexivity was a waste of time and I could not see the benefit of it, I asked myself the question 'who is this important to?', initially assuming that some third party would be the recipient of what I initially considered to be self-important, self-indulgent waffle. As I completed my first and then the second module it gradually became clearer to me that the point of the reflexive writing was to prepare myself for the next module, and the higher academic challenges that it would present. I realised that the recipient of the learning was me, not some third party whom I had never met, and at that point reflexive thinking became easier for me.

I have previously mentioned that I undertook this piece of Doctoral level research with a partner to obtain a joint Doctorate in Transformational Business Change. Aran is someone

I have known professionally for more than eight years, we have similar backgrounds and use similar technical language through having both been located separately in the BAA environment for many years prior to meeting each other at the company. We are almost the same age, yet have no real cultural similarities because Aran is Irish and I am English, he is male and I am female. So in many ways, outside of the professional arena we have little or nothing in common, yet in the workplace we are astoundingly alike in our approach.

The learning for me in working with another person as a partner in the process of research is that there are areas of real convergence and agreement, but in contrast there are distinct areas of disagreement and challenge, and if working with a partner it is essential to be able to actively debate and challenge each other in a healthy way which does not disenfranchise or derail the learning relationship, yet which enables both parties to fully explore ideas and concepts in which they believe.

In the same way that working with the tutor initially presented challenge, I had to learn to present my argument in such a way that my research partner would be prepared to listen to it, particularly if my idea or discussion was contradictory to his. This took a little while to adapt to, as my direct approach in business was not successful in the fragile world of research and academia. I learnt that when an idea or concept is entirely personal it is much more precious to an individual than when it is a business-related concept or project approach, where teams are used to developing ideas together and to making necessary compromise to reach solutions.

Research at Doctoral level is a skilful mix of new and exciting ideas combined with underpinned academic learning that is tried and tested and which has been built upon over many years. This makes any new contribution to that empirical research by an individual very important to that individual, and egos can be easily bruised through the process of agreement or disagreement when undertaking a piece of joint study.

This concept took me a while to come to terms with, particularly when Aran and I have been such confident and easy sparring partners for such a long time in the business arena; it came as a surprise that he was much more sensitive to comments regarding the research, and I also felt equally sensitive about my own ideas. Hence it became clear to me that if undertaking a piece of further research in the future, I would really only consider it with my current research partner.

The key learning for me was to choose your research partner carefully, consider the risks to any existing relationship you have with them, no matter how strong it is, and learn to be

a diplomat whilst studying some tried and tested deep breathing techniques to assist a calm and measured approach to debate.

The process of academic research was not new to me, having undertaken Masters level research, but what was new was the process of uncovering new and relevant research data which could build upon the pillar of research in the specific area we were focussing on. It is a very intense learning experience because every step of the process is an uncertain one, and one which might take you down a blind alley, or one which might present great results. I had to learn how to deal with that level of uncertainty attached to the significant level of work that we were undertaking to gather data and to analyse it.

I am used to goal-oriented activities with defined outcomes, a linear process, a prediction of success provided the process is followed, and of course a defined end date. In contrast, this process of conducting new research has been non-linear; it was at times unpredictable and put me outside of my comfort zone. It was necessary to undo aspects of the plan and re-model the process based on the process of thinking independently, documenting those ideas then converging with my research partner to share ideas which sometimes but not always resulted in change, or additions to the work done or the decisions made.

We would meet confidently with our supervisor to discuss our thoughts and plans; once again most meetings resulted in minor or major change, and in the early days even a return to the drawing board for a complete re-work of a section or a module. I had to learn how to be patient and to appreciate that this non-linear process, including the blind alleys were all part of the rich tapestry of research and were necessary to encourage an investigative and inquisitive approach, looking at all options or opportunities to provide new research.

On reflection I now see research is not a process, but is bound in rigour and process. It is an investigative mystery tour, with a direction of travel in mind but no idea what one might find on the way. I realise that if I had headed off down the process-led route I had begun to define in the earlier part of the Doctorate, I would have missed out on uncovering some of the really important new and exciting findings.

Reflecting back on what I expected the research to uncover, what was discovered was not at all what I had expected. I had no preconceived ideas about what I would find, and I did not want to be a researcher who had decided the outcome of the research before undertaking it. I would go as far as to say that I did not actually believe that I would be able to uncover anything new or exciting by the process of research, and I found the rigour required for the research process difficult initially.

My confidence in being able to find something new and applicable to our business began to rise when the data was returned and the amount of information available became clear. I then felt a little in awe of the amount of data, and therefore the amount of work that lay ahead in analysing it, particularly as we used two methods: qualitative and quantitative. When thinking about undertaking this type of project again in the future, I would step into the research process with more confidence and prepare myself for a process of discovery and a journey rather than expecting a route march to a conclusion.

If embarking on a similar journey again I would also believe in myself more, and trust my ability to discover new findings, whilst building on empirical research undertaken by others. It was an exciting moment when we found a paper which not only confirmed our findings but which underpinned all the work we had done through the change programme, and clearly stated that further work must be done to establish how to move on following the successes of a change programme identical to ours. I felt like I had found a golden nugget, it was a really big day for me and for my co-researcher; we both felt that the previous eight years' work had been validated.

After that, one of the most important and exciting aspects of learning for me was finding and understanding the work of Hofstede (1990) and his PDI/UAI model. The possible application and implications of this model are fundamental to taking the next steps in improving the safety culture and performance in our business.

It seems so obvious now that we have uncovered the Hofstede Model (1990), that the impact of cultural differences, in particular the PDI/UAI aspects of that model, would be significant. How personnel from different countries receive and give direction and their different attitudes to risk explains exactly why we have reached a plateau in our quest to make further improvements to our safety performance, and it provides us with the opportunity to create a paradigm shift instead of an incremental step change.

I have reflected long and often on how I could have been so blinkered that I did not see that an English woman and an Irish man could communicate to 100% of the workforce using the same methodologies when our workforce consists of 39 different nationalities based in opposing quadrants of the Hofstede Model. I had believed, and had thought the results we had achieved confirmed, that we were driving an industry-leading change programme; however, it is clear that our lack of understanding in the area of cultural differences had resulted in the plateau we have experienced.

One of the key aspects of learning for me in this area of cultural difference was that for those cultures that are dominated by masculinity, individual and personal gain will motivate change more effectively, whilst conversely in a culture which is predominantly

feminine, the safety of society and the holistic organisational environment will provide a much better chance of achieving success, as Hofstede (1990).

The very accidental nature of our business structure; it being run by an Irish man and an English woman, both of whom have character traits which enable them to understand the thinking of the opposite cultural dimension better than most individuals due to our personal and professional backgrounds, means that there is a balance created and our organisational strategy is directed in an androgynous way which picks up on the needs of both masculine and feminine diverse cultural requirements. This was an area of surprise to me, and whilst we have been operating our business this way for eight years, it has been a happy coincidence rather than a planned approach.

My learning from this is that when I reach a difficult problem, having tried consistently to find a solution to no avail, then it is imperative to look at what others have found, even if it is historical data, because the trail will lead to much more diverse findings and the empirical research will provide solutions or revelations as long as I look deeply enough into it.

I have also learnt that I like doing research. I have thoroughly enjoyed the process of uncovering information and digesting its wider implication, how it could be applied in practical terms and what I might be able to add to it. I now understand how some individuals might choose research as a life's work. This process has tested my skills to the limit. I am not a natural completer- finisher, I am a plant and resource investigator; I move on quickly in my head to the next idea, I find it hard to be disciplined enough to complete the last details of a project or piece of work because I am already processing the next idea.

I have approached the Doctorate in a highly disciplined way, making time to undertake the vast amount of work, ensuring that research is focused, and yet challenging enough to find new and relevant research by others, as well as paying great attention to detail and combining all of this with playing to my strengths by defining goals and targets for each piece of work. This approach has stood me in good stead, in that at no time during the Doctorate (once I got on track initially) did I become frustrated, bored or want to give up.

I had my own personal fear that I might not reach the end of the process through my own lack of ability to apply myself to the last 20%, my lack of completer- finishing skills letting me down, and that I might simply get bored. This process of learning has been one of the most rich and creative of my academic life, and I am pleased I took the decision to undertake the study journey, and will continue now through authoring technical papers and industry articles, perhaps even a further research project.

Aran Verling

History:

On reviewing my career and my private life, I observe that I have always embraced change and required change and variation throughout the years. This has not led to me changing employers, but rather has forced both my employers and I to find a symbiotic relationship which allows my learning style and my natural team role characteristics to develop and expand. Over a fourteen year period I have moved from being task-oriented ('hands-on') to be more target-orientated, with an emphasis on achieving long-term objectives. I also developed an understanding of how to make tactical choices, while developing capability in a business.

As my career has developed I have been motivated by high levels of recognition and reward for my achievements. I have had to develop my leadership skills in various areas and recognise the things I needed to change, and/or hide, in my personality (for example, I had a tendency become impatient when confronted by significant levels of ambiguity).

I also recognised that in moving my career forward I had to speed up the transfer of potential into competence, particularly on the thinking/planning side where I had significant unutilised potential in my early career. This I was able to do by adapting and developing within the various organisations I worked in, varying the types of projects I got involved in, and expanding into the strategic areas of the businesses I was able to govern and to influence.

I thrive on stimulation and can quickly lose interest in ideas once they are launched. This is clearly indicated by my value preferences *(Figure 39)* accessed by RSM Potentia International. This was also followed up by a 360 degree review from clients, managers, peers and employees to give a balance. In general, feedback from all was as detailed below and to date holds true in my core value preferences.

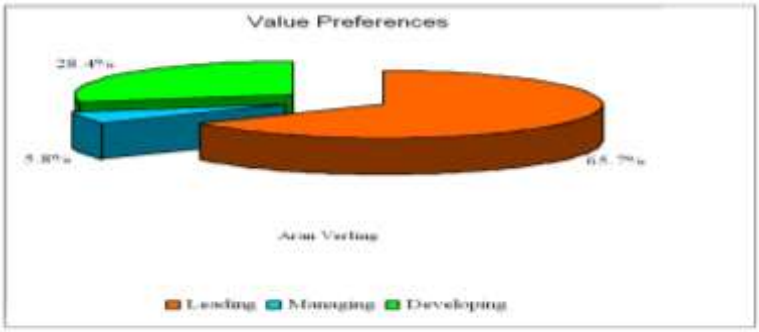


Figure 39 – RSM Potentia International

Throughout my career and as my learning styles have developed and changed within each of the businesses I worked in, I have learnt to be respectful of others' contributions, whilst developing an ability and comfort in managing relationships. This has helped me to work with Michelle and to operate within a business context.

I am a natural intuitive and the more predominant learning style following Kolb D (1984) is working in the (North – South) direction in the *(Figure 40)* below which naturally leads me to:

'Get Started' and 'Get it Done'

The experience I had in other businesses and in implementing the change programme with Michelle allowed me to start in these areas of concern or interest and to work out what I needed to do next and when, as the project developed.

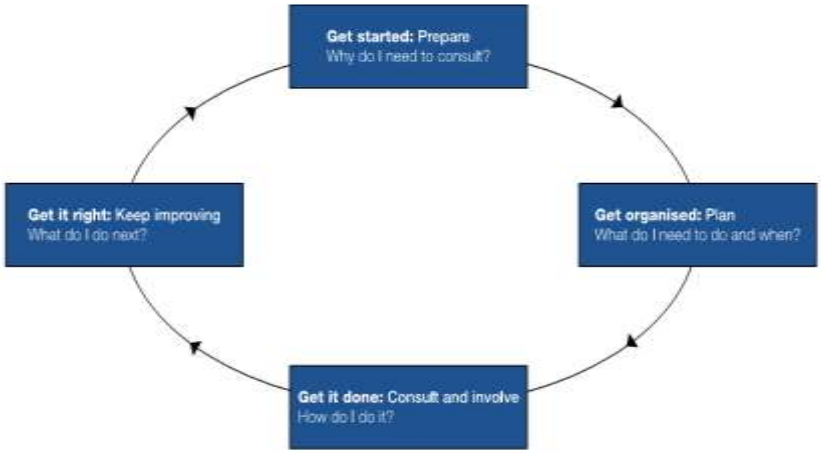


Figure 40 – Adapted from HSG 263 (2008)

Understanding that my tendency was to work in this way forced me continually to stop and consider how I was going to 'Get it Right' and 'Get Organised' (East – West) first, as I tended to not do this and to push through most issues with greater effort and more work hours following my natural learning style. This was a challenge to moderate and control while undertaking the change programme, but more importantly the research. I needed to take time, establish what the objectives were going to be and how the project plan would be delivered.

The values that I had to display and develop while working on the project were trust, relationships and collaboration.

- I needed to pay attention to working as a team, and communication, as my style was rather individualistic.

- I had, and continue to have, an unusual thinking ability which needs to be channelled.
- My natural research investigation tends to expand exponentially.
- I appear dominating with little tolerance for those who have a high need for safety and security and I had to develop the ability to be more patient and practice active listening.

I needed to modify my behaviours to those of a more collaborative way of working. The key developments in my management style and learning were related to being able to develop and understand the ‘co-researcher’ relationship, to gain a shared understanding of Michelle’s requirements and then deliver back to her a comprehensive understanding of her needs and deliver a range of successful outcomes in a non-adversarial and collaborative way.

The learning and reflective experience has seen me develop as a person from being hyperactive and reactive in most situations to be more considerate of others and reflective in relation to challenges and opportunities, while still maintaining agility and decisiveness in decision-making.

The D Prof process helped to develop my practical and thinking skills. This allowed me to collate, formalise and accredit my learning. It has seen me further develop core specialist knowledge across all of the seven key elements of the business.

It has allowed me the time for a reflective process and has provided me with confidence to attain a number of qualifications where I had existing untapped knowledge and has helped me to develop a broader range of understanding in a number of subject areas: project reporting; safety; human resources; the built environment; and marketing, encompassing a sound ethical approach to business and tax governance.

I now have a better understanding of the challenges for legislative and ethical issues that should be considered when making strategic and every day business decisions and my D Prof programme and practical experience provided me with a touchstone for the identification and consideration of risks associated with proposed project and business changes.

The D Prof:

The business had identified a key issue in that it needed to spend some time to review the capital spending programme for the next five years and what we should focus on to sustain our bottom line while continuing to operate in a recession-bound economy. This was coupled with the realisation that we had reached a 'glass ceiling' in relation to safety performance and, as the change in the business over the past seven years was linked to safety, operating procedures needed to be completely reviewed.

We decided that the business would benefit from an academic review through a PHD or Doctorate process and considered asking the academic community to provide us with a candidate to undertake the exercise. This became impractical as we were looking for an individual with an interest in both business and health and safety: a rare breed and almost impossible to find.

This started a conversation between Michelle and I which went along the lines of 'We could do it ourselves! Couldn't we?' Neither of us was shrinking violets and we both relished in a goal, so collectively we decided to undertake a Doctorate in Professional Studies and, having worked with Middlesex University in the past, we were aware of the Institute of Work Based Learning.

Deciding to do a Doctorate in professional studies was setting myself a personal milestone without really understanding the challenges and the amount of self-reflection I would have to undertake. I have always been target or goal-orientated and I have managed my private life, sports and my career development by setting goals and completing them. The D Prof was just another target to be overcome. So I thought, incorrectly.

I had envisaged a large amount of task-oriented work and academic research, but I had not factored in the layers of underpinning knowledge that I would expose and the difficulty of understanding the layered learning approach of becoming more reflective from the initial D Prof module to the next, and building an understanding of academic writing from the ground up – especially as I had not completed any formal education in my career.

The process of academic writing was completely alien to me and provided me with huge challenges in understanding the format, tone and reflection aspects required. This was particularly challenging. Initially, because both the university and Michelle and I had not considered our character profiles, our style of working together and that of our tutor who had to take on a role of advisor to two overachieving workaholics.

This D Prof was always going to be different to anything I had undertaken previously, as we had decided that we would do a joint project on the business at the end of the initial DPS projects, from the day we started to undertake the academic journey. In my enthusiasm I had forgotten that Michelle had already completed an MBA and was familiar with academic process and team working to deliver co-created academic papers. However this process was very diferent from the MBA.

