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Supply Chain Risk Challenge –
The Drive to Continuously Improve

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With ever increasing customer demands, complex regulated environments and significant commercial challenges, comes the need for an effective, integrated and robust supply chain. Most organisations therefore have a critical reliance on their supply chains, which are generally a combination of and based on national, international and global sourcing. Whilst effective supplier relationship management can generate opportunity, with this comes varying degrees of risk which need to be addressed.

This event hosted speakers from the retail, nuclear and rail sectors, sharing their experience and the approaches they have adopted, together with their future ideas and plans they are developing, to effectively manage that risk and to optimise business opportunity.

The event began with a few brief words from Hazards Forum Chairman Rear Admiral (retd) Paul Thomas CB who also chaired the event. He welcomed the audience and thanked the Institution of Engineering and Technology (IET) for hosting the event, together with EDF Energy, the Rail Safety and Standards Board (RSSB), the Rail Industry Supplier Qualification Scheme (RISQS) and the Rail Industry Supplier Approval Scheme (RISAS) for their sponsorship, before introducing the evening’s speakers.

The first speaker of the evening was Phillip Taylor, Head of Group Health and Safety for Wm. Morrison Supermarkets PLC. From a background originally in enforcement he now oversees the health and safety function in a business that is not only the fourth largest supermarket chain, but the largest fresh foods manufacturer within the UK employing 130,000 colleagues and serving almost 12 million customers a week. The presentation from this key player in the retail sector examined the most significant risks to colleagues and customers from product manufacture to point of sale, with a particular focus on their complex and diverse internal and external supply chains.

The second speaker was Paul Newman who has worked in the nuclear industry in EDF Energy and its predecessor companies in the UK for 30 years and was appointed as the Safety Director for EDF New Nuclear Build in 2012. He has held a number of roles within the industry and was the Site Director of Heysham 2 and then Hartlepool nuclear power stations prior to taking up his current role within New Nuclear Build. Paul presented on some of the industrial and cultural framework that is being developed between EDFE and the main contractors in their supply chain to ensure that the UK’s first ‘European pressurised reactor’ will be successfully constructed to ensure 60 years of safe, reliable operation.

The final talk of the evening was given by Richard Sharp, the Rail Compliance Manager for J Murphy & Sons Ltd, a civil engineering company operating throughout the UK. He manages their systems and processes to ensure that the business meets regulatory and client requirements. Richard is an active participant on a number of industry forums working to improve standards and assurance and notably is the Chair of the Rail Industry Supplier Qualification Scheme (RISQS). Following a piece of
research undertaken by RSSB on behalf of industry, a programme of modernisation of supplier assurance management is now underway and in that context and as Chair of RISQS, Richard will present on the developments in supplier qualification in rail and the risks and challenges faced in working with such a diverse supply chain.

The first speaker, Philip Taylor, Head of Group Health and Safety for Wm. Morrison Supermarkets PLC, began by describing the importance of the supply chain to WM Morrison’s. The whole business relies on getting goods from their suppliers and manufacturers to their outlets and customers as smoothly and efficiently as possible. In his talk he discussed potential hazards in this process, and how the organisation can continually learn and improve to proactively avoid these unwanted issues from arising.

The company’s business model is based on vertical integration. In this way it is different from the other major supermarkets. Vertical integration in this context means that Morrison’s attempts to perform as much of the process as they can themselves, without the need for third parties. It is a large company, with over 500 stores, and is still growing. This includes expansion into a new format of smaller convenience stores. There are now over 60 such ‘M Local’ stores. This will soon rise to 100, with a focus on the south east region. There is also a store in Gibraltar.

The stores process in the region of 11 million customer transactions each week. People rarely come to the supermarket alone, so this figure likely underestimates the number of people who actually pass through the stores on a weekly basis. There are around 125,000 employees, most of which working in the retail division, but many also work in manufacturing. In fact Morrison’s is the second largest fresh-food manufacturer in the UK. A significant number work in the logistics division covering transport and warehousing. As the organisation grows, to keep up with its competitors, it is beginning to branch out into online shopping services. This will start in January 2014 and includes a partnership with Ocado, utilising some of their experience in online ordering and delivery.

The manufacturing side of the business is a significant part of the supply chain. There are 17 factories in the UK involved in the manufacturing of food products, as well as a fruit and vegetable pack-house in Holland. Peppers, tomatoes and cucumbers from the glasshouses in Holland are sent to this facility which packs them and sends them to the UK for distribution. There are around 7,000 people involved in the manufacturing division. In addition to this, there is a bakery producing in the region of 2 million products a week, 3 abattoirs and meat cutting plants, a ‘fresh prepared’ produce (ready-to-eat meats, pies, quiches, cheese etc.) factory, fruit and vegetable facilities and a facility producing flowers in Leicester on a very large scale. Production at this facility is especially high around particular times of the year such as Valentine’s Day. There is also a seafood factory in Grimsby and the Morrison’s Farm.

Morrison’s Farm is at Dumfries House in Ayrshire which is owned by HRH the Prince of Wales. It is used as a model farm to help British farmers and suppliers improve processes and get a better deal, and to help Morrison’s improve its produce. Linked with this is a vet who works at the farm and deals specifically with rare breeds and free range chickens. Each of these parts of the business is focused on supplying the stores, but increasingly, and adding to the supply chain issues, the company is looking to supplying others outside its store network. In other words if the factories are producing an excess, the company is looking to identify others to which the produce can be sold. Making additional profit by selling on produce that is excess to Morrison’s requirements is a growing part of the business. This adds complexity to the supply chain.
The supply chain should be simple. Emerging from suppliers, through logistics to the stores and out to customers. The founder of the company Sir Ken Morrison, who is still a shareholder, liked to say that ‘retail is simple: you buy stuff and sell it on for a profit’. The reality is not quite that simple, and as the company has grown, it has become more and more complex. So while this is still fundamentally true, managing this supply chain around the UK is a really complex and difficult process. Vertical integration helps manage this complexity and also helps in securing and managing the food supply. They are not as reliant as other companies are on third party suppliers. While they still have to sell name-brand products, their own label products are to a large extent produced by factories owned by Morrisons.

If there was a catastrophic event at one of the factories or distribution hubs then that would have a significant impact on the way they operate. There are business continuity plans in place to take care of this, should things go wrong.