The process of having another person completing the same academic modules in sync created a competition which was healthy in one sense but also cast an enormous amount of responsibility on me personally. I suddenly realised that I had a lot of work to do to catch up academically and potentially could be the weak link in the process. I had to complete all the modules and the RAL 8 to get to the point where we could then both undertake the project work. Every submittal result was a massive personal milestone for me and with each result I gained confidence and ability while delayering my reflexive self. The RAL 8 was the most stressful and when the positive result arrived it created a levelling out for both of us. We had made it to base camp and were now both ready to engage with the project plan from a position of equality.

Michelle and I had worked together on a vast range of publications and strategies so assumed we would tackle the D Prof in the same way. This was a disaster at first and created quite a storm on occasion when one or the other of us would bring half formed ideas and strategies and declare them as ‘Gold’ then set about defending them, not quite to the death but not far off. It was completely different to our work delivery process and needed a lot of patience and a need to get to know and understand your research partner very well. We work in very different ways to a similar end but on a completely different journey.

I tend to spend a lot of time in research, reviewing all kinds of papers and spiralling off into areas that are completely irrelevant but are of interest to me. I also read a vast amount of all types of literature, from fiction to autobiography to business centric publications, sometimes around a relevant subject area but other times as ‘chewing gum for the brain’.

The challenge for me has been to restrict myself to this particular topic and not get side tracked in another direction just because it exists, pandering to my natural tendency for resource investigation.

All this data I gather tends to be analysed internally and then disseminated in waves like a 'bung out of a barrel'. One of Michelle's great skills was in sketching the core themes and waiting for me to exhaust myself at the flip chart and then start to engage with the tirade after the initial 'tsunami' had passed.

There has been no lasting dissonance between us while completing the project and our long term working relationship has been strengthened throughout our peregrination, allowing a more in-depth view of each other's perspectives while illuminating the content of the data set and debating its intrinsic value to the business. Developing this project has been full of debate and discussion with any personal differences being approached in a non-pernicious way.

The process has allowed me to review a range of opinion and viewpoints that I was unaware of or had not previously considered. My paradigm, on reflection, was quite myopic; I had not appreciated the wider context to organisational change and safety change and the differing contextualisation of a receiving audience from different socio-economic and national backgrounds.

I learned that I had to, form a hypothesis collect the data, and then try and disprove or confirm the hypothesis. This was challenging when I was used to much more action research and fixing issues in a 'plan-do-check-act' environment, and while working at pace to suit a successful business.

The Data

In reviewing the data sets and starting with qualitative data, the process of identification was difficult and time consuming. Even when the exercise was complete on paper, it was impossible to get a feel for what the answer was going to be. It was only when the combined results were collated into one data set did the overall picture emerge that indicated that people were the most important element associated with the research. This also started to provide us with the other key elements that the interviews and workshops had identified.

The most interesting thing about this data set was the difference of opinion between external and internal perception and the comments received from each. It was clear that

the managers, while making the change, did not see themselves as the architects of change and allowed it to pass over them to the blue collar workers and the Black Hats. 'They' as described in the workshops, were the Directors and I was amazed that by allowing the project managers to have individuality and autonomy with accountability, this freedom with authority has been interpreted as blame.

As a business there are a lot of areas that we can get to work on immediately and which we were unaware of prior to starting the D Prof. These are removed from the academic content of the findings and are quick wins, including method statements, paperwork, 'They' as an entity, and the concept of blame versus accountability.

The results of the quantitative data set were equally exciting as it was carried out in two channels, paper copy and online Survey Monkey. I was unaware of the overall picture until the results were both combined in SPSS. When the data set was reviewed in SPSS it became evident that there was an abundance of data and neither we nor anyone in the business was familiar and competent with SPSS to extract the data in the way we required. We decide to contact Oxford Brookes to get someone and they were very helpful. We sent them the database and a list of requirements for review.

The data was very illuminating initially, but before we started to see a picture in relation to nationality as a key indicator, there was a requirement for a number of months of dissecting the data (on four different occasions); asking for different ways of cutting and searching for linkages and looking for the interdependencies.

This then prompted us to research in relation to nationality and we were amazed to find academic research to back up our findings. The literature review demonstrated that the subject area is complex, and not well covered due to its complexities. Having reviewed the Hofstede Model, the key indicators for our demographic were PDI/UAI and masculinity and femininity.

This identification resulted in further investigation of the workforce within London which we discovered is as HSE (2010) states 'Migrant labour has been estimated to make up some 8.2% of the labour force in construction (176,628). In London and the South East, migrant workers form a higher percentage of the workforce, at around 18%. HSE's latest Survey of Construction Workers, started in January 2009, indicates that, in Greater London, foreign workers now make up around 37% of the workforce. These statistics now show that the problem is even greater for businesses with the greater London polymorphic region'.

The process of reviewing the data sets has given me a much better understanding and appreciation of the business, both internally and externally, along with an understanding of the challenges faced by our multinational workforce, who are working in a foreign country and using English as a second language to earn a living while supporting a family in one of the most dynamic and dangerous working environments in the UK.

I had not considered the issues for these workers with their level of understanding and clarity of the message being communicated by the business and by me personally. We had created a construct where we had an Irish view and an English view between Michelle and I, but had not considered the wider demographic and the message they were receiving.

The profile of the respondents was interesting because of the way they perceived the constructs of people, safety and culture. Individually or collectively, these issues were of differing importance to them differing importance to them, partly as a result of their varied international background.

The process of research in both the areas of business, and safety and the evolving linkages has been interesting and has strengthened my understanding of organisational culture and safety culture. I understand that the latter is sub-culture, but that they have a symbiotic relationship within the overall business context.

I have had to look beyond the individual. I had to try and understand the culture he or she was part of; their nationalities, customs, and families. I had to appreciate that they have different values, and that the values of the people who surround us have an effect on everyone individually.

The D Prof process has created a reflexive awakening that has opened up the world of research and exploration, unknown until this point. The reflection on my career to date has tapped into a reservoir of knowledge that has allowed me to complete three chartered qualifications, two of which are chartered fellowships and also to become a fellow of the Institute of Civil Engineers while working through the D Prof process.

The business has now reached a position of ‘accumulative advantage’ Gladwell M.(2008), and the change process is balanced and has delivered a sustainable future delivery strategy. The external perception of the market from the interviews is encouraging and is reflective of the work in building a brand value around the vision of People, Delivery and Relationships.

10.0 Conclusion

During the seven years from first quarter 2006, we have been undertaking a transformational business change programme, using health and safety as a core business value. This research has underpinned the success of the change programme and our literature review has verified that the business has achieved a 'balanced' safety culture, therefore providing a reliable platform for future change.

This research has been conducted in a high hazard domain, has reviewed the differing cultural values between workforce and management and has examined how management behaviours are construed and what influence this has had on employee behaviours and safety performance.

The robust research undertaken has indicated that our workforce understands the three dimensions most commonly used to assess safety: risk perception, employee involvement, and management's commitment to safety.

The impact of a male-female perspective has been influential through the period of the business change programme and has continued into the Doctorate overall, as well as into the specific delivery of this project: its design, delivery and discussion.

The CEO and the Directors of the business have consistently provided support for the change programme, and have been visible leaders with consistent messaging. This has no doubt assisted the success of the change programme and is supported by the findings in the qualitative research.

Our literature review and research has also uncovered a clear link between Hofstede's original cultural dimensions model in 1990 and his later work on the same model in 2011. This balance in our business strategy and our safety culture as defined often in the empirical literature validates the use of Hofstede as an area of future focus to promote change.

The definition of clear differences in power distance, uncertainty avoidance, and masculine versus feminine cultures, are the most relevant to the demographic presented within our polymorphic London-centric construction project environment.

It is clear from the literature that there was a limited amount of academic research in this subject area. The extant literature on cultural dimensions does not provide research that relates specifically to the UK construction industry; it relates to nationalities in comparison with each other, or nationalities operating in other national environments, typically using examples with similar risk profiles such as the oil and gas.

There are key challenges to the work of Hofstede in relation to the unique London construction market, which has a minimum of 37%% non-British, foreign workers. Our business, which is formed of 39 different nationalities, and when referencing the sample audience, employs 47% foreign workers as a general demographic out of 900 responses. In comparison, the UK national demographic indicates 8.2% migrant workers a group of 176,628.

There is no defined UK survey of foreign/migrant workers and further research suggests that the figure relating to foreign workers in Central London could be closer to 60% of the workforce. There is a need for a pan-industry body to collate the data on foreign/migrant workers UK wide to identify the wider issues.

A further challenge is the construction industry itself, which is based around a cyclical economic climate generally using a 'hub and spoke' project- based delivery model with a worker population moving often and in quick succession between the project-based spokes of various businesses. This mobile workforce is then frequently exposed other organisational and safety cultures which may not align with our business, given its advanced evolutionary state.

Our business is not atypical in this respect with a semi stable workforce and a core of workers (29%) being employed by us for more than ten years. There is, though, dilution of culture every time the workers move from project to project, and a further dilution when they move business to business.

This high percentage of migrant workers creates a truly polymorphic society, whereas all Hofstede's cultural dimensions, micro-converge in London, meso-converge in our business, and macro-converge again in a project environment. All of this presents a concentrated mixture of national dimensions in the temporary and relatively small project-based environments which are atypical of a construction business.

There are 18 million people living in Greater London, 8.1 million living in Central London. There are 2.1 million people in the UK working in the construction industry nationally, both male and female, 8.2% of which are migrant workers. Our survey sample audience indicates that we employ 23% of the UK's migrant worker population, in the confines of London projects. This highlights the importance of developing a way of communicating safety effectively across all cultural dimensions, evidence of which has not yet been found in academic research.

This phenomenon is only clear to us through the process of undertaking this research, and would not necessarily be apparent in other businesses in the construction industry

undertaking similar research in the construction industry. It would not be visible to a main contracting business for instance, as they predominantly employ sub-contractors or agency workers and are in some cases as far as six-times removed from the employer.

In January 2014 we presented our findings to Dr Vince Cable MP, his role as Secretary of State for Business, Innovation and Skills at the time, as the opportunity arose whilst he was visiting our business. He commented that he had not before heard such a positive and proactive approach to health and safety in relation to a business model, and felt it enlightening to understand the very different perspective that we were able to convey to him regarding the impact of an excellent safety culture on business improvement and on business performance.

Dr Cable was impressed with our findings, in particular with relation to the polymorphic society that is the City of London, and he expressed a desire to engage with us further at a later date to assist him and his colleagues in understanding the challenges presented by current policy in order to create the opportunity for others to provide the kind of support and improvement opportunities that we have been able to put into place in our business.

He also expressed an interest in further understanding the success we have been able to achieve in our apprentice school and how that may be translated nationwide. This was validation of our performance and our findings from an individual who sees all kinds of businesses and could see the potential benefits of our research in mainstream business to improve performance.

In January 2014 we also presented the findings to QBE one of the largest insurers of construction worldwide. They commented that we had taken a unique step in the approach to establishing the baseline of where were as a business in relation to culture and balance. They were also impressed with the concept of nationality having an impact on safety performance but had not understood the impact this could be having on the UK market with particular emphasis on the Greater London region.

In December 2014 we presented to a number of members from the Infrastructure UK (IUK), consisting of the Highways Agency, Anglian Water and London Underground. Infrastructure UK is a unit within the Treasury that works on the UK's long-term infrastructure priorities and secures private sector investment. It is responsible for:

- Co-ordinating and simplifying the planning and prioritisation of investment in UK infrastructure.
- Improving UK infrastructure by achieving greater value for money on infrastructure projects and transitions.

The feedback again was positive with a number of entities indicating that they had not appreciated the scale of opportunity in using safety as a means of business change.

This lack of understanding means it is impossible for clients to influence culturally the behaviours of the individual worker with that level of sub, counter, business, national, and project cultures impacting upon it. This drives the conclusion that a direct workforce or a single tier of sub-contract is the only successful way to influence long lasting and consistent change and excellence in a highly polymorphic and fragmented industry.

This research may provide the answer as to why the construction industry is not achieving consistent and incremental improvements despite all the strategic efforts to make safety change, which empirical research has proven to be linked to organisational business change.

In Our experience it is necessary to create a common platform which enables the construction worker to step outside their own cultural influences and norms and into a non-adversarial, non-hierarchical, communicative environment in which they can freely express their concerns, thoughts or ideas in pursuit of a culture of safety excellence. This will have the impact of also producing more productive high performing and contented teams. If operating in London's polymorphic macro-climate, English could be the potential benign language to aid commonality.

It should be noted, however, that this would be entirely different in other locations, for example Asia or Africa, and individual analysis of the workforce must be undertaken to establish what that benign common platform may be. Technology could provide the platform rather than or as well as a common language, and it is necessary to investigate as many ways as possible to provide commonality of culture.

The outputs from the Dprof are already in use in the business, where the visual method statements and risk assements are being utilised and linked to the business Building Information Modelling (BIM) strategy, utilising one data set to provide not onlty integration and co-ordination but also visualisation and virtual build for the work force and supervisors.Appendix 7.

11.0 Further Research Opportunities

Further micro analysis of individual questions in relation to the Hofstede's cultural dimensions

Re-survey our existing workforce using Hofstede's latest online survey as detailed in his publication Cultures and Organizations: software of the mind(1991), then following this with a correlation to our existing survey data paying particular notice to 'people, safety, and culture'

It must be established whether English- E2L is the answer? IS a common language needed? Who trains and pays to train the workforce to the required standard of English and how do we negate the potential to cause great offence to foreign workers or ensure that we do not strip away their national identity in undertaking this exercise? It is a subject for further consideration within the business and will be part of a further research piece.

Once a common platform for communication is in place, conduct the same survey again to establish the success or otherwise of the work undertaken using existing data and analysis as a benchmark.

Undertake new research using new data distinct from our existing data to assess the values of each different nationality using the (WVS) World Values Survey Model and the Values Survey Module as discussed by Hofstede, Hofstede and Minkov (2010)

Conduct our survey in other similar businesses that employ a direct workforce and who have not undertaken any form of cultural change programme.

All of the opportunities mentioned in this section would be appropriate for our business or indeed for other researchers wishing to further investigate how to add further improvement to safety culture and the impact of the issues surrounding nationality and power distance.

Both researchers agree that it would be beneficial to not only the construction industry, but to industry in a wider context, to publish the knowledge gained in a technical paper, with a particular desire for it to be published in the IOSH Journal for Policy and Practice, as well as in a more informal way as a book that provides foundational knowledge for anyone trying to implement a behaviour-based safety programme in their business.

We will also use it in other consulting work, including Michelle's role as a Major in the British Army advising them in the field of change, as well as specialist seminars where we are invited to speak.

12.0 Bibliography

Arbnor, I. and Bjerke, B. (1994) *Methodology for creating business knowledge. 3rd Edition.* California: Sage.

Ballard, G. (1993). 'Lean Construction and EPC Performance Improvement.' Lean Construction Workshop. Finland: Espoo

Bartlett, C.A. and Ghoshal, S. (1998) *'Managing across Borders'. 'The transnational solution'.* Harvard Business Press.

Cameron, I. Dr, Hare, B. Dr, Duff, R. Dr, Maloney, B. Professor, PhD. (2006*).'An investigation of approaches to worker engagement'.* Glasgow Caledonian University.

Charles, T. and Tashakkori, T. (2009)-*Foundations of Mixed Methods Research – Integrating Quantitative and Qualitative Approaches in the Social and Behavioural Sciences.* California: Sage.

Construction Skills (2010) *Understanding future change in construction, final report*, October. Page 40,46,

Eakin, J. (2010) 'Towards a 'standpoint' perspective: health and safety in small workplaces from the perspective of the workers', *Policy and Practice in health and safety,* 8(2), 113-127

Easterby-Smith, M., Thorpe, M., Lowe, A. (2002) *Management Research, An introduction (2nd Edition).* London, Sage.

Fox, M., Martin, P.,Green, G. (2007); *Doing Practitioner Research.* London: Sage

Gadd, S. and Collins, A.M. (2002) *Safety Culture: A review of the literature HSL/2002/25. Sheffield: Health and Safety Laboratory.*

Garratt, B. *'The fish rots from the head'*, HarperCollins Location (1996).

Ghosal, S. and Bartlett, C.A. (1997) *'The individualized corporation'*. New York: NY. Harper.

Grulke, W. (2000) *'10 Lessons from the future'.* Parklands, South Africa: One Communications.

Grulke, W. (2003) 'lessons in radical innovation'. London: Financial Times. Prentice Hall.

Hart, C. (1998): *Doing a Literature Review: Releasing the social Science Research Imagination.* London: Sage

HSE (2008) HSG 263. 'Involving your work force health and safety.' Bootle HSE

Kaplan, R.S. and Norton, D.P. and Dorf, RC and Raitanen, M. (1996) *'The balanced scorecard: translating strategy into action'.* Boston: Harvard Business School Press.

Markides, C. and Schwartz, P. and Leyden, P. and Hyatt, J. (2000) *'All the right moves'.* Harvard Business School Press.

Power, N.G. and Baqee, S. (2010) 'Constructing a 'culture of safety': an examination of the assumptions embedded in occupational safety and health curricula delivered to high school students and fish harvesters in Newfoundland and Labrador, Canada. in *Policy and Practice in health and safety Policy and Practice in health and safety* Vol 08, issue 1

13.0 References

ACSNI Human Factors Study Group: Third report - Organising for safety HSE Books 1993

Agapiou, A. (2002), Perceptions of gender roles and attitudes toward work among male and female operatives in the Scottish construction industry, *Construction Management and Economics,* 20, 697–705

Ailon, G. (2008). Mirror, Mirror on the wall: Culture's consequences in a value test of its own design. *Academy of Management Review,* 33, 885-904

Alcorn, D.S. (1992) *Dynamic Followership: Empowerment at Work. Management Quarterly*, 33, 9-13

Aldersgate Group (2009), Mind The Gap: Skills for the Transition to a Low Carbon Economy available at file:///D:/WORK/DATA/Mind%20the%20Gap.pdf accessed March 2012

Alvesson, M. (2002) *Understanding Organisational Culture*. London: Sage

Ashforth, B. E. (1998). Becoming: How does the process of identification unfold? In Whetten D., Godfrey P. (eds.), *Identity in Organizations: Developing Theory Through Conversations*: 213–222. Thousand Oaks, CA: Sage.

Austin, S., Green, S. and McDermott (2009) The Big Ideas for a changing world: Creating pathways for a competitive future – a fresh perspective on company competitiveness in the UK construction sector available at http://www.thebigideas.org.uk/downloads/big_ideas_brochure.pdf

Banutu- Gomez, M. (2004) "Great leaders teach exemplary followership and serve as servant leaders". *The Journal of American Academy of Business*, 4(Nos. 1/3), 143-51

Bandura, A. (1986). *Social Foundation of Thought and Action: A Social Cognitive Theory*. Prentice Hall, Englewood Cliffs, NJ

Baskerville, R.F. (2003). Hofstede never studies culture. *Accounting,Organisations and Society*, 28(1), 1-14

Baxter, G. (2011). Socio-technical systems. LSCITS Socio-Technical Systems Engineering Handbook available at http://archive.cs.st-andrews.ac.uk/STSE-Handbook/ accessed July 2014.

Belbin, RM. (1993). *Team Roles at Work.* Oxford: Butterworth-Heinemann.

Bennett, J.F. Davidson, M.J. and Gale, A.W. (1999) Women in construction: a comparative investigation into the expectations and experiences of female and male construction undergraduates and employees. *Women in Management Review*, 14(7), 273-91

Bennis, W. (2000) *Managing the dream: Reflections on leadership and Followership.* Cambridge, MA: Perseus Books.

Brenner, S. and Cochran. P. (1992) 'The Stakeholder Theory of the Firm: Implications for Business and Society Theory and Research', in J.F. Mahon , ed., *International Association for Business and Society 1991 Proceedings*, pp. 449–67.

Braun, V. Clarke, V. (2006) 'Using thematic analysis in psychology' *Qualitative research in psychology* 3 (2), 77-101

Bradburn, N. M., Sudman, S., Blair, E., Locander, W., & Miles, C. (1980). *Improving interview method and questionnaire design: Response effects to threatening questions in survey research*. San Francisco, CA: Jossey-Bass.

Brondino, M. Silva, Silvia. Pasini, M. (2012) Multi-level approach to organisational and group safety climate and safety performance: co-workers as the missing link. *Safety Science,* 50, 1847-1856

Boons, F. and Lüdeke-Freund, F. (2013). Business Models for Sustainable Innovation: State-of-the-art and steps towards a research agenda. *Journal of Cleaner Production*, 45, 9-19

CABE and Royal Holloway (UoL) Centre for Ethnic Minority Studies (2005). Black and Minority ethnic representation in the Built Environment Professions. London CABE/Royal Holloway University of London.

Cabinet Office (2011). Government Construction Strategy. London, Cabinet Office

Casey, T.W. and Krauss, A.D. (2013) *The psychology of contractor safety management in; Smith, G. (Ed.) Contractor safety management*. Clermont, Florida: CRC Press.

Casner-Lotto, J., & Barrington, L. (2006). *Are They Really Ready to Work? Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century US Workforce*. Partnership for 21st Century Skills. 1 Massachusetts Avenue NW Suite 700, Washington, DC 20001

Chaleff, I. (1995) *The courageous follower.* San Francisco: Berrett-Koehler Publishers

Chapman M. (1997). Social anthropology, business studies, and cultural issues: preface. *International Studies of Management and Organisation*, 26(4), 3-29

Chan, P.W. and Dainty, A.R.J (2007) Resolving the UK construction skills crisis: a critical perspective on the research and policy agenda. *Construction Management and Economics* 25(4), 375-386.

Charmaz, K. (2006) *Constructing Grounded Theory. A practical Guide through Qualitative Analysis.* London: Sage

Chatman, J.A. (1991). Matching people and organisations. *Administrative Science Quarterly,* 36, 459-484

Christian, M.S., Bradley, J.C., Wallace, J.C. and Burke, M.J. (2009) Workplace safety: a meta-analysis of the roles of the person and situation factors. *Journal of Applied Psychology* 94, 1103-1127

Coghlan, D. (2003) 'Practitioner research for organisational knowledge: mechanistic-and organistic-oriented approaches to insider action research', *Management Learning,* December 2003, 34, 451-463.

Coghlan, D. (2004). Action research in the academy: Why and whither? Reflections on the changing nature of research1*. Irish Journal of Management*, 25(2), 1.

Coghlan, D. (2007) Insider action research doctorates: Generating actionable knowledge. *Higher Education* 54: 293-306

Coghlan, D. Brannick, T. (2010) *'Doing action research in your own organisation', 3rd edition,* 43-49: London: Sage.

Colley, S.K. Lincolne, J. Neal, A. (2013) An examination of the relationship amongst profiles of perceived organisational values, safety climate, and safety outcomes. *Safety Science.* 51. 69-72

Collins, J.C. and Porras, J.I. (1996). Building your company's vision. *Harvard Business Review. Sept-October 1996*

Collins, J. C. (2001). *Good to great: Why some companies make the leap... and others don't*. London, Random House,

Commission for Architecture and the Built Environment (2005) see CABE and Royal Holloway

Construction Industry Council and Construction Skills (2010) Building the future: How women professionals can make a difference. Available at http://www.cic.org.uk/activities/BuildingtheFuture.pdf

Construction Industry Council and University of West of England (2009). Gathering and reviewing data on diversity within the construction professions. Bristol. UWE see De Graft-Johnson

Construction Industry, Engineering, Construction and Architectural Management, Editorial, 6 Construction Industry. Available at http://www.ciob.org.uk/resources/research

Construction Skill Network Blueprint 2010 – 2014; Foresight Group, (2008), Powering Our Lives: Sustainable Energy Management and the Built Environment – Final Project Report; and, BIS (2009), Skills for growth: The national skills strategy.

Cooper, C. L. and Rousseau, D.M. (Eds) (1994) *Trends in Organisational Behaviour, Volume 1.* Chichester, England: Wiley & Sons.

Cooper, M.D. (1996) *The be-safe programme*. Applied Behavioural sciences Ltd, Hull

Cooper, M.D. (1997*). Improving Safety Culture: A Practical Guide*. Chichester: J Wiley.

Cooper, M.D. (2000) Towards a model of safety culture: *Safety Science* 36,111-136

Cooper, M.D. (2009) Behavioural Safety Interventions: A Review of Process design Factors. *Professional Safety* February, 36-45

Cooper, M.D.and Phillips, R.A. (1995). Killing two birds with one stone: achieving total quality via total safety management. *Leadership and Organisation Development Journal* 16, 3–9.

Costley, C. Elliot, G. Gibbs, P. (2011) '*Doing Work Based Research – Approaches to enquiry for insider researchers'* London: Sage.

Court, G, and Moralee, J. (1995). *Balancing the Building Team: Gender Issues in the Building Professions,* The Institute for Employment Studies, Sussex.

Cramér, H. (1999*). Mathematical Methods of Statistics*, Princeton University Press. NJ

Cramér, H. (1999). *Phi Correlation, Chi-square test Mathematical Methods of Statistics,* Princeton University Press, NJ

Cramer S.C. (2011) Harnessing neuroplasticity for clinical applications. *Brain,* 134, 1591-1609

Crotty, M. (1998) *'Foundations of social research: Meaning and perspective in the research process'.* London: Sage

Crow, G. Wiles, R. Heath, S. Charles, V. (2006) 'Research ethics and Data quality: The implications of informed consent. *International Journal of Social Research Methodology,* 9, 83-95.

Cunningham, J.B. and MacGregor, J. (2000). Trust and the design of work: Complementary constructs in satisfaction and performance. *Human Relations*. 53, 1575-1591

Dainty, A., Green, S. and Bagilhole, B. (2007) *People and Culture in Construction: Contexts and Challenges, in A. Dainty, S. Green, and B. Bagilhole (eds), People and Culture in Construction: Contexts and Challenges*. London: Taylor and Francis Books Ltd.

Dalton, M. (1964) *'Preconceptions and methods in men who manage', in P Hammond (ed.) Sociologists at work.* New York: Basic Books

Davey, C. Davidson, M.J. Gale, A.W. (1999), "Working Paper Series No. 9901", Good Practice Guidelines for Building Contractors and Housing Associations 1999 MSM, UMIST, Manchester.

David Cameron as described in: Lord Ashcroft Polls 2013: Small Island Public Opinion and the politics of immigration: Lord Ashcroft KCMG PC.

De Graft-Johnson, A., Sara, R., Gleed, F. Brkljac, N. and Gleed, C. (2009) Gathering and reviewing data on diversity in construction professions. Technical report, construction Industry Council available from http://eprints.uwe.ac.uk/10382

Deal, T. and Kennedy, A. (1982). *Corporate Cultures*. Reading, MA: Addison-Wesley.

Dejoy, D (2005) Behaviour change versus culture change, by divergent approaches to managing workplace safety. *Safety Science*,43, 105-109

Dept for Business, Innovation and Skills (2009), *Towards a Low Carbon Economy – economic analysis and evidence for a low carbon industrial strategy*. BIS Economics Paper No. 1. London. BIS

Dept for Business, Innovation and Skills (2009). *Nanotechnologies and the Construction Sector*. Available at http://webarchive.nationalarchives.gov.uk/20091017095729/interactive.bis.gov.uk/nano/sections/nanotechnologies-and-the-construction-sector/

Depree, M. (1992) *Leadership Jazz*. New York: Doubleday Publishing.

Dewberry, C. (2004).'*Statistical methods for organisational research'* Padstow, UK: TJ International Ltd.

Dewey, J. (1933) '*How we think: A restatement of the relation of Reflexive thinking to the educative process, rev. edn*. Boston, MA: D.C.Heath & Co.

Donaldson, T. Preston, L. (1995). "The stakeholder theory of the corporation: Concepts, evidence, and implications", *Academy of Management Review*, 20(1), 65-91

Egan, J. (1998). Rethinking Construction. The report of the Contruction Task Force. London DTI

Ehrhart, M.G. & Klein, K.J. (2001). Predicting follower's preferences for charismatic leadership: The influence of follower values and personality. *Leadership Quarterly*, 12, 153-179

Elliot, J. (1987). 'Educational Theory, Practical Philosophy and Action Research' in British *Journal of Educational Studies*, 35(2) 149-169

Elsey, B. Sai-kwong, L. (2002) Changing the Work Behaviour of Chinese Employees using a Continuous Process Improvement Program and Action Research: a case study of an international elevator company located in China: *ABAC Journal* 22,(3) (September – December, 2002), 31 – 46

Equality and Human Rights Commission (2011) *Equality and diversity: good practice for the construction sector- A report commissioned by the Equality and Human Rights Commission*.:ISBN 978 1 84206 380 4

Erickson,T J. (2008) Redesigning Your organisation for the Future of Work. *People & Strategy:* 31(4)

Fernandez-Muniz, B. Montes-Peon, J.M. and Vazquez-Ordas, J. (2007). 'Safety Culture: Analysis of the Casual Relationships between its key dimensions' , *Journal of Safety Research* 38 627-641.

Fielden, S. L., Davidson, M. J., Gale, A. W. and Davey, C. L. (2000). Women in construction: the untapped resource. *Construction Management nd Economics,* 18 113-121

Fielden, S.L., Davidson, M.J.,Gale, A. and Davey, C.L. (2001) "Women, equality and construction", *Journal of Management Development,* 20(4) 293 – 305

Fielding, J. (1993) *Coding and Managing Dat: In N. Gilbert (ed.) Researching Social Life*. London: Sage Publications.

Fiol, C. M. & Lyles, M. A. (1985). Organizational learning. *Academy of management review,* 10(4), 803-813.

Flemming, M.and Lardner, R. (2002) *Strategies to promote safe behaviour as part of health and safety management systems*. Health and safety Executive. Report No. contract research report 430/2002

Flin, R., Mearns, K., O'Connor, P. and Bryden, R. 2000. Measuring safety climate: identifying the common features. *Safety Science* 34, 177–192.

Freeman, R. (1984). *Strategic Management: A stakeholder Approac.,* Ballinger, Boston, MA

Gabrielsson, M., Darling, J. and Seristö, H. (2009) "Transformational team-building across cultural boundaries: A case focusing on the key paradigm of leadership styles", *Team Performance Management,* 15(5/6) 235 – 256

Gale, A.W and Davidson, M.J. (2006). *Managing Diversity and Equality in Construction: Initiatives and Practice.* London: Taylor and Francis.

Ganesh, D. Bhatt, (2001) 'Knowledge management in organisations: examining the interaction between technologies, techniques, and people', , *Journal of Knowledge Management*, 5(1) 68-75.

Geller, E.S. (1994) Ten Principles for achieving a Total Safety Culture . *Professional Safety* (September), 18-24.

Geller, S. (1997). *The psychology of safety: How to improve behaviours and attitudes on the job.* Boca Raton, Florida: CRC.

Geller, E.S. (2006) Occupational Injury Prevention and Applied Behavioral Analysis. *Injury and Violence Prevention*. 297-312

Gibson, M (2009). Changing to compete: Review of Productivity and Skills in Engineering Construction, A commission report for the Secretary of State for Business, Innovation and Skills. London BIS

Gillen, M., Schneider, S., Hecker, S. and Goldenhar, L. (2013) *Safety Culture and Climate in construction Bridging the Gap Between Research and Practice*. The Center for Construction Research and Training

Gladwell, M. (2008) *Outliers.* Penguin; London ISBN 978-0-14103-625-0

Goffee, R. & Jones, G. (2001). Followership: It's personal, too. *Harvard Business Review,* 79, 148

Gosling, J. & Ashton, D. (1994). Action learning and academic qualifications. *Management Learning,* 25(2), 263-274

Government Equalities Office (2010). Respresentation of women in business and government: Public attitudes and perceptions. Ipso MORI/Government Equalities Offi ce

Government Office for Science Foresight Group, (2008). *Powering Our Lives: Sustainable Energy Management and the Built Environment: Final Project Report. London Govt Office for Science*

Gratton. L. (2000). *Living Strategy: Putting people at the heart of corporate purpose.* LondonFinancial Times Prentice Hall, 19.