Today’s multi-channel, multi-format supply base operations are a far from simple, highly competitive environment. If you get it wrong, then there are at least three other major companies ready to exploit your mistakes. It is therefore very important to be proactive and prepared.

In addition to the internal suppliers from Morrison’s own manufacturing division there are a network of external suppliers throughout the UK, EU and worldwide. The company has an office in Hong Kong which helps manage the supply of their non-food products, a large number of which are manufactured in China. They used to rely on independent testing houses and agents in the region to make sure that their specifications were being met before it was shipped to the UK. This can still lead to complications in term of reliability. The Hong Kong office is now staffed with technologists and others who are there to provide an internal oversight of the products coming out of the factories before it goes into the shipping containers. This has reduced the number of product rejections and the difficulties that are encountered in this area. It reduces the risk of any problems with Trading Standards arising once the product reaches the UK if the independent testing is discovered to not meet UK regulations. As previously mentioned, there are also branded suppliers, such as Heinz, which customers will expect to be able to purchase from a supermarket.

An average supermarket carries about 25,000 different lines of product. That is a big mix of different items, with a ratio of about 30:70 own label to branded goods. So even with a high level of vertical integration, branded goods provide a large element of the supply chain.

A further external supply route, although it is something the company tends to avoid, is what has been referred to as the grey market. These are direct imports from other countries where a brand could be obtained for less than it would cost to buy it in the UK. The problem is of course the impact this has on the relationship with the UK supplier. One of the shifts in the organisation since around 2004, when they took over the Safeway chain of supermarkets, is an increased emphasis on ethics and ‘doing business the right way’. Everyone in the supply chain is treated with respect. This helps the company enormously. It helps build relationships with suppliers and in doing so helps further secure the supply chain.

In addition to the external suppliers of goods are external suppliers of services. This plays a huge part of the supply chain. There are three main types of service supply. The first is the supply of goods which are not for resale. This could be anything from baking machinery to a carrier bag. These are things that are used in operation but are for sale, or things which are given away to customers. There are also repair and maintenance contractors who are relied upon to keep stores and depots up and running. These can have a massive impact on the safety of colleagues, suppliers, contractors and customers. The third group are general services suppliers, things such as waste collection. The collection and movement
of skips and waste is recognised as a dangerous industry. If people who are performing a vital service on behalf of Morrisons are doing so unsafely, even if not on a Morrisons site, then this can still have a significant impact on the organisation, particularly in the way it is perceived by the public. It is very difficult to recover a high level of reputation once it is lost. They therefore have to be very mindful of the behaviours of external service suppliers.

Phillip then turned to look at the recent events surrounding horse meat in the food supply chain, something that Morrisons were not implicated in. Why does something like that happen in the supply chain? It’s because people want and demand cheap food. There is a simple fact behind this: a tonne of horse meat costs around £400 while a cheap tonne of beef would cost around £700. It’s easy when looking at these sorts of figures to see how people would be tempted to try and pass one thing off as another. This sort attitude towards food is not new. In fact it is at least as old as public health legislation. The desire for cheap food leads to driving down production costs, reducing margins and complacency. Complacency can manifest itself in the belief that the supply chain is fine, a lack of monitoring and a loss of control over where the ingredients are sourced.

A lot of the horsemeat involved in this scandal started off clearly labelled as horsemeat, but found itself, though a very convoluted and geographically disperse supply chain into a product labelled as beef. At this point nobody thought to question or test the meat, it simply entered the food chain as beef. It is then a big shock when trading standards come along, test the product, and discover it to contain equine protein. This results in such an outcry from the general public and the press that it can affect the scale of the Government’s reaction. Thus, the desire for cheap food can ultimately lead to a distancing from the supply chain, a loss of control over where ingredients are sourced and inadequate auditing, testing and horizon scanning.

Morrisons attempt to avoid and mitigate these risks through end to end assurances of safety, quality, legality and integrity throughout the supply chain. This is delivered through a set of clear principles for protection. Standards are carefully defined and suppliers are audited against these. Suppliers are made aware of the standards Morrisons want from them. Morrisons conduct their own testing and measuring against specifications. They gather intelligence and monitor customer complaints. Clear reporting mechanisms and focused management information help insure everyone knows what is going on. Risk assessments are employed to help decide what issues require action, what needs more attention and what needs less. They also conduct horizon scanning to get a sense of what is being done beyond the organisation and into the future in order to try and stay one step ahead.

Phillip concluded his talk by discussing the importance of continual improvement. Doing nothing is not an option. Despite not being implicated, Morrisons has tightened up surveillance following the horse meat scare, and will continue to do so. They have increased their horizon scanning and networking with other people in order to find out what is going on in the wider world. They make sure that their policies and principles are clear and properly communicated, and that their targets are realistic, risk based and supported by the directing mind of the company. If the directing mind becomes complacent then the supply chain may become complacency, so it is crucial that everyone is part of the journey for continual improvement.

The second speaker of the evening was Paul Newman, Safety Director for EDF Energy Nuclear New Build. Paul began his talk by stating the importance of being able to ensure that EDF Energy Nuclear New Build is ready to safely deliver the right quality of plant to the time and cost necessary to deliver 60 years of safe and reliable operation.
EDF Energy New Nuclear Build is set to build two Evolutionary Pressurised Water Reactors (EPRs) at Hinkley Point in Somerset. They will provide round 5% of the UK’s electricity, each one generating 1,650MW of electrical power. Each will have a unit capability of 93% which means they will be on load 93% of the time. At the peak of their construction there will be in excess of 5,000 people on site. Over the construction project duration there will be around 20,000 construction workers on site. In addition to the two EPRs will be an interim spent fuel storage facility capable of storing the used fuel for the lifetime of the plant. This all needs to be done with the right level of safety and quality and to the right time and cost.

Paul then briefly explained how a pressurised water reactor works to generate electricity. It is based around a cooled and moderated nuclear reaction taking place in the core. The steam generator uses the heat from this to produce steam which is sent to the turbine which generates the electricity. The nuclear component is all contained within pre-stressed concrete containment. Nuclear Safety requires control of what are referred to as ‘the three Cs’:

• Control of reactivity;
• Core cooling, both during normal operation and post-trip, and;
• Containment.