Graves, D. (1986*). Corporate Culture: Diagnosis and Change*. New York: St Martins Press

Greed, C. (2000). Women in the Construction Professions: Achieving Critical Mass, *Gender, Work and Organization*, 7(3), 181-96.

Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P. and Kyriakidou, O. (2004) Diffusion of Innovations in Service Organizations: Systematic Review and Recommendations *Millbank quarterly*, 82(4), 581-629.

Greif, M. (1991) *The Visual Factory: Building Participation Through Shared Information*. New York: Productivity Press.

Grote, G. and Kunzler, C. 2000. "Diagnosis of safety culture in safety management audits." *Safety Science*, 34, 131–150.

Guba, E. and Lincoln, Y. (2005),*'Paradigmatic controversies, contradictions, and emerging confluences' in N.Denzin and Y. Lincoln (eds), The Sage handbook of qualitative research.* London: Sage.

Guldenmuld, F., Cleal, B. and Mearns, K. (2013) An explanatory study of migrant workers and safety in three European countries. *Safety Science.* 52 92-99

Gurjao, S. (2006*). Inclusivity: The Changing Role of Women in the Construction Workforce.* Ascot, Berks The CIOB

Hale, A.R., 2000. Editorial: culture's confusions. *Safety Science* 34, 1–14.

Hallinger, P. (2003). Leading educational change: Reflections on the practice of instructional and transformational leadership. *Cambridge Journal of Education*, 33(3), 329-352.

Hamden-Turner, C. (1990). *Corporate Culture: From Vicious to Virtuous Circles*. London: Random Century.

Hanges P. Offerman, L. & Day, D. (2001). Leaders, followers and values: Progress and prospects for theory and research. *Leadership Quarterly*, 12, 129-131

Hanges, P.J. and Dickson, M.W. (2004). *The development and validation of the GLOBE culture and leadership scales, in R.J House, P.J.Hanges, M.Javidan, P.W.Dorfman. & V.Gupta (Eds).' Culture; leadership and organisations: The GLOBE study of 62 societies* (pp. 122-151). Thousand Oaks, CA: Sage.

Health and Safety Executive (2002). *"Strategies to promote safe behaviors as part of a health and safety management system." Contract Research Rep. 430/2002,* The Keil Centre for the Health and Safety Executive, Edinburgh, U.K

Health and Safety Executive (2006) Fit3 (Fit for Work, Fit for Life, Fit for Tomorrow) employer and employee surveys 2005/06

Health and Safety Executive (2010) Topic Inspection Pack - Migrant Working available at www.hse.gov.uk/foi/internalops/fod/inspect/migrantworker.pdf

Heffernan, M. (2011): *Wilful Blindness: Why We Ignore the Obvious at our Peril*. UK: Simon & Schuster.

Heinrich, H. W. (1959). *Industrial Accidents Prevention.*New York, Mc Graw Hill.

Helmreich, R.L. (1999). Building safety on three cultures of association. *In Proceedings of the IATA Human Factors Seminar. Bangkok, Thailand, 39-43*

Helmreich, R.L and Merritt, A. (2000) "Culture in the Cockpit: Do Hofstede's dimensions replicate?," *Journal of Cross-Cultural Psychology* 31(3) 283-301.

Hersey, P. & Blanchard, K. (1988) *Management of organisational behaviour: Utilising human resources.* Englewood Cliffs, NJ: Prentice Hall

human resources. Englewood Cliffs, NJ: Prentice Hall

Hinze, J.W. (1997) Construciton safety. Prentice-Hall inc., Upper Saddle River, New Jersey.

Hofstede, G. (1990) *Cultures and organisation: software of the mind*. London: McGraw Hill.

Hofstede, G. (1994). *Value Survey Module 1994 Manual*. The Netherlands: IRIC

Hofstede, G. (2001) *Culture's Consequences: Comparing values, behaviours, institutions and organisations across nations.* Thousand Oaks; CA: Sage.

Hofstede, G; Hofstede.G J; Minkov, M.(2010) *Cultures and Organisations : Software for the Mind (3rd Edition).*New York, NY, USA: McGraw-Hill Professional Publishing.

Hofstede, G. (2011). Dimensionalizing Cultures: The Hofstede Model in Context. *Online Readings in Psychology and Culture*, 2(1).

Høgevold, N.M,, Svensson, G., Wagner, B., Petzer, D.J., Klopper, H.B., Sosa Varela, J.C., Padin, C. and Ferro, C. (2014). Sustainable business models – corporate reasons, economic effects, social boundaries, environmental actions and organizational challenges in sustainable business practices. *Baltic Journal of Management*, 9(3). 357-380

HM Government (2007) The Construction (Design and Management) Regulation (2007): Statutory Instruments No 320

HM Government and Strategic Forum for Construction (2008), *Strategy for Sustainable Construction*. London Dept for Business, Enterprise and Regulatory Reform.

Hogg, M.A. Martin, R. and Weeden, K. (2003), *"Leader-member relations and social identity, in van Knippenberg, D. and Hogg, M.A. (Eds), Leadership and Power.* London: Sage.

Holt, B. and Scott, K. (2011) *Saving Lives through Leadership*. London IIRSM (International Institute of Risk and Safety Management)

Honey, P. and Mumford, M. (1986). The Learning Style Inventory. Maidenhead, Berks, Peter Honey Associates

Hopjkins, A. (2006).What are we to make of safe behaviour programs? *Safety Science*, 44, 583-597.

Hosseini, J. Brenner, S. (1992) "The stakeholder theory of the firm: a methodology to generate value matrix weights", *Business Ethics Quarterly*, 2(2), 99-119.

House, R.J. & Hanges, P.J. (2004). *Research design. In R.J.House, P.J. Hanges, M.Javidan, P.W. Dorfman & V.Gupta, (Eds) Culture; leadership and organisations: The GLOBE study of 62 societies (pp. 122-151).* Thousand Oaks, CA: Sage.

House, R.L. 1999. Building safety on three cultures of aviation. In: *Proceedings of the IATA Human Factors Seminar.* Bangkok, Thailand, pp. 39-43

Howell, D.C. (1997) *Statistical Methods for Psychology*. London: Duxbury Press.

Hunter, J.E. Schmidt, F.L., 1990. *Methods of Meta-Analysis*. London: Sage.

Hurwitz, S.K. and Hurwitz, M. (2010) “The missing ingredient in talent development”. *CMA Management Canada*, 84(3), pp 10

Husserl, E. (1970). *Logical Investigation*. New York: Humanities Press.

Husserl, E. (2012) *Ideas: General introduction to pure phenomenology*. London: Routledge Classics

International Atomic Energy Agency (IAEA), 1991. *Safety Cultures (Safety Series No. 75-INSAG-4),* A Report by the International Nuclear Safety Advisory Group, Vienna.

James, P. (2009) Understanding health and safety outcomes: causes, methods and concepts. Policy and Practice in Health and Safety, 7(1), 5-31

Janis, I. L. (1972) *‘Victims of Groupthink’*. Boston: Houghton Mifflin,

Janis I.L. (1982). *Groupthink.* Boston: Houghton Miffin

Johnson, G. (1992). Managing strategic change — strategy, culture and action. *Long Range Planning* 25(1) 28-36.

Johnson, S. (2003) Behavioral Safety Theory: Understanding the theoretical foundation. *Professional Safety*, 39-44

Jones, T. (1995) "Instrumental stakeholder theory: a synthesis of ethics and economics", *Academy of Management Review*, 20(2), 404-37

Kahneman, D. (2011): Thinking fast and Slow: Farar, Strausand and Giroux, US:

Kaplan, R. S. (1983). Measuring manufacturing performance: A new challenge for managerial accounting research. *The Accounting Review* (October) 686-705

Katalytik see Equality and Human Right Commission.

Kelley, R. (1992). *The power of followership*. New York: Doubleday.

Kelley, R.E. (2004). *"Followership", in Goethais, G.R., Sorensen, G. and Burns, J.M. (Eds), Encyclopedia of Leadership*. Thousand Oaks, CA: Sage

Kennedy, R. and Kirwan, B. 1998. Development of a hazard and operability-based method for identifying safety management vulnerabilities in high risk systems. *Safety Science*, 30, 249–274.

Kerr Hurwitz see Hurwitz, S.K.

Keupp, M.M., Palmie, M. and Gassmann, O. (2012). The strategic management of innovation: A systematic review and paths for future research. *International Journal of Management Reviews 14(4) 367-390*

Key, S. (1999) "Toward a new theory of the firm, a critique of stakeholder "theory" *Management Decision*, 37(4), 310-328.

Kirkman, B.L. Lowe, K.B. & Gibson C.B. (2006) A quarter century of culture's consequences: a review of empirical research incorporating Hofstede's cultural values framework. *Journal of International Business Studies* 37(3): 285-320.

Knott, D. Muers, S. & Aldridge, S. (2007*). Achieving culture change: A policy framework.* : London, Prime Minister's Strategy Unit

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development.* New Jersey: Prentice-Hall.

Komaki, J.L. (1998). *Leadership from an Operant Perspective*. London: Routledge

Kübler-Ross, E. (1969) *On Death and Dying*. LondonRoutledge.

Kübler-Ross, E. (2005) . , London, Simon & Schuster Ltd.

Lancaster, R. J. McAllister, I.and Alder, A. (2001). *Establishing effective communication & participation in the construction sector*. Entec UK Ltd, HSE Contract Research Report 391.

Langford, D. Rowlinson, S. Sawacha, E. (2000) Safety Behaviour and Safety Management; It's influence on the attitudes in the UK construction Industry. *Engineering Construction and Architectural Management Journal* 7 (2), 133-140

Lansdown, T.C. and Deighan, C. (2011) Psychosocial influences on health and safety behavior among small and medium sized enterprises, *Policy and Practice in Health and Safety,* 9(1) 34-55

Latham, S. M. (1994). Constructing the team: Final report of the government/industry review of procurement and contractural arrangement in the UK construction Industry London HM Stationery Office.

Lau, D.C. and Murnighan, J.K. (1998). Demographic diversity and faultlines.: The compositional dynamics of organizational groups. *Academy of Management Review*. 23(2), 325-340

Lawler, E (1996) cited in p37- Lunt J., Bates S., Bennett V., Hopkinson J. (2008) *'Behaviour change and worker engagement practices within the construction sector'*.Health and Safety Laboratory

Leaders working in the UK and Europe. www.katalytik.co.uk See Equality and Human Right Commission.

Leaviss J., Gibb, A. and Bust, P. (2008) *Meeting the challenges of an aging society: understanding the older worker in construction.* Report for SPARC (EPSRC and BBSRC research groups_

Lee, S. and Halpin, D.W. (2003) Predictive tool for estimating accident risk*. Journal of Construction Engineering and Management.* 129(4), 431-436

Lee, T. & Harrison, K. (2000). Assessing safety culture in nuclear power stations. *Safety Science,* 34(1), 61-97

Lester, S. (1999) *'An introduction to phenomenological research'*.Taunton, UK; Lester Developments.

Levesque, L.C. (2005) see Roberto, M.A. and Levesque, L.C. (2005).

Lewin, K., and Cartwright, D. (1951) Field theory in social science: Selected theoretical papers.. New York, Harper Collins

Liebowitz, J. (Ed.) (1999), *The knowledge Management Handbook*. Boca Raton, FL: CRC Press.

Liebowitz, J. (2000). *Building Organisational Intelligence: A Knowledge Management Primer*. Boca Raton, FL: CRC Press.

Liebowitz, J. (2009), *Knowledge retention: strategies and solutions*. Boca Raton FL: CRC Press.

Litzinger, W. & Schaefer, T. (1982), "Leadership through Followership". Business Horizons. 25(5), 78-81

Lord Ashcroft Polls (2013). Small island: Public opinion and the politics of immigration: available at http://lordashcroftpolls.com/wp-content/uploads/2013/08/LORD-ASHCROFT-Public-opinion-and-the-politics-of-immigration2.pdf

Lundin, S.C. and Lancaster, L.C. (1990) "The importance of followership:". *The Futurist*, 24(3), 18-22

Lunt, J., Bates, S., Bennett, V. and Hopkinson, J. (2008) *'Behaviour change and worker engagement practices within the construction sector'*. (2008). Health and Safety Laboratory

Maclay, C. Ozerdem, A. (2010) 'Use' them or 'lose' them: Engaging Liberia's disconnected youth through socio-political integration. *International Peacekeeping*, 17(3), 343-360.

McSweeney, B. (2002). Hofstede's Model of national cultural differences and their consequences: A triumph of faith – a failure of analysis. *Human Relations* 55 (1), 89-118

McSweeney, B. (2009). Dynamic diversity: Variety and variation within countries. Organisation studies, 30, 933-957

McKinsey & Company, (2007).*Women Matter: Gender diversity, a corporate performance driver.* London, Mckinsey

McKinsey's 7 Consultancy model: see Waterman, Peters and Phillips

Mangione, T. W.. Howland. J.. Amick, B.. Cote, J.. Lee, M.. Bell, N. Y. and Levine, S. (1999). Employee drinking practices and work performance. *Journal of Studies on Alcohol 60 (2):261-270*

Marosszeky, M. (2005*):"Performance measurement in construction process management."* Proceedings of the 4th Triennial International Conference of the Interntational Council for Research and Innovation in Building and Construction (CIB) Working Commission W99, Port Elizabeth, South Africa, pp. 12–27.

Marsh, T. (2007) Affective Safety management and pro-active safety culture Birmingham: IIRSM (International Institute of Risk and Safety Management): Health and Safety at Work: How to manage the health and safety challenges of today and tomorrow confernence 11th and 12th Sept 2007

Marsh, T. (1998). Role of management commitment in determining the success of a behavioural safety intervention. *Journal of the Institute of Occupational Safety and Health* 2(2), 45–56.

Maznevski, M. L. (1994) Understanding our differences: Performance in decision-making groups with diverse members. *Human relations*, 47(5), 531-52

Mearns, K., Yule, S. (2009): The role of national culture in determining safety performance: Challenges for the global oil and gas industry. *Safety Science* 47, 777-785

Meindl, J.R. (1987). The romance of leadership. *Administrative Science Quarterly*, 30, 91-108

Miles, R. (1987) *Managing the Corporate Social Environment. A grounded theory.* Englewood Cliffs, NJ: Prentice- Hall

Milgram, S. (1970). The experience of living in cities. *Science* 167(3924), 1461-1468

Miller, D. (2004) "Building sustainable change capability", *Industrial and Commercial Training*, 36(1), 9 - 12

Miller, W. (1994) *'Common space: creating a collaborative research conversation'. In B. Crabtree, M.Miller, R.Addison, V.Gilchrist and A.Kuzel (eds) Exploring Collaborative Research in Primary Care*. London: Sage.

Ministry of Defence (2013) Op Herrick casualty and fatality tables up to January 2013 available from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/280235/31_january_2013.pdf

Minkov, M. (2007). What makes us different and similar: A new interpretation of the World Values survey and other corss-sultural data. Sofia, Bulguria, Kalsjika y Stil Publishing House

Minkov, M. and Hofstede, G. (2011). The evolution of Hofstede's doctrine. *Cross Cultural Management: an International Journal*, 13, 10-20

Minkov, M. (2014) A replication of Hofstede's uncertainty avoidance dimension across nationally representative samples from Europe. *International Journal of Cross Cultural Management,* 14(2), 161-171,

Mintzberg, H. (1994) *The rise and fall of strategic planning: Reconceiving roles for planning, plans, planners*. New York Free press

Mintzberg, H. and Quinn, J.B. (1998) *Readings in the strategy process, (3rd ed.).* New Jersey, Prentice-Hall Books Mohamed, S. (2002). Safety climate in construction site environments. *Journal of construction engineering and management*, 128(5), 375-384.

Mohamed, S. (2003) Score card approach to benchmarking organisational safety culture in construction. *Journal of Construction Engineering and Management* 129 (1), 80-88

Morann, D. (2000). *Introduction to Phenomenology*. London: Routledge

Mumford, M.D. Dansereau, F., & Yammarino, F.J. (2000) Followers, motivations and level of analysis: The case of individualized leadership. *Leadership Quarterly*, 11. 313-340

Nahrgang, J.D., Morgenson, F.P. and Hofmann, D.A. (2011). Safety at work a meta-analytic investigation of the link between job demands, job resources, burnout, engagement, and safety outcomes. *Journal of Applied Psychology*, 96 (1), 71-94.