These are achieved through the delivery of defence-in-depth, redundancy and diversity in all of the protection systems. It is essential that this is done correctly, and important that the public is confident that this is the case.

The EPR was conceived and designed over a long period of time from two plant design concepts in Germany and France. It has a lot of redundancy in terms of the safeguard systems for cooling and electrical support. It is designed to ensure that the severe accident regime is of a very low probability, such that you wouldn’t expect an event to happen in 10 million years. There is lots of redundancy in the electrical supplies, with four diesel generators, any one of which could provide sufficient back-up power, with further station generators and batteries should they be required.

In total there is around 2 and a half million tonnes of concrete in the structures and in the order of 170 thousand tonnes of rebar. It is designed to withstand a 1 in 10,000 year seismic event, and any other external hazard, including aircraft impact. It has an aircraft protection shell around the nuclear island and two of the safeguards buildings. It is designed for 60 years of operation which are defined by the anticipated radiation damage levels in the pressure vessel. It is possible then that lives could be extended.

In order to do this to the right standard there is an emphasis on nuclear safety culture. This is defined by the World Association of Nuclear Operators (WANO) as “An organisation’s values and behaviours – modelled by its leaders and internalised by its members – that serve to make nuclear safety an overriding priority”. This is widely accepted in the operations side of the business, but a great deal of thinking has gone on more recently to determine a set of principles for excellence in nuclear project construction. Leadership is an important part of these principles. The values and behaviours of the senior leaders right through to first-line super-vision is absolutely critical. Having a capable and competent organisation both within EDF Energy and right through the supply chain is imperative. Schedules that are realistic and understood are also necessary. If this is not the case then
problems may arise in moments of increased pressure. While there might be an aggressive programme, this has to be realistic and achievable.

There needs to be an appreciation for the unique qualities of nuclear plant, and the necessity for people to follow procedures and processes carefully. The plant, the data and the design information need to be carefully controlled. With all this in mind, the plant has to be delivered to the quality and specification necessary to meet the safety case. Paul went on to talk about this from his experience in the operational side of the business as a site director. He acknowledged the significant difficulty which arises in justifying safety when you find something that does not meet the original design or original manufacturing requirements. This can cause a challenge to safety as well as a potentially enormous commercial impact. Having sat as site director on a plant shut down for 15 months while the Boiler Closure Units were repaired, he described how challenging that position can be.

There is a need then to build the stations as they are designed, if not they won’t be compliant with the safety case. In terms of developing the nuclear safety culture it is important to be aware when things aren’t right. It is important that deviations and concerns are identified, communicated and resolved. Another key principle involves the transition to plant operation. This needs to be planned for and started early.

The supply chain for the design is particularly interesting. The operator and licensee is sat in the context of UK regulations and markets, but the responsible designer is based in France, working with a supply chain for the nuclear plant that is largely in France. The design has been through a Generic Design Assessment (GDA) with the Office of Nuclear Regulation and the Environment Agency. This has brought about some changes which need to be thought about in the context of UK standards and safety assessment principles. There are, for example, different views about common mode failures between the two countries. The plant design is very resilient and robust, but the thinking has changed a little as it is brought into the UK. As a result there is a need to reflect on the control system, the HVAC system and some of the additional systems being put in place to make it even more robust.

This requires EDF Energy Nuclear New Build to be an intelligent customer and have a design authority. There is a large engineering capability in this country which is working very closely with the relevant parties in France to ensure they understand the design, and are satisfied with it. Additional oversight is placed on top of this leading to quite a complex process which needs to be managed through to the detailed design of a successful Safety Case that will be in place before the station starts up. Addressing the GDA findings and modifications from other sister projects entails an iterative design process maintaining alignment with the Safety Case in a staged way.

The design itself is complex and there are a lot of suppliers involved in the delivery. It must be done with safety and quality at the forefront today to support a lifetime of nuclear safety. There are 150 tier one suppliers. Moving down the supply chain this gets even more complicated.

To manage this it is necessary to have the right safety and quality arrangements in place. These are developed in conjunction with the supply chain to ensure that the right capabilities and organisational culture are in place.
Arrangements related to the nuclear safety significance of plant need to also be in place. This means thinking about the level of control required for the intelligent customer to reassure itself that it is getting what it needs in compliance with the design and safety case. There is a lot of work going on to categorise and classify components and systems.

Environmental safety significance is also being investigated in order to identify the critical elements. Controls, arrangements, procedures and organisation are then put in place to ensure that the correct levels of safety are met. A graded approach to quality is employed, such that different systems are treated in different ways. Thus site drainage is not necessarily treated in the same way as a reactor coolant pump might be. Having the right systems in place is great, but what really matters underneath all this is still having the right culture and behaviours.

Paul then turned to look at the key lessons from other projects, including nuclear projects like Sizewell in the UK, Taishan in China and Flamanville in France, as well as civil construction projects like Terminal 5 at Heathrow and the London Olympics. A number of key lessons start to emerge when looking at these projects. For example, there is a need to be fully ready with a design at the start of the project. There needs to be sufficient confidence in this design before construction to avoid problems later on. There needs to be a robust and achievable programme of work, aligned with the supply chain, as discussed previously. There should be early engagement with key contractors, something which is very active in this project. It is important to have the right industrial relations strategy. An unhappy workforce is not well led and is not going to be very well engaged. There needs to be a meaningful social partnership. Also, there needs to be a good understanding amongst all involved of the quality standards required for nuclear needs as these can be different from other construction projects.

He then discussed the type of risks that EDF Energy Nuclear New Build are trying to mitigate through effective supply chain engagement. Firstly, this includes the risk of a safety related incident, but it also includes the risk of poor quality. They are trying to mitigate the risk of a lack of supplier alignment with the overall project’s schedule and critical path, the risk of a late handover or missed key dates as well as cost increases. Ultimately the intelligent customer cannot transfer out the risk. They operate within a very strong regulated environment and as a responsible operator need to ensure compliance with the Safety Case. The transfer of risk is a myth. An appropriate level of design completeness is fundamental.

Procurement is the start of the journey. It does not guarantee the outcome. Just putting a contract in place is not the answer. Work has to be done every day to manage the contract and manage performance around the contract. Any changes around the contract have to be very, very carefully controlled and managed. It is not a case of ‘one size fits all’ and there is a lot of work going on to look at the contracting strategy. It is recognised that there is risk involved in the construction project, which will be the largest in Europe, and this needs to be shared to an extent in terms of commercial impacts. Contracts have to have the right balance between hard targets on cost and driver for the right levels of performance.

In the first instance, the contract should drive performance and not be used to protect EDF Energy in the event of default.
Management of the contract should always ensure the commercial interests of the parties remain aligned, in order to avoid adverse impact on delivery. It is important then to pick the correct indicators, as the incorrect ones can drive performance in the wrong places. With the right indicators everyone can remain aligned on both the safety and quality aspects as well as the commercial position as the project moves forward.

Early Contractor Involvement (ECI) can underpin safe working and quality. It enables input from those with the domain expertise. Ultimately the new plant won’t be built by EDF Energy, it will be built by its supply chain. There is a need to work collaboratively with the supply chain to ensure their experience is brought to the fore. ECI allows EDF Energy to validate the schedule and assess constructability. If the design is not constructable then the built plant will not be of the same quality as the design requires. The company is already working with the four largest contractors, who between them make up about 70% of the cost base of Hinkley Point C, in order to get the right collaborative approach. All four leads from these contract partners attend Executive Committee meetings in order to be aligned with developments and information.

Based on lessons from elsewhere and developments in the industry a lot of work is being undertaken to look at prefabrication (of cooling pool liners and galleries). This can help in achieving a high weld quality. Elsewhere, groups are looking at 3D modelling and 5D modelling which looks at time, schedules and the movement of resources around the site. This allows for the identification of problems with constructability, clash points and resource issues. The designer can identify issues at the 3D design stage before moving to mock-up designs and through to pre-fabrication and construction. Issues can be resolved early in order to deliver safety and quality.

People also need to feel engaged and motivated in the workplace. Work is being done with the supply chain and trade unions such that collectively the project is driving a social covenant. This means putting in place the right employment packages, the right facilities to live in, transport infrastructure and everything else which facilitates a good environment to work in. EDF Energy Nuclear New Build want the Hinkley Point C site to be the most safe, productive and efficient, and for the build to be delivered in a sustainable way. In terms of the skills agenda, they are looking to provide opportunities to people locally and within the UK supply chain, to be mentored and get a mature apprenticeship. There will also be a separate supervisory agreement which recognises the importance of supervision on the site needed to deliver the nuclear specific requirements.

There are different models of the principles behind nuclear safety culture and what it means. The important thing is to realise that people are fallible and make mistakes. The organisational processes and values drive the behaviours of the people. There is an importance in making sure everyone knows that we must learn from the past. This can be communicated through key messages in training and development. The first of these is adherence to processes and procedures. There also needs to be a culture where people are willing to stop and ask questions. This is an interesting concept on a large project so needs to be communicated effectively. If something isn’t right, the culture needs to develop a trusting relationship such that people can stop and report issues in an open way. This can help in identifying issues early in the processes.

EDF Energy Nuclear New Build is using a nuclear safety culture maturity matrix which looks at aspects such as leadership, behaviours, support for continuous improvement, development and provision of competency, how it develops an open reporting culture and how it resolves arising issues. The role of EDF Energy is to ensure that an environment is established to deliver the right standards, culture and design. There is a need for integration, and this must be done in a
collaborative way with the regulator and the supply chain. Paul concluded his talk by stating that if this can be achieved then by 2022/23 two reactors will be in operation at Hinkley Point C which will provide 60 years of low Carbon electricity for the UK. This is a significant project to undertake but EDF Energy Nuclear New Build is determined to make this a success.

The final talk of the evening was given by Richard Sharp, Chair of the Rail Industry Supplier Qualification Scheme (RISQS). Richard described a supplier scheme that deals with the complexity of the whole rail industry, as opposed to the challenges faced by one organisation managing its supply chain. One of the key difficulties in achieving this arises from the number of stakeholder, all of whose needs must be met. Every company has their own needs, and their own ideas about the how those needs will be met.

Today’s railway is very different from the British Rail days of the past, but it was at that time that the Rail Industry Supplier Qualification Scheme embryonically began. During the breakup of British Rail into Railtrack and then Network Rail, the supplier qualification scheme, known as Link-up at the time, was passed to a private company. Network Rail and Railtrack pushed their wants and needs on to that company, and in the main, the suppliers to Network Rail acceded to those needs.

The train operating companies and freight operating companies, all have very different needs from the infrastructure managers, as do the infrastructure contractors. These contractors have to have a set supplier qualification for the company, but as a supplier to Network Rail, they must also work to their requirements. Their procurement must fit with the framework that the whole of the railway industry works with. The main contractors will then have their own suppliers which can vary greatly from multi-billion pound international organisations to small two or three person companies.

The rail network has reduced by about 40% since the 1960s, but the passenger totals are up to record numbers. There is a lot of stress on the network and everyone wants work to be done to get it as good as it can be in as short a time as it can be done. The challenge is in ensuring that all suppliers are performing to the necessary standards such that this can be achieved safely.

Between the main infrastructure managers and the major buyers within the industry, such as Network Rail and Transport for London, there are unprecedented levels of spending in the industry; around £30 billion over the next control period. The supply chain is quite complex as many organisations are involved in each other’s projects, so a shared supplier accreditation scheme helps to manage this complexity and make the process more efficient. This sets out to establish that the 3,500+ suppliers in the industry all have the right level of assurance, but are not unduly pressured by over-auditing. In one example, a single company was audited 136 times by different companies in a single year. This frequency does not necessarily give any more assurance that the company was doing what it was supposed to do, in fact the added pressure and workload of those audits is detrimental to that ability.

There are a number of assurance schemes throughout the rail industry. Some of them are backed by industry and widely recognised. For example the RISQS board is recognised and approved by the RSSB Board and the Rail Delivery Group as an industry group. Annually there are costs of around £90-100 million
for assurance across the rail industry. This includes not just the costs of carrying out the audits, but also the cost of preparing for those audits. A supplier may have to spend time and money preparing for one audit only to have to do the exact same thing the following week for a different buyer. This fragmented approach was not thought to be the best way forward for the industry. Groups were not seeing the potential collective benefits of the audits, as although buyers tended to be auditing purely for their own needs, the questions they each asked were actually remarkably similar.