Neal, A., Griffin, M. A. and Hart, P. M. 2000. "The impact of organisational climate on safety climate and individual behavior." SafetyScience, 34(1–3), 99–109.

NESTA (2006). *The Innovation Gap - Why Policy Needs to Reflect the Reality of Innovation in the UK.* Policy Briefing IG/02

NESTA (2007), Hidden Innovation: How innovation happens in six 'low innovation' sectors. Research Report 2007

Nichols, T., Walters, D., and Tasiran AC. (2007), Trade Unions, institutional mediation and industrial safety: Evidence from the UK. *Journal of Industrial Relations* 49(2): 211-225.

Nightingale, D.J. and Cromby, J. 1999, (Eds), *Social constructionist psychology: A critical analysis of theory and practice.* Buckingham: Open University Press

Office of the United Nations High Commissioner for Human Rights (OHCHR 2007). The International Convention on Migrant Workers and its Committee Fact Sheet No. 24 (Rev.1). New York and Geneva United Nations

ONS (2013) Statistical bulletin: Employment by industry:Labour Market Statistics, August 2013. London, ONS

Op Herrick see Minsitry of Defence

Paul, P.S., Maiti, J., Dasgupta, S. and Forjuoh, S., (2005). An epidemiological study of injury in mines: implications for safety promotion. *International Journal of Injury Control and Safety Promotion,* 12(3), 157-65

Pedler, M., Burgoyne, J. and Boydell, T. (1991). *The Learning Company: A strategy for sustainable development*. London: McGraw-Hill

Perspectives on research and policy see Chan et al

Pesqueux, Y. and Damak-Ayadi, S. (2005). "Stakeholder theory in perspective", *Corporate Governance: The international journal of business in society,* . 5(2), 5-21

Peters, J. and Katalytik, M.A. (2011). Equality and diversity: good practice for the construction sector- A report commissioned by the Equality and Human Rights Commission. Equality and Human Rights Commission. London EHRC

Peters, T. and Waterman, R. (1982) .*In Search of Excellence*. New York: Harper & Row.

Peterson, M.F. (2003) Review of the book culture's consequences: comparing values, behaviours, institutions, and organisations across nations, 2nd ed. By Geert Hofstede. *Administrative Science Quarterly* 48 (1): 127-31

Pidgeon, M. (1998) Safety Culture, Key theoretical issues. *Work and Stress* 12. 202-216

Pierce, D.F. 1998. Does organisational streamlining hurt safety and health. *Professional Safety* 43 (12), 36–40.

Plummer, K. (1983). *Documents of Life: An Introduction to the Problems and Literature of a Humanistic Method.* London: Unwin Hyman

Popma, J. (2009) Does worker participation improve health and safety? Findings from the Netherlands. *Policy and Practice in Health and Safety*, 7(1) 33-51

Price Waterhouse Change Integration Team, (1995). *Better Change: Best Practices for Transforming Your Organisation.* Burr Ridge, Il. Irwin

Punch, M. (1986). *Control in the police organisation*. Cambs MA: MIT Press.

Reason, J. (1997) *Managing the risks of organisational accidents*. Aldershot, Hants: Ashgate Publishing Limited.

Reid, L., D, Murphy, K.R. and Reynolds, D.H. (1990). *'Drug abuse and drug testing in the workplace', In Murphy K R & Saal F E (Eds). Psychology in Organisations: integrating science and practice.* New Jersey: Lawrence Erlbaum Associates inc.,

Richter, A. and Koch, C. (2004). Integration, differentiation and ambiguity in safety cultures. *Safety Science* 42, 703–722

Robens, A. (1972) *Safety and Health at Work Volume 1. Report of the Committee 1970-72.* Chairman, Lord Robens. Cmnd. 5034. H.M.S.O., London.

Roberto, M.A. and Levesque, L.C. (2005). The art of making change initiatives stick. *MIT Sloan Management Review* Summer 2005

Robson, C. (2011). '*Real world research – a resource for users of social research methods in applied settings' (3rd Edn)*. Chichester, W. Sussex, Wiley.

Roos, J. Roos, G. Dragonnetti, N. and Edvinsson, L. (1998). Intellectual Capital. Navigating in the New Business Landscape, New York, NY: New York University Press.

Sawacha, E. Naoum, S., Fong, D., (1999). Factors affecting safety performance on construction sites. *International Journal of Project Management* 17 (5), 309–315.

Schein, E. (1990). Organisational culture. *American Psychologist* 45, 109–119.

Schloesser, M. McCaffer, R. and Garas, F. (1999). Challenges Facing the European construction industry. *Engineering, Construction and Architectural Management* 6(1) 1-2

Seddon, J. (1989). A passion for quality. *The TQM Magazine* May, 153–157.

Seyman, O.A.and Bolat, O.I. (2010) The role of national culture in establishing an efficient safety culture in organisations: an evaluation in respect of Hofstede's cultural dimensions. Paper presented at the Eurasia Business and Economic Society (EBES) 2010 Conference, Athens. Greece 28th-30th October

Shearn, P. (2005). *Workforce participation in occupational health & safety Management in Non-unionised Workplaces.* HSL report SOFS/05/09.

Shoesmith, C. (2002) Full Marks. Health and Safety at Work.

Sittenfeld, C. "He's No Fool (But He Plays One Inside Companies)," *Fast Company,* November 19, 1998, 66

Smith, M. Choen, H.H., Cleveland, R.J., (1978) Characteristics of successful safety programmes*. Journal of Safety Research* 10, 87-88

Sønderstrup-Andersen, H.K., Carlsen, K., Kines, P., Bjørner, J.B. and Roepstorff, C. (2011). Exploring the relationships between quality of management and safety climate in a large scale Danish cross sectional study *Safety Science Monitor* ; 15 (1) 1: Article 8

Sorensen, L. Pekkonen, M. Mannikko, K. Louhevaara, V. Smolander, J. Alen, M., (2008). Associations between work ability, health-related quality of life,physical activity and fitness among middle-aged men. *Applied Ergonomics,* 39, 786-791.

Spangenbergen, S. Baarts, C. Dyreborg, J. Jensen, L. Kines, P. MIkkelsen, K.L. 2003. Factors contributing to the differences in work related injury rates between Danish and Swedish construction workers*. Safety Science* 41, 517-530.

Spector, P.E. Cooper, C.L. Sparks, K. Bernin, P. Bussing, A. Dewe, P. Lu, L. Miller, K. Renault d Moraes, L. O'Driscoll, M. Pagon, M. Pitariu, H. Poelmans, S. Radhakrishnan, P. Russinova, V. Salamatov, V. Slagado, J. Sanchez, J.I. Shima, S. Siu, O.L. Sora, J.B. Teichmanm M. Theorell, T. Vlerick, P. Westmn, M. Wilderszal-Bayzl, M. Wong, P. Yu, S.;

2001. An international study of the psychometric properties of the Hofstede Values Survey Module 1994: a comparison of individual and country/province level results. *Applied Pyschology: An international Review* 50, 269-281.

Stanley, L.and Wise, S. (1993) *Breaking Out Again: Feminist Ontology and Epistemology* London: Routledge

Starren, A., Hornikx, J. and Luitjers, K. (2013) Occupational teams and organsiations: a research agenda. *Safety Science* 52. 43-49

Stewart, D.W. and Shamdasani, P.N. (1990*) Focus Groups: Theory and Practice.* Newbury Park, CA Sage

Strategy for sustainable construction see Dept of BIS

Svennson, G. Wagner, B. (2012) "Business sustainability and E-footprints on Earth's life and eco-systems: generic models". *European Business Review,* 24(6) 542-552

Tarling, R. (2006) *'Managing social research.'* Abingdon, UK: Routledge

Tarnow, E. (2000):*Self Destructive Obedience in the Airplane Cockpit and the Concept of Obedience Optomization: Obedience to Authority :Current Perspectives on the Milgram Paradigm* : NW Jersey: Erlbaum Associates.

Tedla, B. A. (2012). Understanding the importance, impacts and barriers of ICT on teaching and learning in East African countries. *International Journal for e-Learning Security (IJeLS)*, *2*(3-4), 199-207.

Thacker, R.A. and Wayne, S.J. (1995), "An examination of the relationship between upward influence tactics and assessments of promatablity", *Journal of Management*, 21(4) 739-756

The Diversity Practice and Katalytik Ltd (2007). Different Women, Different Places: A study of the lives and experiences of black and minority ethnic women leaders working in the UK and Europe. London, The Diversity Practice

The Corporate Executive Board Company (Now CEB) (2011) The Integrity Matrix. No longer available on line but summary available at file:///D:/WORK/DATA/ceb-riskclarity-program-overview.pdf

The Financial Reporting Council Limited. (2010) *The UK Corporate Governance Code*. London, FPC

Thompson, J.A. (2006) "Proactive personality and job performance: A social capital perspective". *Journal of Applied Psychology,* Vol. 90, No 5, 1011-1017

Thompson. R.C. Hilton, T.F. Witt, L.A, (1998) Where the safety rubber meets the shop floor; a confirmatory model of management influence on workplace safety. *Journal of Safety Research* 29 (1), 15-24

Tilley, M. (2006) 'An investigation into the psychological contract continuum in family owned construction companies; which have achieved survival of the long term career worker. Held at the Henley Management College

United Nations: Office of the High Commissioner for Human Rights (OHCHR 2007). The International Convention on Migrant Workers and its Committee Fact Sheet No. 24 (Rev.1). New York and Geneva United Nations

Universities of Loughborough, Reading and Salford see Austin, Green and McDermott

Uttal, B., (1983). The corporate culture vultures. *Fortune Magazine* October 17

Van Krough, G. Ichijok, K. & Nonaka, I. (1999). *Knowledge creation, How to unlock the mystery of tacit knowledge and release innovation and power*. NY: Oxford University Press.

Van Maanen, J, Barley, S.R. (1985) *Cultural Organisations. Fragments of a theory. in; Frost, P.J. (Ed). Organisational Cultures.* Beverley Hills: Sage.

Vecchio-Sudus, A.M. Griffiths, S., 2004. Marketing strategies for enhancing safety culture. *Safety Science* 42, 601–619.

Venaik, S. & Brewer, P. (2010). Avoiding uncertainty in Hofstede and GLOBE. *Journal of International Business studies,* 41, 1294-1315.

Vora, M. K. (2013). Business excellence through sustainable change management, *The TQM Journal*. 2013 25(6), 625-640

Walker, A and Hutton, D (2006). The application of psychological contract to workplace safety. *Journal of Ssafety Research*.37, 433-441

Walker, R., Hoggart, L. and Hamilton, G. (2008.) 'Random Assignment and informed consent: A case study of multiple perspectives.' *American Journal of Evaluation*, 29, 156-74.

Wang, Y., Ming, L. and Mobley, H., (2011). *Advances in Global Leadership*, Emerald, NY

Waterman, R.H., Peters, T.J. and Phillips, J., R. (1980). Structure is not organisation: Diagnosing and solving organizational problems means looking not merely to structural reorganization for answers but to a framework that includes structure and several related factors.

Watkins, K. E., & Marsick, V. J. (1992). Building the learning organisation: a new role for human resource developers. *Studies in Continuing Education*, 14(2), 115-129.

Wilkinson, A., Allen, P., and Snape, E., (1991). TQM and the management of labour. *Employee Relations* 13(1), 24-31

Williams, J.C. 1991. *Safety cultures — their impact on quality, reliability, competitivenes and profitability. in: Matthews, R.H. (Ed), Reliability '91*. Amsterdam,Elsevier Applied Science.

Williamson, A.M., Feyer, A.M., Cairns, D. and Biancotti, D. (1997_. The development of a measure of safety climate: the role of safety perceptions and attitudes. *Safety Science* 25, 15–27

Wood, D. (1993) *Business and Society*. Glenview, IL Scott, Foresman & Co.,

Woodall, J. and Douglas, D. (2000) 'Winning hearts and minds': 'Ethical issues in human resource development'. In D. Winstanley, & J. Woodall (Eds.), Ethical issues in contemporary human resource management. London: Macmillan Press.

Worrall, L. Harris, K. Thomas, A. Stewart,R. Jessop, S. McDermott, P. Platten, A. (2008), Organisational Cultures: Retention and Progression Barriers to Women in the UK Construction Industry. *International Journal of Communities, Organisations and Nations*, 8(3), 31-40

Yeung, see Erickson (2008)

Zohar D. (2002). Modifying Supervisory Practices to Improve Subunit Safety: A leadership –based intervention Model. *Journal of Applied Psychology,* 87 (1):156-63

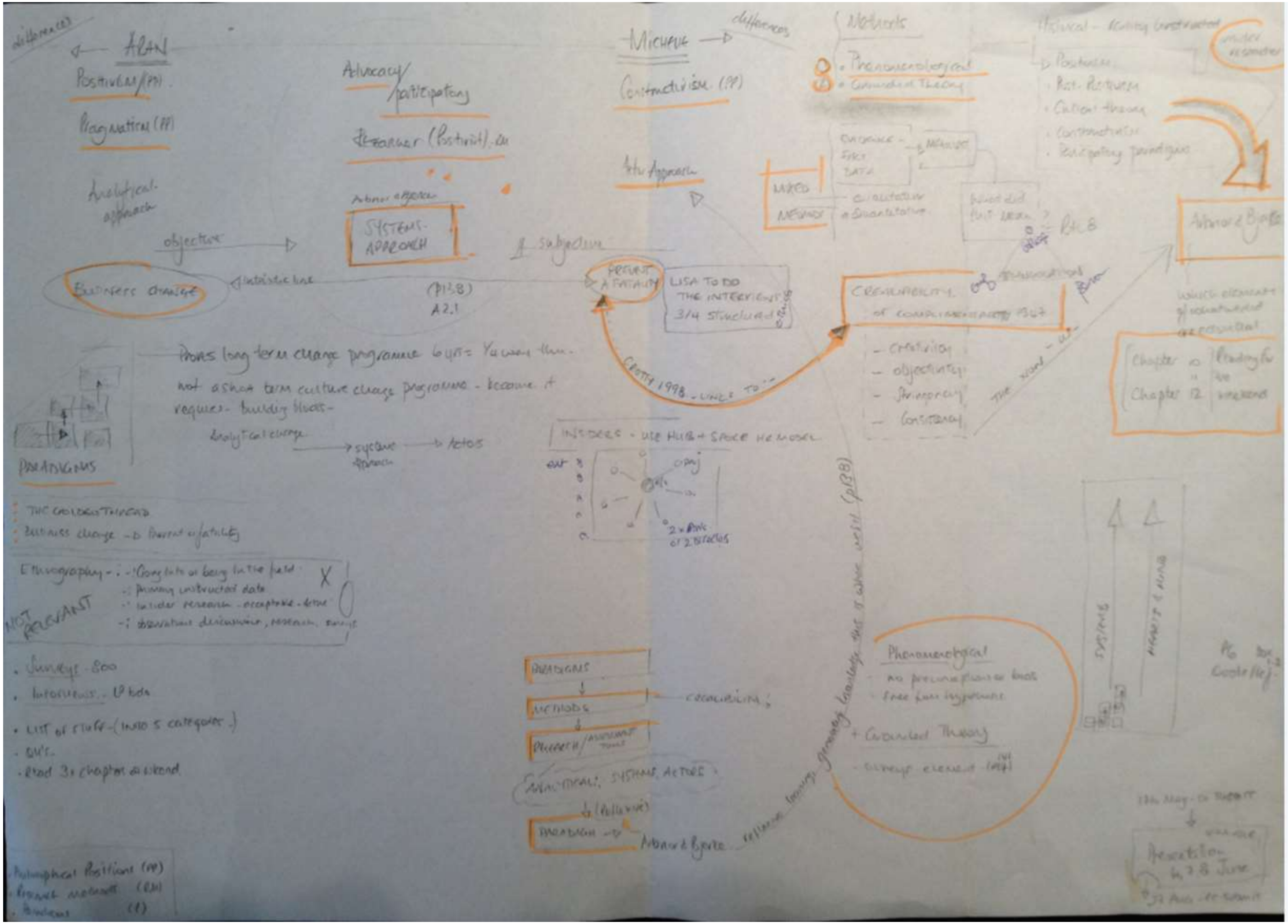
Zohar, D and Polachek, T (2014) Discourse-based intervention for modifying supervisory communication as leverage for safety climate and performance improvement: A randomized field study. *Journal of Applied Psychology*, 99(1): 113-124.