To remedy this, it was decided to develop a single supplier qualification scheme that all stakeholders could sign up to and agree that it contained the correct questions, which when companies are audited in the right way lead to the appropriate level of pre-qualification assurance. This would ensure that companies have the capability and standards in place that demonstrate they could work to the appropriate quality. It is then the buyers responsibility to check that they can actually meet the specific requirements of the buyer on an ongoing basis.

At London Blackfriars there is a lot of construction work going on in and around the railway. The train operating companies are the customer facing element. The stations could be likened to Morrison’s, in that there is a flow of passengers being provided with various services each day. These have to be closed down to undertake any major work. It is important to make sure all of the components are correct and to the necessary specification as if this is not the case all stakeholders will lose out. It is beneficial to achieve greater reliability and efficiency while still making sure the safety levels are appropriate.

There are contractual reforms to try and ensure that stakeholders work better together and adopt a more collaborative approach. Network Rail is trying to get the supply chain more closely aligned from the very start of projects. Working together to get the designs right first time is important as changes later in the programme bring with them the introduction of significant costs.

There has been a massive improvement in the supply chain management over the last 15 years, and the push for improvements continues. The ultimate goal is to get the right balance between cost and safety.

The industry has worked towards common product code categorisation. Each element of the industry has to know exactly what it is buying, and the level of assurance they are getting from their supplier. Uniformity of requirements, interventions and assurance schemes is also necessary.

All of the different buying organisations conducting audits will have their own in-house schemes. These are not just pre-qualification audits, but buyer audits which are further around the assurance cycle. There needs to be a process through which the industry can come together and learn from each other. If it is known that a company has recently audited a supplier, and there can be confidence that that audit meets the industry standard, then time and money could be saved in the process of conducting another audit. If two other companies have checked that the supply has the appropriate paperwork and processes, would a third need to do exactly the same thing? Instead, that information should be published so that everyone can see it. That would reduce the duplication in auditing that at the moment is benefiting nobody.

The industry also needs to move away from being reactionary. Every accident
and incident is entered into the Safety Management Information System (SMIS) which allows for industry wide data analysis, but this can result in overly reactionary behaviour.

One of the ways to address these concerns is to develop a common vocabulary. The RICCL is a product code structure that works for the whole of the industry, allowing buyers to know exactly what it is they are buying. The next step though is to risk rank these products so that those in the industry can make an informed decision about the products they are buying and the affect those choices have on risk. Decisions then have to be made as to whether a desk study of the product is adequate, or whether a site visit or continual on-site monitoring is required.

The Railway Industry Supplier Approval Scheme (RISAS) is a product monitoring scheme which checks that the wheel sets are constructed to the right tolerances from the right materials, and in the right way. This is totally different to the Railway Industry Supplier Qualification Scheme (RISQS) which is a supplier scheme, looking at services rather than products. The two complement each other, while making sure there is no duplication, and ensuring the right elements are covered in the right way by the right people. The industry is now looking at developing a single approach to supplier capability assessment. This helps buyers, but will also help suppliers coming into the industry, informing them in advance of the processes they will need to go through to be audited. The schemes are being modernised to ensure they work together. Industry governance has been changed over the last two years to allow that.

The initial link-up governance group (as it was previously called) decided what the link-up product categories should be, and how everyone would work together. This met the needs of one very large player with the industry, but other members of the industry felt that this did not meet the needs of the wider industry and as a result was not the correct way forward. This resulted in a move to a wider industry governance group. Infrastructure contracting companies, train operators, freight operators and other industry representative (RSSB, RIA, Rail Alliance, CECA, TfL, Network Rail etc.) have seats on the board of this group, making it truly cross-industry. It takes into account the needs and requirements of all buyers. This resulted in the development of the Rail Industry Commodity Classification List (RICCL) – a product code system.

The group has looked at the ways of trying to fund this scheme such that it is sustainable and that suppliers aren’t charged too much to take part. The industry is currently 8 months into the use of a new computer system which is able to show all of the suppliers to all of the buyers, and who is able to supply into companies for each product code. In total there are 2,953 product codes in the system covering a wide variety of products. It was felt that the original audit question set, created by Network Rail, was not delivering adequate benefit. Many suppliers just saw it as a cost they had to incur in order to become part of the industry. Without the feeling that they were getting something out of it, the danger was that it would just be paid lip-service. This was possible because under the old, broad system, companies were given the complete question sets four months before the audit.

The audit was completely streamlined, and moved towards a sampling-based process. There are now categories describing areas which could be audited. Suitable categories will be selected and the auditor will progress through the questions in an attempt to identify any areas which might not meet the necessary
requirements. Focusing on relevant areas gives a much more useful view of the company’s position. This is a big change for the industry, and one which some suppliers might not like. However, it is a change the industry needs to make sure the appropriate assurance are achieved in the most efficient way. This is particularly important as the amount of work being undertaken in the rail sector increases.

The new audits, which started in January 2014, have involved a total realignment of the risk matrix, such that different levels of the audit are covered in different ways. Questions are now not asked if the issue is already covered by a specific industry body. For example, if you work with asbestos, this will require an appropriate license which is already conditional on a specific audit relevant to that issue. It would therefore be duplication to ask the same questions already asked to obtain the license, when one could simply ask whether a valid license is possessed. Under the previous system, questions which were already being asked by a trade body specialist were then being duplicated and asked by someone else in a different context who might not necessarily be a specialist in that area and understand the full complexities. Taking away the need to ask questions for which there is already specialist certification reduces time, cost and effort, but none of the reassurance. The new scheme is also tailored such that suppliers of things like office equipment are not required to be audited as rigorously as those supplying safety critical components.

In summary, the rail governance has been changed, the new RICCL has been created, the sustainability of the scheme has been enhanced by a new pricing structure, and there is a new IT platform to facilitate the system. The future hope is that there will be a central hub where all of this information resides such that if one company conducts an audit they can place all of the information in the hub and others can decide if that is enough or whether they need to go in and intervene themselves. To get there, there needs to be a continued move toward a single governance structure and further alignment between all of the different schemes still in operation. This means going to the major buyers in the industry and making sure they understand and are mindful of what the others are doing in terms of assurance.

A huge amount of work is undertaken each year. Auditing companies every year did not seem to be delivering any benefit for the amount of effort and expense it required from everyone involved. As a result, if a company can demonstrate that it successfully passes the audit time and time again, then it is possible under the new scheme to lengthen the period between audits. Using the risk based approach, some requirements have been discontinued. Effort will be taken to make sure that the system stays at the right level, providing the necessary and risk proportionate level of assurance.

As IT improves, it should hopefully develop to a stage where the information is available in real time to all interested parties. The system should also become more easy to use, as historically this has been a barrier to use, and pushed people to use duplicate systems. Richard concluded his talk by stating that the implementation of this more efficient scheme could result in a potential cost saving in the region of 35%.

The Chairman then thanked the speakers and invited questions from the audience. The first question identified the importance in the talks of reputation and trust, asking whether the panel employed any systems for forecasting effects in reputation, and if so, what units this was measured in. Paul Newman replied first, identifying a myriad of metrics that could be used to assess the success of a safely operating business. If you look at safety performance and reliability of a nuclear power plant it tells you something about trust, because if you don’t have the trust of the public or the regulator then the station simply won’t be allowed to operate. Phillip Taylor added that it was easy miss situations through complacency. A level of trust is built with partner organisations, but that trust can very easily be lost...
through simple errors and mistakes. This can translate into loss of business and people going elsewhere for their groceries. Predicting this can be very difficult to do. It takes a conscious effort to monitor and scan the horizon, but you still need to be prepared to deal with things that you may not have expected. Richard Sharp described how the measurements of the impact of trust can usually be reduced to financial values.

The second question described the study of major events across a range of industries and the identification of common issues, contractor relationships being one such issue. Other common precursors to unwanted events which had been touched on throughout the evening include issues with leadership and a lack of clarity at interfaces within the organisation and between organisations. When people start seeing something going wrong, the ability to stop and raise the right questions is very important. There is a need to look at the organisational, contractual and social pressures which might prevent this. Oversight is also important, and far too often this is limited to the audit of written procedures and not the behaviours and actions as they manifest themselves in practise. Are we getting the most out of interventions, are we also looking to audit and oversee such cultural driver?

Richard Sharp agreed that this was very important. He reiterated that the scheme he had described were for pre-qualification, assuring among other things that the documented processes are appropriate. It is then necessary for buyers to monitor out on site whether the cultural and social practices reflected those documented. The panel emphasised the importance of strong leadership in driving the right cultural behaviours. The leaders have to demonstrate the correct and desirable behaviours if everything they do. This has to be the case to ensure that the correct behaviours are still observed even in the face of commercial and time pressures.

The final question related to the depth and length of the supply chains discussed by the evening’s speakers. The audience member asked how they satisfy themselves that things are still being done correctly way down the supply chain.

Paul Newman acknowledged the dependence on the main contractors doing their jobs correctly in sampling and taking oversight. There are organisations set up with the sole purpose of auditing the whole manufacturing supply chain. It is not possible to be everywhere, and while there will be samples performed throughout the supply chain, there is a dependency on the top level doing it right. Philip Taylor agreed. He described how the company produces a detailed specification for products which could then theoretically be produced anywhere in the world. There is still a degree of reliance on the principle contractors from which they are buying that product to have done the necessary checks down the supply chain. It is about trust. There is a quite detailed surveillance programme which checks things such as the chemical composition and bacterial standards to make sure that the products meet and exceed requirements. Customer complaints are monitored and a network of technologists visit the supplier factories. These factories will be audited by third-party bodies trusted by the organisation. When something is going wrong or drifting out of specification, they will investigate and monitor the supplier until confidence and trust is re-established. If that does not occur they will move to a different supplier. The level of surveillance is increasingly being informed by risk based models, such that products which could pose higher risks are targeted with more surveillance.

The evening’s chairman then drew the proceedings to a close by highlighting the similarities and high degree of potential cross-fertilisation between the three diverse industries. He again thanked the speakers for their informative talks and the sponsors for supporting the event, before inviting all those present to continue discussions over refreshments.

For more information on RISQS please visit: www.RISQS.org
Visitors to the Hazards Forum’s website since January will be aware that it has changed! A new site was anticipated in the previous Newsletter – and has now come into service. More about the new site and its many new features, for example, can be seen at Page 17.

We look forward to seeing as many members as possible at the Annual General Meeting on Tuesday 18th March 2014 at the Institution of Civil Engineers, One Great George Street, London, SW1P 3AA at 16.30. The Agenda will be as per the Notice sent to members in January. For those unable to attend, however, an account of the meeting is planned for publication in the next Newsletter.

The Calendar of Events on Page 21 shows many forthcoming events including the Hf Evening Event that follows the AGM at 17.30 for 18.00, which will be at the same address. Further events are shown, including a number by member organisations of the Hazards Forum. The proposed date for the Hf June event is included also. Members are reminded of the benefits of attending events shown, including the offer of reduced rates for many of them, where charges are made. As usual, however, for more current information please refer to the Events Calendar on the new website under Upcoming events, which is now in a new format.

Brian Neale

Safety, but not as we know it – Small cultural differences can have a big impact on how we work

Andrew Petrie¹
CEng, MIChemE, MIET, CFIOSH

It has been four months since I made the move to Australia and so I thought it would be a good time to write an update about my experiences so far for the Hazards Forum newsletter. It is early days for me here in Sydney and I am still finding my way around how they do things down here. I’ve moved to Sydney primarily to undertake a role on a new railway scheme and my initial observations are therefore limited to my experiences in this field over a few months and should be read as my personal opinions based on my experiences so far. I am learning new things every day and as I get a better understanding of these issues I will provide some more updates for the Hf newsletter.

As an outsider who is new to the way of working here it is actually quite a difficult process to get used to, and I think that coming from the UK can actually make it more difficult to acclimatise. Why do I say that? Well, I’ve worked in several different
countries during my career and in each case the way of working has been completely different from the UK. So I’ve always approached each case with an open mind and no pre-conceptions about how things work, effectively starting from scratch. With Australia however, there is a real danger that you still think you are in the UK. The legal system and in particular how they look at safety is largely based on the UK approach which in itself is the problem. While it is based on the UK approach, in practice they have their own way of doing things and what they do is subtly different from back home. One of the worst things you can do here is make assumptions about how they do things based on the UK, because you will undoubtedly get some things wrong. You very quickly learn to stop saying ‘this is how we do it back home’ and instead learn to ask about what the processes are here.