Zuhosky, J. Irwin, R. Sable, A. Sullivan, W. Panagos, A. Foye, P. (2007). Industrial medicine and acute musculskeletal rehabilitation. 7. Acute industrial musculoskeletal injuries in the aging workforce. *Archives of Physical Medicine and Rehabilitation* Vol 88, Suppl 1, s34-39

14.0 Appendices

Appendix 1

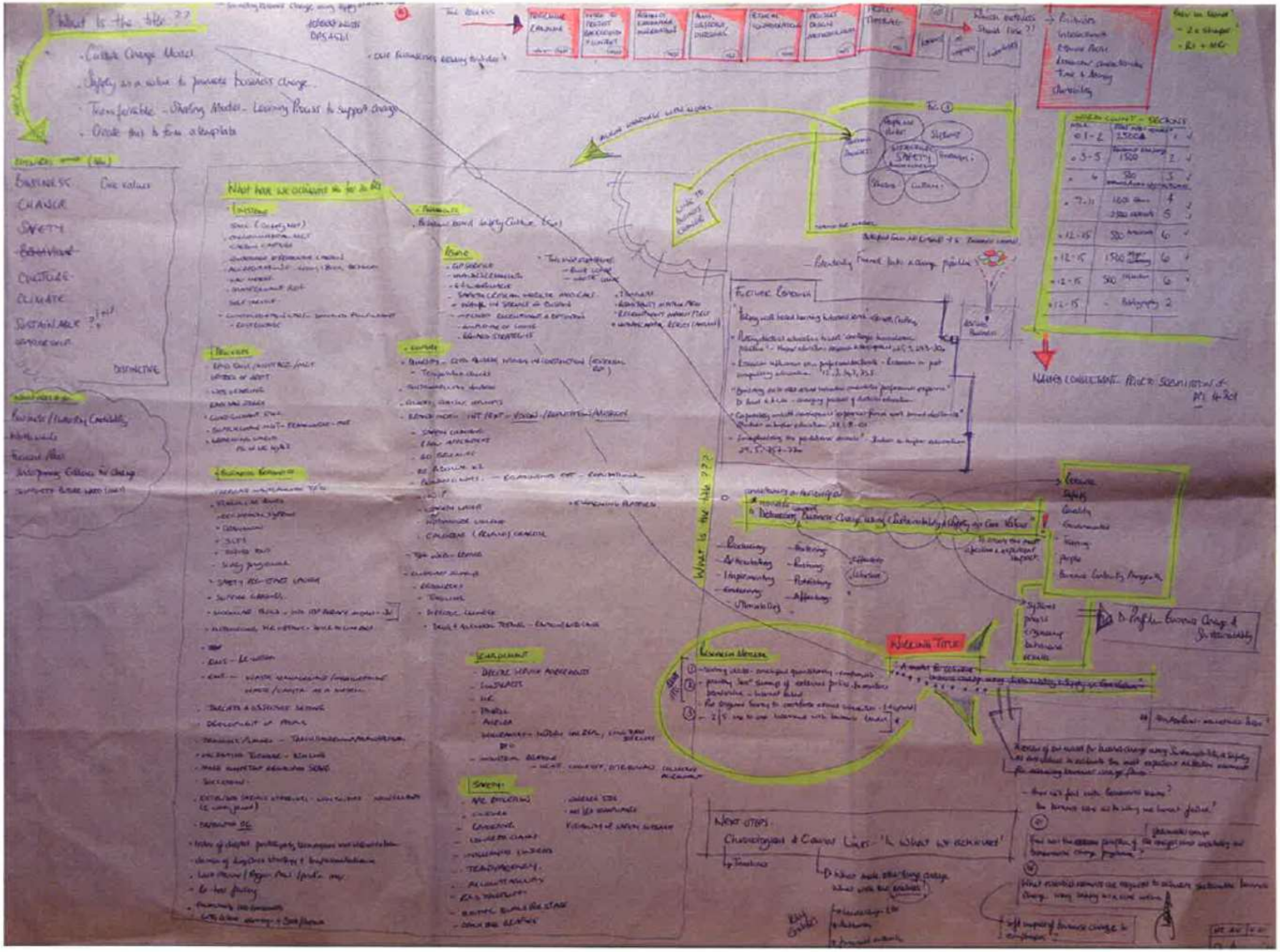
Philosophical Positions – Methodologies & Methods Explored



differences
ALAN
Positivism (PP)
Pragmatism (PP)
Analytical approach
Advocacy/participatory
Researcher (Positivist)
SYSTEMS APPROACH
objective
subjective
Business change
(P.138)
A2.1
Michelle
differences
Constructivism (PP)
Methods
Phenomenological
Grounded Theory
Mixed
Qualitative
Quantitative
CREDIBILITY
of COMPLIMENTARITY 1967
creativity
objectivity
consistency
PRESENT A FATALITY
LISA TO DO
THE INTERVIEWS
3/4 Structured
Crotty 1998
Proms long term change programme
not a short term culture change programme
requires building blocks
Analytical change
systems approach
Actors
PARADIGMS
THE GOLDEN THREAD
Business change -> Present a fatality
Ethnography
primary unstructured data
NOT RELEVANT
Surveys 500
Interviews
LIST of stuff (into 5 categories)
Read 3x chapter at weekend
INSIDERS - USE HUB + SPOKE ME MODEL
2 x Banks or 2 x Branches
PARADIGMS
METHODS
RESEARCH/ANALYTICAL TOOLS
ANALYTICAL; SYSTEMS, ACTORS
PARADIGM
Arbnor & Bjerke
Phenomenological
no preconceptions or bias
free from hypotheses
Grounded Theory
SYSTEMS
ANALYTICAL
Positivism
Critical theory
Constructivism
Participatory paradigms
Arbnor & Bjerke
Chapter
Chapter 12
Reading for the weekend
Presentation 6, 7, 8 June
Philosophical Positions (PP)
Research methods (RM)

Appendix 2

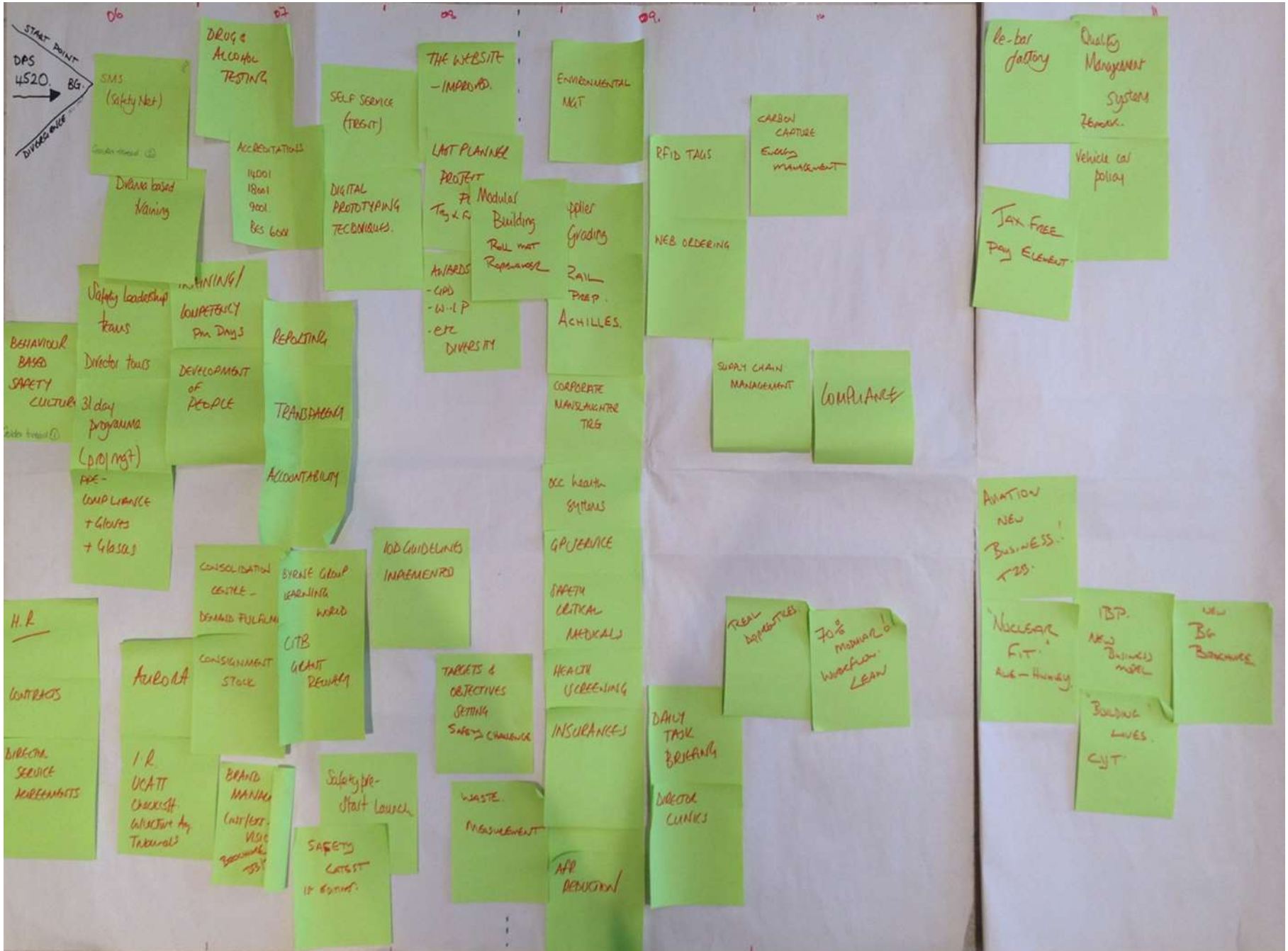
Lay-Up 9th August 2011: Review of Topic and Requirements



What is the title ??
Culture Change Model
What have we achieved so far to date
Further Research
What is the title ???
Working Title
Research Methods
Next steps.

Appendix 3

Process Map Time Line


START POINT
DPS 4520
BG
DIVERGENCE
SMS (Safety Net)
DRUG & ALCOHOL TESTING
ACCREDITATIONS
14001
18001
9001
BES 6001
SELF SERVICE (TRG IT)
DIGITAL PROTOTYPING TECHNIQUES
THE WEBSITE - IMPROVED
LAST PLANNER PROJECT
AWARDS - CPD - W.I.P - etc
DIVERSITY
ENVIRONMENTAL MGT
Modular Building
Roll mat Replacement
Roller Grading
RAIL PREP.
ACHILLES
RFID TAGS
WEB ORDERING
CARBON CAPTURE
ENERGY MANAGEMENT
SUPPLY CHAIN MANAGEMENT
COMPLIANCE
CORPORATE MANSLAUGHTER TRG
OCC Health Systems
GP/JERVICE
SAFETY CRITICAL MATERIALS
HEALTH SCREENING
INSURANCES
TARGETS & OBJECTIVES SETTING SAFETY CHALLENGE
WASTE MANAGEMENT
APP REDUCTION
DAILY TASK BRIEFING
DIRECTOR CLINICS
REAL APPRENTICES
JOB MANAGER WORKFLOW LEAN
Re-bar factory
Quality Management System
Vehicle car policy
TAX FREE Pay Element
AVIATION NEW BUSINESS
NUCLEAR F.I.
IBP
BG BENCHMARK
BUILDING LIVES
Driving based training
Safety Leadership Tours
Director tours
31 day programme (pro/mgt)
TRAINING/ COMPETENCY Pin Days
DEVELOPMENT OF PEOPLE
REPORTING
TRANSPARENCY
ACCOUNTABILITY
BEHAVIOUR BASED SAFETY CULTURE
PRE-COMPLIANCE + Gloves + Glasses
CONSOLIDATION CENTRE
CONSIGNMENT STOCK
BYRNE GROUP LEARNING WORLD
CITB GRANT RECOVERY
IOD GUIDELINES IMPLEMENTED
H.R
CONTRACTS
DIRECTOR SERVICE AGREEMENTS
AURORA
I.R
UCATT
BRAND MANAGEMENT
Safety Pre-start Launch
SAFETY CAMPAIGN

Appendix 4

Ethics Letter

Researcher: Michelle Tilley & Aran Verling
Email:
Telephone:
Supervisors: Dr Kate Julian (k.julian@chester.ac.uk)

30th May 2012

Dear Participant:

Participant Information Sheet

Aran Verling and Michelle Tilley (researchers) are Directors of the Group, undertaking a D Prof in conjunction with Middlesex University and The Group, the focus of the work based research is to try and establish the critical elements required to underpin the success of a business change programme using health and safety as the lens for change. For this purpose internal and external individuals will be asked to participate in this research in the form of structured one to one interviews or attendance in structured group workshops, all of which will be facilitated by an independent facilitator and or answering a questioner in confidence. Although the findings based on the data collected will be published for researching purposes, no names will be used in this study or any subsequent publication and any data collected will be held in strict confidence in line with data protection requirements. To facilitate the research participants will retain their privacy at all times.

What is the study?

The business has undertaken a significant change programme during the previous six years and this study is an attempt to enable the business to ensure the focus going forward through the continuous change programme is directed in the most effective and efficient areas to ensure continued success. The study will also be disseminated to a wider audience through the medium of appropriate academic journals and in a technical paper written for the benefit of other businesses wishing to make business change using health and safety as the lens through which to focus the change.

Do I have to take part?

No, you do not have to take part, but we hope that you will. It is entirely up to you whether you agree to join in, but your participation will contribute interesting information about the key elements required to make effective business change using the lens of health and safety, with the wider benefit to businesses being that precious resources can be directed to the most key areas to ensure success based on the findings of the study. You can also decide to withdraw your participation at any time, without giving a reason.

What will happen if I take part?

Your participation in the study will be in one of the following three ways:

☐ Participation in a one to one interview lasting approximately 45 minutes covering 4 structured and pre-prepared questions, as well as some open conversation.

Or

☐ Participation in a semi structured workshop as a group of employees from mixed professional backgrounds working within the employing business. The workshop will last approximately one hour and will cover the same 4 structured questions as well as some open debate.

Both of the above will be conducted by an independent facilitator to ensure that you will feel no bias or pressure to take part or to participate openly. The facilitator will not be known to you through the business.

Or

☐ You will be asked to complete a questionnaire comprising multiple choice questions with answers across a pre-determined range. The questionnaires will be anonymous with no way of tracing back who has completed them.

What are the risks and benefits of taking part?

The information obtained by this study will contribute to detect particular difficulties arising when businesses wish to make significant cultural change using health and safety as the focus of the change. The study will involve the views of the interviewees, the delegates in the workshop and the participants in a multiple choice questionnaire which will be disseminated throughout the business.

It is anticipated that the results will highlight those areas which are perceived to have been out effective during the previous six year change programme and therefore will assist in identifying where to focus energy going forward. The study will provide invaluable learning for other businesses who may have constrained resources to undertake such a significant change programme and it may enable them to direct those precious resources where they are most effective making use of the results in the best way for their business.

What will happen to the data?

Although the findings based on the data collected will be published for researching purposes, no names will be used in this study or any subsequent publication and any data collected will be held in strict confidence. The records of this study will be kept private. No identifier to any participant to the study will be included in any publication. Research records will be stored securely in a locked cabinet and on a password-protected computer and only the two researchers and the supervisor will have access to the records. The data will be destroyed securely after 3 years and once the findings of the research have been written up.

The Data will contribute to the research being conducted in relation to the business change programme conducted using the lens of health and safety, it will also be used for the wider business purpose to ensure that energy and resource is focused on the most pertinent areas going forward into the future.

If you want to ask anything about the study, please contact either the researchers or the supervisor using the email addresses above.

This application has been reviewed following the procedures of the University Research Ethics Committee and has been given a favourable ethical opinion for conduct. Thank you for your time.

Participant Consent Form

I have had the purposes of the project explained to me, and what will be required of me, and any questions have been answered to my satisfaction. I agree to the arrangements described in the Information Sheet in so far as they relate to my participation.

I understand that I will take part in an interview/workshop/questionnaire, he outputs of which will be used in the research begin conducted and for the wider benefit of the business going forward.

I understand that my participation is entirely voluntary and that I have the right to withdraw from the project at any time, without giving reason and without repercussions.

I have received a copy of this Consent Form and the accompanying Information Sheet

Please tick as appropriate:

I consent to participate in the study: ☐

Name:

Signed:

Date:

This application has been reviewed following the procedures of the University Research Ethics Committee and has been given a favorable ethical opinion for conduct.

Appendix 5

List of psuedonmyms used in quotations to assist in understanding the demographic of our contributors

Particpant A – UK Construction Director – Main Contractor – UK

Particpant B – Lawyer – Legal Company – International

Participant C – Project Director – Main Contractor – London

Particpant D – Surveying and Commerncial Director – Contracting – London

Particpant E – Senior Insurance Underwriter – London

Participant F – Construction Director – Developer – London

Appendix 6

Quantitative Questions

People, Safety & Culture

Please complete the following questionnaire comprising multiple choice questions. The questionnaires will be anonymous with no way of tracing back who has completed them and the findings, based on the data collected, will be published for research purposes. No names will be used in this study, or any subsequent publication, and any data collected will be held in strict confidence in line with data protection requirements.

I Agree	○
I Do Not Agree	○

EMPLOYEE COMPANY

Company A.	Company B	Company C
○	○	○

GENDER:

Male	Female
○	○

Nationality:

Staff Monthly	CIS/ Ltd Company	PAYE Weekly	Sub - Contractor
○	○	○	○
Manager	**Manager**	**Manager**	**Manager**
○	○	○	○
Senior Manager	**Senior Manager**	**Senior Manager**	**Senior Manager**
○	○	○	○

AGE:

○	16 – 24	○	25-35
○	36-45	○	46-55
○	56+		

TIME WITH THE BUSINESS:

○	0 - 3 month		
○	3 - 12 months	○	1 - 5 years
○	6 – 10 years	○	Over 10 years

What does our safety culture look like to you?

INSTRUCTIONS

Please follow the instructions carefully all you need to do is fill in the circle that represents your answer. Give your answers based on your experience working for 'The Group' and not on your experiences in other companies or industries. Do not take too long over each question, as it is better to indicate your first immediate response. There is no right or wrong answer we are only interested in your perceptions. If you have **NO** opinion or knowledge of a certain question, tick "neither".

* White Hat = Directors/Management

** Black Hat = Supervisor

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
PEOPLE					
1. Management* talks a lot about safety but does little about making work safer.	○	○	○	○	
2. Management* needs to do more to improve safety.	○	○	○	○	◉
3. Management* listens to employees suggestions to improve safety.	○	○	○	○	○
4. Management* is aware of safety issues and concerns.	○	○	○	○	○
5. Management* seldom follow through with what they say they are going to do.	○	○	○		○
6. I trust management* to do what they say they are going to do.	○	○	○	○	○
7. I feel free to discuss safety concerns with management* without the fear of having it used against me in the future.	○	○	○	○	○
8. My Supervisor** works hard to maintain a safe work place.	○	○	○	○	○
9. My Supervisor** personally investigates each accident / incident / near-miss.	○	○	○	○	○
10. My Supervisor** takes the time to show me how to work safely.	○	○	○	○	○
11. My Supervisor** is always telling us how important it is to work safely.	○	○	○	○	○
12. My Supervisor** doesn't care about our safety.	○	○	○	○	○
13. My Supervisor** gives me positive feedback for working safely.	○	○	○	○	○
14. My Supervisor** does <u>not</u> praise me for working safely.	○	○	○	○	○
15. I have confidence in speaking up.	○	○	○	○	○
16. I don't have confidence in speaking up.	○	○	○	○	○
17. My Supervisor** rewards me for working safely.	○	○	○	○	○
18. My Supervisor** recognises me publicly for working safely.	○	○	○	○	○
19. My Supervisor** recognises me privately for working safely.	○	○	○	○	○
20. My Supervisor** overlooks safety hazards to get the job done.	○	○	○	○	○
21. My Supervisor** enforces safety rules fairly among all employees including contractors & subcontractors.	○	○	○	○	○
22. My Supervisor** does <u>not</u> follow the safety rules himself or herself.	○	○	○	○	○
23. My Supervisor** will discipline an employee or contractor for <u>not</u> following the safety rules.	○	○	○	○	○
24. I feel free to discuss accidents / incidents / near-misses with my Supervisor** without the fear of	○	○	○	○	○

having it used against me in the future.					
25. I trust my Supervisor** to keep information I share with him or her in confidence.	○	○	○	○	○
26. Supervisors** rarely check that people here are working safely.	○	○	○	○	○
27. Supervisors** devote sufficient effort to health and safety here.	○	○	○	○	○

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
SAFETY					
28. If you violate the safety rules, you are likely to get caught.	○	○	○	○	○
29. Employees including contractors who do not follow safety rules will be disciplined.	○	○	○	○	○
30. Employees including contractors know the safety rules.	○	○	○	○	○
31. Group safety rules make sense to me.	○	○	○	○	○
32. Group safety rules help create a safer place to work.	○	○	○	○	○
33. We have a good safety training programme.	○	○	○	○	○
34. I have received the training I need to work safely.	○	○	○	○	○
35. Employees with whom I work need more on-the-job training.	○	○	○	○	○
36. New team member training creates stresses for safety.	○	○	○	○	○
37. Training is important at my company for creating a safe work environment.	○	○	○	○	○
38. The training I receive reinforces the importance of a strong safety culture.	○	○	○	○	○
39. Safety audits and inspections are regularly undertaken.	○	○	○	○	○
40. Safety helps me to do my job.	○	○	○	○	○
41. Safety makes my job harder.	○	○	○	○	○
42. Employee complaints of unsafe working conditions are quickly investigated.	○	○	○	○	○
43. I feel comfortable discussing a near miss or accident with safety / accident investigators.	○	○	○	○	○
44. Accident investigations of on-the-job injuries are thorough and complete.	○	○	○	○	○
45. Outcomes of accident / incident investigations are communicated to everyone.	○	○	○	○	○
46. Problems found by safety / accident investigations are <u>not</u> corrected.	○	○	○	○	○
47. Waste management and waste segregation is important on all projects within the Group.	○	○	○	○	○

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
SAFETY					
48. HAVS are monitored regularly throughout all projects and the risks explained to me.	○	○	○	○	○
49. The swipe card system to get tools and equipment from the stores is beneficial to me.	○	○	○	○	○
50. The swipe card system to get tools and equipment from the stores is beneficial to the company.	○	○	○	○	○
51. I understand what the safety whistle blowing hotline is there for and I would feel comfortable using it if needed to.	○	○	○	○	○
52. The occupational health and safety critical medicals including pre-employment medicals within Group are beneficial to me.	○	○	○	○	○
53. I see directors carrying out safety tours on a regular basis. I am happy to have a conversation with them on the state of health and safety on my project.	○	○	○	○	○
54. I feel comfortable talking to company directors on site.	○	○	○	○	○
55. Quality has a role equal to safety in the Group.	○	○	○	○	○
56. The correct PPE for the task is available at all times.	○	○	○	○	○
57. I understand method statements and risk assessments are important in my role to define what is required of me on site.	○	○	○	○	○

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
CULTURE					
58. It is <u>not</u> my responsibility to worry about the safety of others.	○	○	○	○	○
59. I remind colleagues to work safely.	○	○	○	○	○
60. I offer safety suggestions.	○	○	○	○	○
61. If I notice a safety hazard, I will take corrective action.	○	○	○	○	○
62. I expect to be challenged by others if I'm acting in an unsafe manner or about to make an error.	○	○	○	○	○
63. I try to improve safety in my work area.	○	○	○	○	○
64. It is important to help others work safely.	○	○	○	○	○
65. Management* only looks at health and safety after there has been an accident.	○	○	○	○	○
66. Sometimes accidents are not reported.	○	○	○	○	○
67. There are too many health and safety procedures given the real risks of my job.	○	○	○	○	○
68. My workmates would react strongly against people who break health and safety procedures.	○	○	○	○	○
69. Some health and safety procedures are only there to protect management's back.	○	○	○	○	○

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
CULTURE					
70. People who work here sometimes take risks at work which I would not take myself.					
71. Sometimes it is necessary to take risks to get the job done.					
72. People here are trained and have their skills developed.					
73. I am treated fairly here.					
74. Some jobs here are difficult to do safely.					
75. Suggestions to improve health and safety are not always reacted upon.					
76. The site shows interest in my views on health and safety.					
77. The site really cares about the health and safety of people who work here.					
78. I am given supportive feedback on the work I do.					
79. I can get more people to do a job if I need them for safety reasons.					
80. Suggestions on how to improve health and safety are encouraged.					
81. Some of the workforce pays little attention to health and safety.					
82. Some health and safety procedures do not reflect how the job is done.					
83. People who work here often take risks when they are at work.					
84. I have unrealistic time pressures.					
85. People can always get the equipment needed to follow health and safety procedures.					
86. My supervisor** takes on board ideas on how to improve health and safety.					
87. All the people who work in my team are fully committed to health and safety.					
88. The training I have been given has helped me work safer.					
89. Management* always acts quickly over health and safety concerns.					
90. People here are treated with respect, regardless of who they are or the job they do.					
91. People here are sometimes pressured to work unsafely by their workmates.					
92. People here are sometimes pressured to work unsafely by management*.					
93. Accidents that happen here are always reported.					
94. My supervisor** often talks to me about health and safety.					

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
CULTURE					
95. There are always enough people available to get the job done safely.					
96. Accident investigations are mainly used to identify who is to blame.					
97. I have to work very fast.					
98. Getting the job done is usually seen as more important than health and safety.					
99. There are good communications (e.g. toolbox talks and task briefings) here about health and safety.					
100. Near misses are always reported.					
101. The health and safety equipment (e.g. PPE, guarding) works well.					
102. I can talk to my line manager about something that has upset or annoyed me at work.					

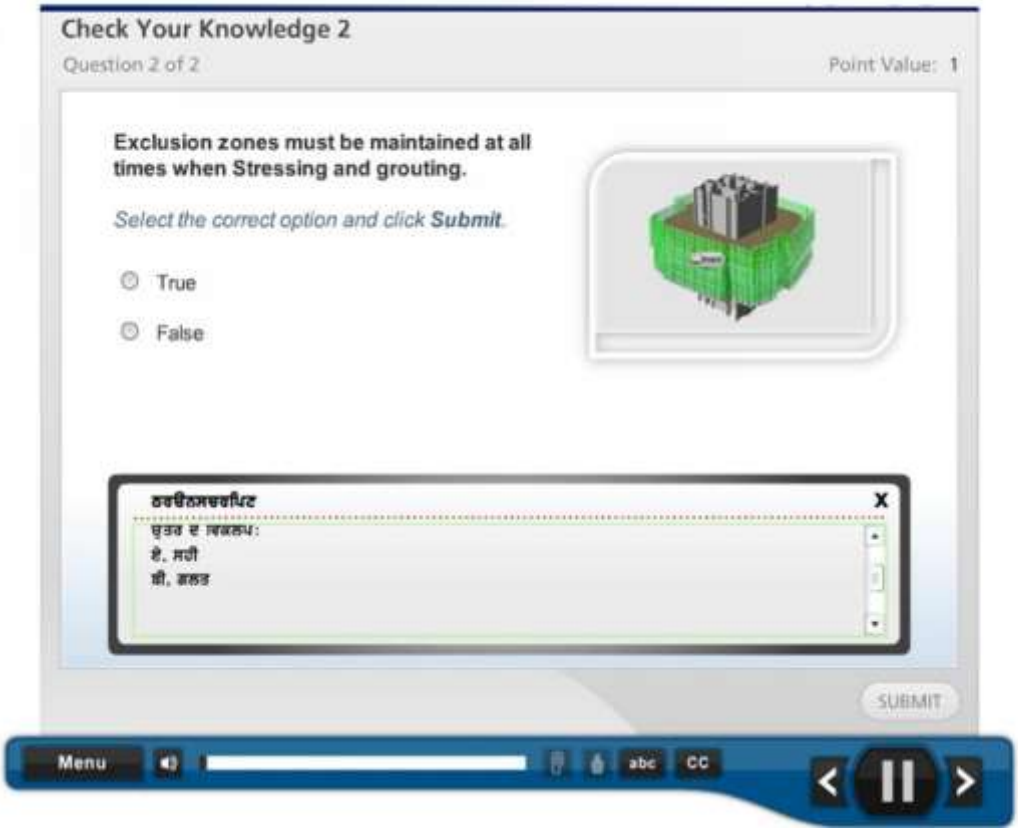
Appendix 7

Implementing the Findings since finishing the project

Implementation of Findings since finishing the project

SCORM Accredited
Training from Digital model


Yellow Hat = Screen Gang
Black Hat = Screen Superviser
White Hat = Permit Holder
Orange Hat = Banksman
Blue Slab - Screen Gang
Remove shoes
Menu
abc
CC


Check Your Knowledge 2
Question 2 of 2
Point Value: 1
Exclusion zones must be maintained at all times when Stressing and grouting.
Select the correct option and click Submit.
True
False
SUBMIT
Menu
abc
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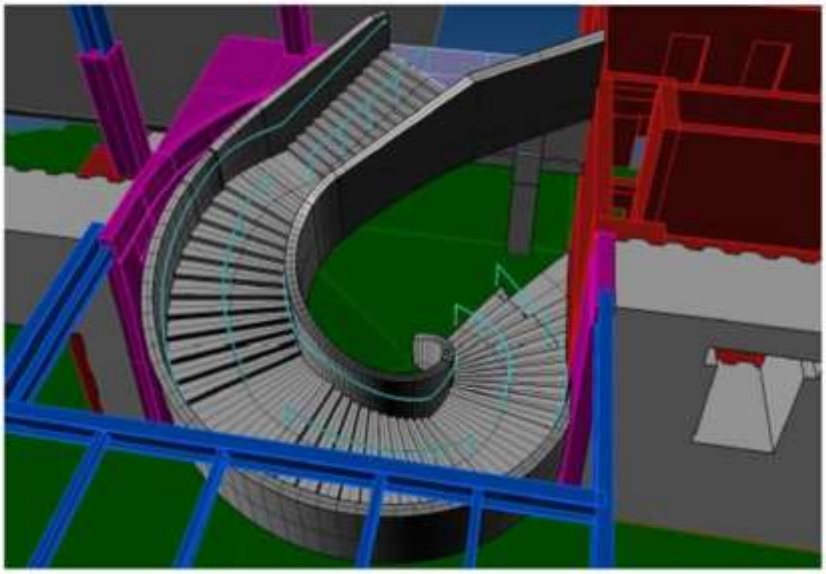
Visual Method Statements
&
Task Sheets

METHOD STATEMENT

1. SCOPE OF WORKS

Construction of Public Stairs Levels 1-2.

Stairs will be constructed using prefabricated formwork produced
formwork will be supplied in units of soffit formers and wall formers



2. SEQUENCE OF WORKS

The following Hazard and Risks triangle identification will be used throughout this Sequence of Works:

 CDM Risks Identified and Mitigated.	 Environmental Risks and Hazards.
 Health and Safety Risks to be controlled by site team	 Quality Risks and Potential Non-Conformance

METHOD STATEMENT

Sequence 1 of 17

The stairs will be constructed in three sections – Phase 1, Phase 2 and Phase 3 (see Figure 1). Due to this some of the formwork units are repeated and care must be taken when lifting, installing and striking the units to ensure no damage is done to the formers.
Each phase will be constructed with three pours (soffit, upstand, stairs – see sequence sketches), using the following sequence.