As I mentioned, the approach to safety is largely similar to that of the UK, however one of the issues I came up against almost from day one was that of ALARP/SFAIRP. In the UK I have always used the term ALARP (As Low As Reasonably Practicable), it’s simply what we do. The term SFAIRP (So Far As Is Reasonably Practicable) does not really get a look in back home, while it is used in legislation the term ALARP is generally always used in practice as meaning the same thing. I don’t know about the rest of Australia or how other industries work, but in the New South Wales railway fraternity they prefer to use the term SFAIRP and are of the view that it does in fact represent a different set of criteria than ALARP. When this was first pointed out to me I was a bit taken aback and struggled to understand what the difference really is. A quick search on Google will flag up hundreds of articles where people try and explain the difference between these two terms, and as with a hundreds of different Google articles you will get a hundred different personal opinions, none of which can be counted as definitive.

I reverted back to the HSE for help with my clarification and did find a useful page on their website on this very subject, which takes the view that the two terms are effectively the same and can in practice be used interchangeably. While this does back up my original view, it does not in fact help with my problem in Sydney. I have conceded that I will use whichever term they want me to, I can’t in my own mind see any actual difference in how they are applied and nothing I have read has convinced me that there is a material difference between the two. As mentioned above, it’s one of those things that is slightly different, and in this case something I am just going to have to live with.

Another aspect of life down here that takes some getting used to is that the government structure is not the same as back home. It is not one country as I had always assumed but rather a commonwealth made up of from eight states and territories, each with their own government and legal structure. The state governments actually have a significant power and need to ratify any laws that are made by the federal government. (It’s more similar to the European Union approach where an EU directive is produced and the member states then have to implement the law into their own legislation, often amending or adding to it in the process.) This means that in each state there can be subtle differences in the law, which is not always obvious. For example the federal government recently introduced the Rail Safety National Law of which one key measure was to introduce a national rail regulator called the Office of the National Rail Safety Regulator, or ONRSR for short. As I write this only four of the eight states and territories have implemented their version of the law and therefore the national regulator only covers half of the country.

Another way of looking at this is that it is 40 years since the Health and Safety at Work etc. Act 1974 was introduced in the UK following the recommendations of the Robens report. As stated above a lot of the safety law in Australia is based on UK practice and indeed following the Robens
report, a significant reform of occupational health and safety legislation did occur much like the UK, however this was done on a state by state. As a result there were effectively eight different legal regimes in place to manage safety, all doing broadly the same thing, but all subtly different. It wasn’t until 2008 that the federal government began the process of harmonisation to develop a common piece of legislation for the whole of Australia. The model Work Health & Safety Act 2011 was therefore developed by the government and was introduced into law by four states in 2012 and two further states in 2013, however the remaining two states have chosen not to introduce the legislation. So while in the UK we have been working under the HASWA for nearly 40 years, Australia still doesn't have a unified set of regulations. This isn't necessarily a bad thing as the local states consider their approach to provide an adequate, if not better, legal framework to manage safety. It is however another example of things that are different and another thing us Pommies have to adapt to.

I can sympathise with this approach and it is partly a natural instinct, we all want to be in control of our own destiny and think we can do things better than others. There does come a time though when you have to consider the greater good and give up some of your local control and agree a way of working with your neighbours. For years in the UK we have been kicking and screaming every time the EU wanted introduced a new directive, particularly where it changed our existing laws or moved control to Brussels. But over recent years we have been getting better at dealing with that change. The railway interoperability regulations and the associated common safety methodology for example have to be seen as a good thing. In Europe where there are 27 member states with railways we all had to agree to get along, it just isn’t practical to have nearly 30 different ways of doing things. Maybe looking to Europe rather than the UK may provide the direction for future.

Well that’s enough from me for now, I hope to get another update to you later in the year. Please feel free to get in touch if you have any questions you would like me to answer in future updates.

Written in January 2014

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1 Andrew Petrie has been a member of the Hf for several years and was a trustee and member of the executive committee from 2012. Last September Andrew moved to Australia to take up a long term assignment with his organisation and had to step down from the committee. Andrew was keen to maintain his involvement with the Hf and agreed to write some articles for the Hf Newsletter about his experiences down under and this is the first of those articles. If anyone has any questions they would like to ask Andrew he can be contacted on agpetrie@outlook.com


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**The Hazard Forum’s new website - an introduction**

Brian Neale  
Hf Executive Secretary.

Early evening on Thursday 23rd January 2014 the switch over to the new site was initiated. The look and feel of the new site is more modern than the previous site, with a clean looking three column format, as well as a footer. This design allows for new useful features such as quick access to key areas of the site and also the inclusion of social media, for example. The provision of a footer has provided space for extra important information of the type that can be expected on user-friendly modern informative sites. The presentation of forthcoming events has
been revitalised also. This introduction gives users an insight to some of the new and updated features.

Figure 1 shows the Home page (accessed from welcome) where the three column approach can be seen. Features that will be familiar to users of the previous site include the structure of the site, as well as much of the text, where the latter is the next part of the site planned for review.

There are three quick access buttons and they are for Become a member, Newsletters and Upcoming events. The social media section is for the feed from the Forum’s Twitter account, which extends the communications value of the site on a number of levels. Incidentally replies to Tweets are not included in this feed for clarity, although they can be viewed by accessing the Hf Twitter site at https://twitter.com/hazardsforum

Some users may wonder why some tweets do not appear in chronological order. This has been answered with the explanation that the “re-tweets” show the time/date stamp of the original tweet and not that of the re-tweet!

The Events Calendar has been refreshed with a different form of presentation and now includes the features that allow the benefits of saving to your diary and also sharing through various social media. As usual, some events arranged by Hf member organisations are included, where the organiser can now be identified easily by the use of their logos alongside the event. Hence upcoming Forum events are now more obvious. The “legacy” aspect of past events has also been included in the diary for reference. The calendar is hosted by a specialist provider and this is the reason users may experience a slight pause when accessing this feature. To return to the Hf main site swiftly, however, the top tip for a speedy response is to activate the Visit our website button.

A further improvement can be found under publications, where the Event Reports section has been augmented significantly. As these reports are now included in the Forum’s Newsletters, the link to a listed report takes users to the relevant Newsletter. Some earlier standalone reports have also been included. An added benefit of this section is that it can be used as a way of finding out which is the main feature in a particular Newsletter.

By the way, the “SEARCH” feature on this site works by entering the word or words to be searched in the box provided and then pressing Return or Enter on keyboards – or the equivalent.

For those wishing to get in touch with the Forum, this is now made easier through the contact page, where a feature has been included for Comment. This feeds through as an email to the Hf Secretariat office.

Two further new features that are provided are a Privacy policy and a Sitemap, where the latter includes a Cookies statement. Links to both can be found in another new feature as mentioned above. This is the active Footer which appears at the bottom of every page. Also found in the footer is an array of logos, one for each of the four “parent” Professional Engineering Institutions of the Hazards Forum – each of which still actively supports the Forum, of course. For users wishing to know about them and their current activities, links are provided from the logos to the respective Institution’s home page.

When going onto the site, those with a keen eye will note that there is a change to the web address, although it will not affect the use of the http://www.hazardsforum.org.uk address which has been in use for the past six years. The new address is now the snappier http://hazardsforum.org.uk, however.

The Hazards Forum acknowledges the work of mediaOrb and Oliver Booth in particular for their professional approach to working with Hf in the creation of this new website. Thanks are also due to all who contributed to the development of this site. As a footnote, and as mentioned above, it is planned that this site should continue to evolve. Ideas for future development are welcomed.

1 http://mediaorb.net/
The latest issues of “Science in Parliament”, the journal of the Parliamentary and Scientific Committee of which the Hazards Forum is a member, has among its contents the following articles. Any member who would like any further information on any of the articles below should visit the PSC website www.ScienceInParliament.org.uk

CONSTRUCTION 2025
Peter Hansford

MATHEMATICS RESEARCH – WHY IS IT IMPORTANT?
Tim Pedley and Nigel Peake

PUTTING UK PHARMACOLOGY ON THE MAP
Katharine Richardson

INVESTING IN THE FUTURE OF SUSTAINABLE CHEMISTRY
Professor David Greenaway

SINGAPORE’S SUCCESS STORY IN RESEARCH AND DEVELOPMENT
George K Radda
ROCKETING SKY HIGH: UK AND RUSSIA IN SPACE

Dr Julia Knights

Addresses to the P&SC by Deborah Pullen, Professor Doug King and Dr Martyn Thomas

SMART BUILDINGS

SMART BUILDING NETWORKS

IAN TAYLOR AND ANDREW COMER

AN IMMIGRATION POLICY FOR SCIENCE

Addresses to the P&SC by Philip Duffy, Professor Ian Haines and Ian Robinson

 Addresses to the P&SC by Mary Vayou, Michael Jones and Daniel Brutto

SUB-SEA MINING

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### Calendar of Events

Please check the Events section of the Hazards Forum website for more information at [www.hazardsforum.org.uk](http://www.hazardsforum.org.uk) and to see any updates in the calendar. These may include additional events or perhaps amendments to the Events shown below.

Please note that attendance at Hf Events is by invitation.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Venue</th>
<th>Contact/further information</th>
</tr>
</thead>
<tbody>
<tr>
<td>March</td>
<td>Hf Event: Annual General Meeting 2014</td>
<td>Institution of Civil Engineers, One Great George Street, London SW1P 3AA</td>
<td><a href="mailto:admin@hazardsforum.org.uk">admin@hazardsforum.org.uk</a></td>
</tr>
<tr>
<td>18</td>
<td>Hf Event: Returning to normal service – Challenges of resuming normal operations following disaster</td>
<td>Institution of Civil Engineers, One Great George Street, London SW1P 3AA</td>
<td><a href="mailto:admin@hazardsforum.org.uk">admin@hazardsforum.org.uk</a></td>
</tr>
<tr>
<td>19</td>
<td>IMechE Event, Hf Supported: Offshore weight control – Managing design, installation and cost</td>
<td>Aberdeen Exhibition &amp; Conference Centre</td>
<td><a href="mailto:t_khatun@imeche.org">t_khatun@imeche.org</a></td>
</tr>
<tr>
<td>25</td>
<td>ICE Event: Infrastructure Asset Management 2014 – Future Proofing our Assets</td>
<td>Central London</td>
<td><a href="mailto:events@ice.org.uk">events@ice.org.uk</a></td>
</tr>
<tr>
<td>27</td>
<td>IET Event: Nuclear Engineering for safety, control and security</td>
<td>Aztec Hotel, 110 Aztec West, Bristol, BS32 4TS</td>
<td><a href="mailto:mcopping@theiet.org">mcopping@theiet.org</a></td>
</tr>
<tr>
<td>May</td>
<td>IChemE Event, Hf Supported: Hazards 24 Conference</td>
<td>Edinburgh, UK</td>
<td><a href="mailto:conferences@icheme.org">conferences@icheme.org</a></td>
</tr>
<tr>
<td>7 – 9</td>
<td>IChemE Event, Hf Supported: Human Factors in Health and Safety, Module Three</td>
<td>Edinburgh, UK</td>
<td><a href="mailto:courses@icheme.org">courses@icheme.org</a></td>
</tr>
<tr>
<td>June</td>
<td>SaRS Event, Hf Supported: Has Technology Gone Too Far?</td>
<td>SaRS HQ, Once Central Park, Manchester M40 5BP</td>
<td><a href="mailto:elinor.davies@sars.org.uk">elinor.davies@sars.org.uk</a></td>
</tr>
<tr>
<td>17</td>
<td>Hf Event: Topic to be confirmed</td>
<td>Institution of Civil Engineers, One Great George Street, London SW1P 3AA</td>
<td><a href="mailto:admin@hazardsforum.org.uk">admin@hazardsforum.org.uk</a></td>
</tr>
</tbody>
</table>
The Hazards Forum’s Mission is to contribute to government, industry, science, universities, NGOs and Individuals to find practical ways of approaching and resolving hazard and risk issues, in the interests of mutual understanding, public confidence and safety.

The forum was established in 1989 by four of the principal engineering institutions because of concern about the major disasters which had occurred about that time.

The Hazards Forum holds regular events on a wide range of subjects relating to hazards and safety, produces publications on such topics, and provides opportunities for interdisciplinary contacts and discussions.

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