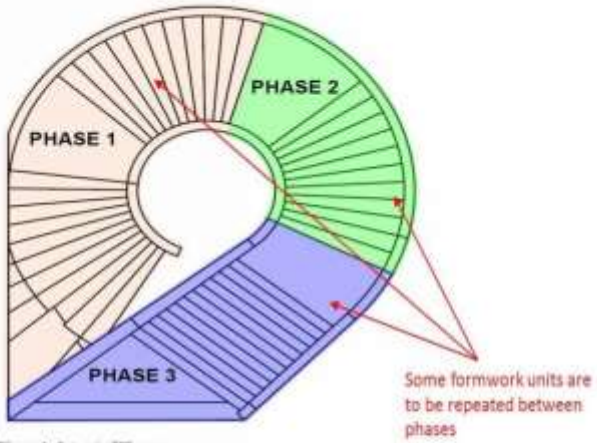


Figure 1: Set out of Phases

Hazards & Controls:

- Care to be taken with shutters and soffits at all times – **this is finished work**
- A permit to strike must be issued prior to striking and re-using shutters

Additional Information / Daily Changes:

Sequence 4 of 17

Once the soffits are secured in position, the external wall shutters for Phase 1 will be crane lifted into position using the spider crane. Reinforcement to the slab and starters for the wall will now be fixed (See MS-005).

N.B. for sections of the stairs where there is not void former (i.e. there is no gap between the waist and the steps) the riser and tread rebar will also need to be fixed locally at this stage.

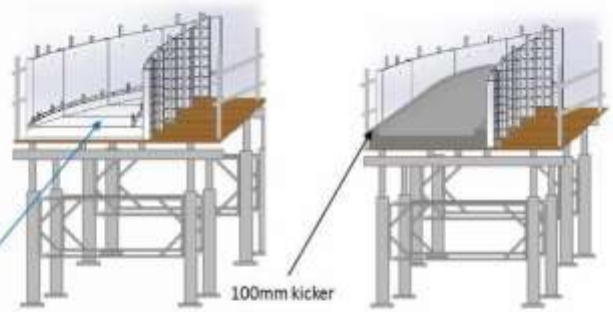
Fix kicker (100mm high) as shown, and install stop ends for soffit. Once kicker has been fixed, pour area is to be cleaned of all tie wire and detritus for inspection by design team. On completion of sign-off, the concrete can be ordered. The concrete will be placed by pump, and vibrated using pokers.

Hazards & Controls:

- Compressed air controls see RA (Sections 3 & 4)
- Follow Concrete SOP at all times
- Care must be taken when laying the reinforcement not to damage formwork.
- Note, where stop ends are used, grout checks will be used in all cases to provide the best possible aesthetic joint.

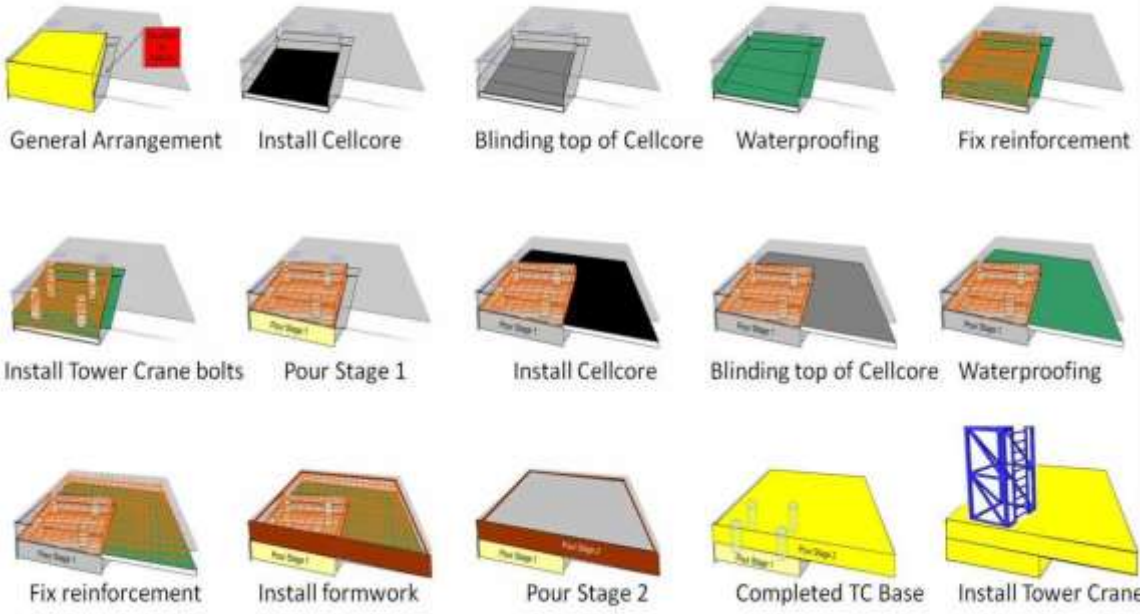
3. Wall Shutters

4. Concrete Pour 1 - Soffits



Additional Information / Daily Changes:

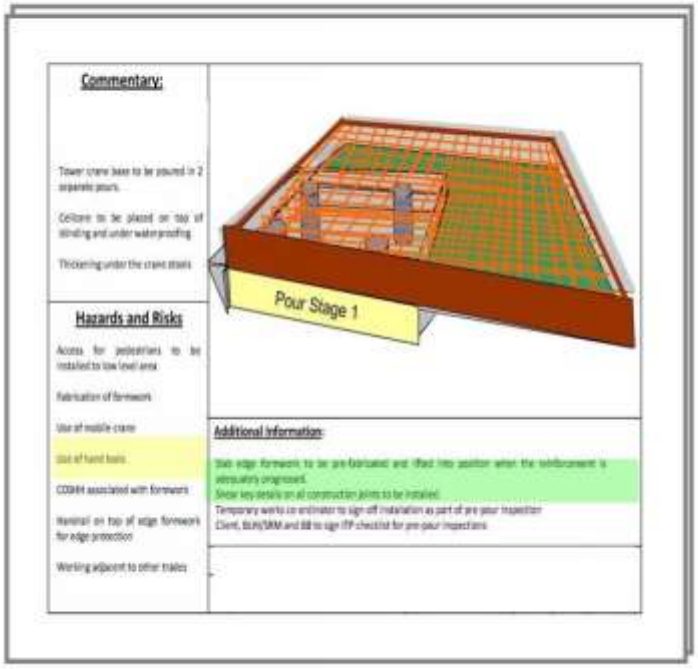
Stages of construction - Slab



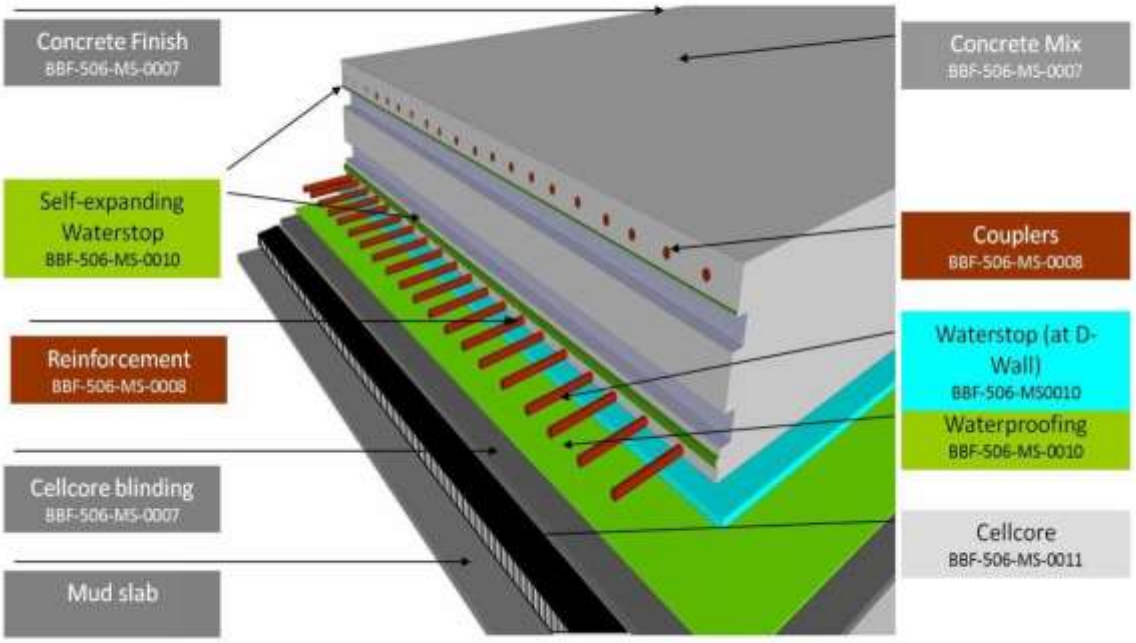
Visual Task Sheets

Visual Task Sheets (VTS)

1. Details the sequence of the build process in stages using both sketches, 3D model graphics and photos where possible.
2. Highlights safety and environmental risks
3. Also includes quality and inspection requirements where applicable



Slab construction – Method Statements



Method Visualisation
‘Project Level’


Main Scene - Draft 10-04-2013
02:37


DESCRIPTION

Method Visualisation
'Task Level'

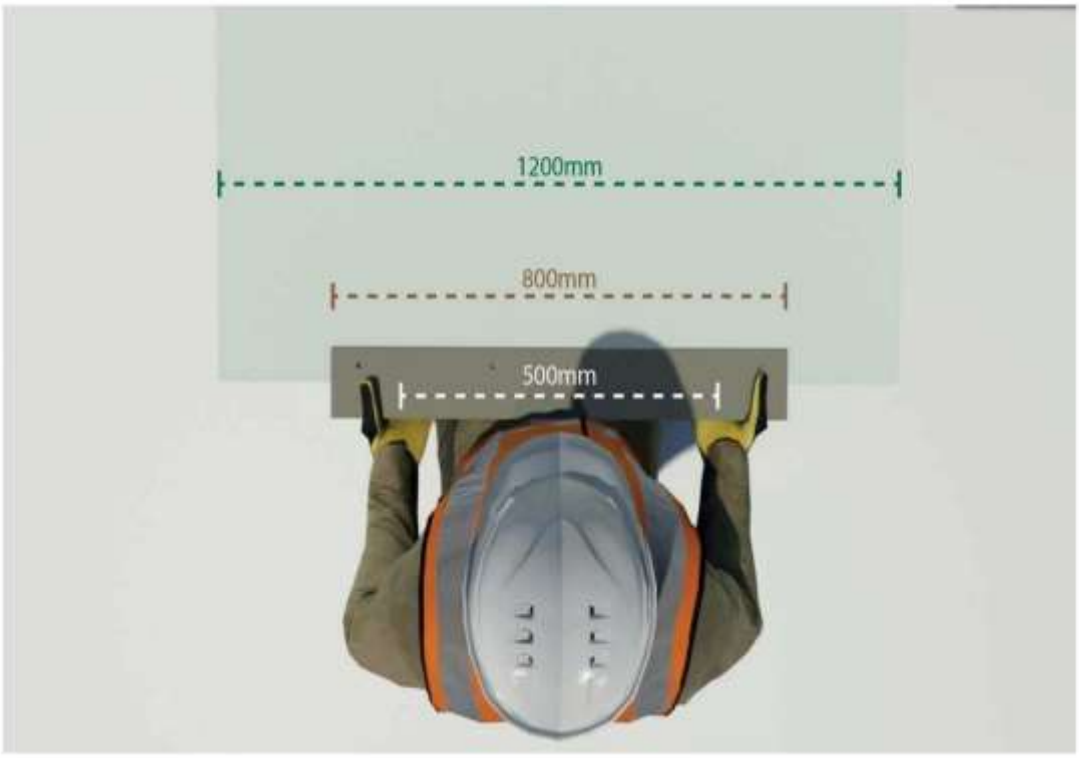
'Avatars'

Current
Strategy

Current Strategy

Insufficient hand grip

Current Strategy



ALTERNATIVE OPTION -
STAGE_01

ALTERNATIVE OPTION -
STAGE_02

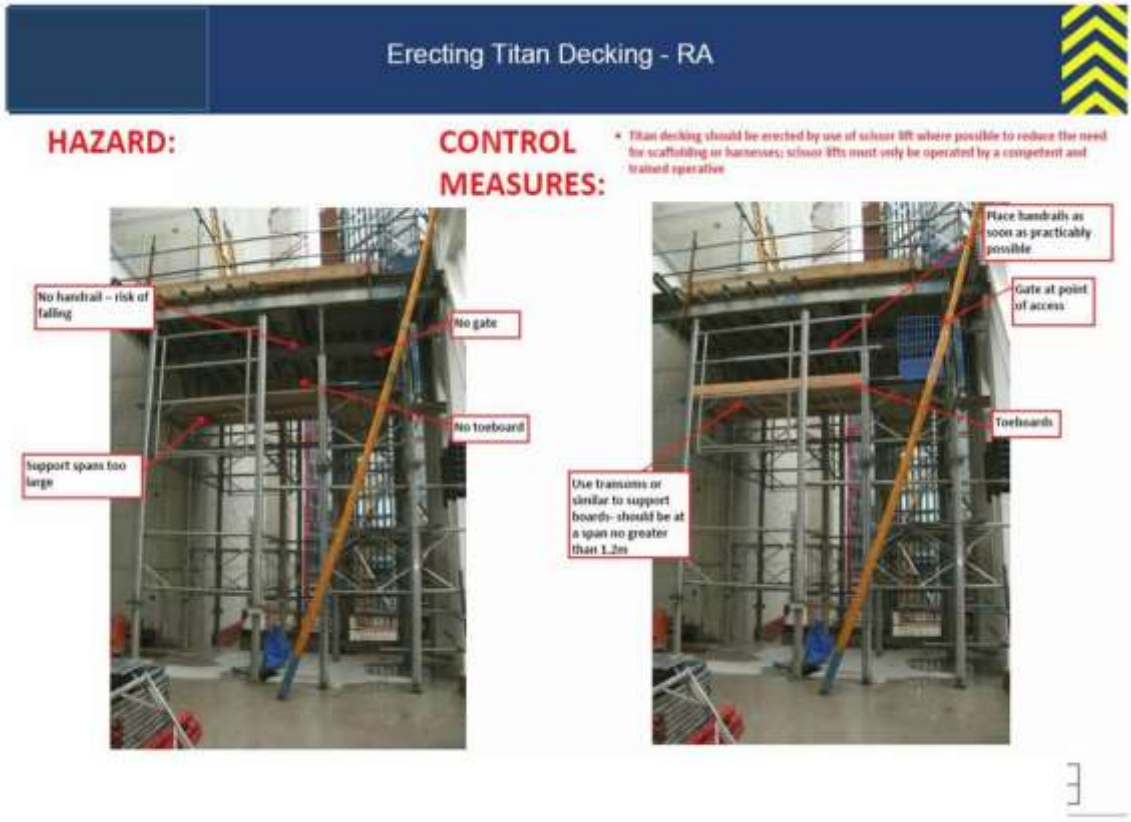
ALTERNATIVE OPTION -
STAGE_03

ALTERNATIVE OPTION -
STAGE_04

ALTERNATIVE OPTION

Problem turning and lifting later in cycle

VISUAL RISK ASSESSMENTS


Erecting Titan Decking - RA
HAZARD:
CONTROL MEASURES:
• Titan decking should be erected by use of scissor lift where possible to reduce the need for scaffolding or harnesses; scissor lifts must only be operated by a competent and trained operative
No handrail – risk of falling
No gate
No toeboard
Support spans too large
Place handrails as soon as practicably possible
Gate at point of access
Toeboards
Use transoms or similar to support boards- should be at a span no greater than 1.2m


Use of Compressed Air Power Tools to Clean Slabs
HAZARD:
CONTROL MEASURES:
Operator must be trained in safe use of compressed air power tools
For compressed air power tools with a HAV risk, exposure times should be reduced and staggered
Tools should be fitted with noise control devices, noise assessments should be carried out and if necessary exclusion zones should be established
In the case of concrete dust, COSHH assessments are to be carried out and respiratory masks may be necessary
Protective goggles not being worn correctly
No hearing protection being worn
Air hose has not been correctly assembled
Are there other personnel working in or adjacent to the area?
Hearing protection should be worn at all times whilst operating compressed air power tools
Protective goggles should be worn
Anti-whiplash device and safety pin securely connected to air hose
Lance not to be directed towards third parties or over slab edges
Supervisor should plan works to coincide with breaks wherever possible
Area being blown out should be clear of personnel or adequately protected