



**2012 PROGRESS REPORT  
ASSET MANAGEMENT  
AND MAINTENANCE**

# CONTENTS

## 2012 PROGRESS REPORT

Strategy	1	Frank Mitchell, CEO, ScottishPower Energy Networks	13
Review of 2012	2	Appendix 1	13
Delivery Plan for 2012	2	Appendix 2	14
Robert Davis, Group CEO, EA Technology	3	Appendix 3	14
Activities Carried Out During 2012	5	Appendix 4	20
Measuring Progress	10	Appendix 5	20
Looking Forward – Delivery Plan 2013	11		
Mike Clancy, General Secretary, Prospect	12		

# VISION

**The UK Electricity Industry will be a world leader in health and safety performance by 2015.**

## STRATEGY

ENA and Energy UK electricity companies and trade unions commit, with the support of Health and Safety Executive (HSE), to build on our partnership approach to bring about continuous improvements in the management of safety and occupational health in the electricity sector in the 5 years leading up to 2015. We will do this by supporting the priorities in the HSE strategy, in particular the themes of leadership, worker involvement and improving competence, and to proactively manage the risks that cause real harm and suffering.

The strategy covers the electricity generation, transmission and distribution sectors. See Appendix 1 for companies and trade unions that formally support the strategy.

In line with HSE's strategy, three over-arching themes will run throughout the lifespan of Powering Improvement: **leadership, improving competence and worker involvement.**

To maintain momentum each year the strategy will focus on a specific topic that has been identified as a priority area for our sector. Each theme will be led by a senior industry champion.

- > 2010 Leadership
- > 2011 Occupational health/wellbeing
- > 2012 Asset management/maintenance
- > 2013 Behavioural safety/personal responsibility
- > 2014 Beyond 2015 – Next steps

Further information can be found in the full strategy document which is available on the Powering Improvement website at [www.poweringimprovement.org](http://www.poweringimprovement.org)

## Governance

Powering Improvement is managed and directed by the National Joint Health Safety and Environment Committee (HESAC)<sup>1</sup> (comprising representatives from ENA and Energy UK member companies, the industry trade unions (GMB, Prospect, Unison and Unite) and HSE. National HESAC has been operating as a tripartite body successfully addressing health and safety issues in the electricity industry for over 30 years.

Executive decisions on behalf of ENA member companies rest with the ENA SHE Committee and ultimately the ENA Board. Executive decisions on behalf of Energy UK companies rest with the Energy UK Health and Safety Forum and ultimately the Energy UK Board.

<sup>1</sup> National HESAC meeting notes are published at: [www.energynetworks.org/electricity/she/national-hesac.html](http://www.energynetworks.org/electricity/she/national-hesac.html)

## REVIEW OF 2012

The third year of Powering Improvement focused on asset management and maintenance although the work in support of the previous years' themes of leadership and occupational health and wellbeing continued.

The year was championed by Robert Davis, Group CEO for EA Technology Ltd. All ENA and Energy UK companies have detailed systems and procedures in place to manage their assets, many of which are accredited to BSI PAS55 (the Publicly Available Specification published by the British Standards Institute which provides for the integration of all aspects of the asset life cycle: design, acquisition, construction, commissioning, operation, maintenance, renewal, modification and disposal). The intention for 2012 was to focus on the "softer" aspects of asset management and to produce sector-specific high level guidance linked to the over-arching Powering Improvement themes i.e. leadership, competence and worker involvement. This included a competency framework for asset management and maintenance within the electricity sector, collating case studies highlighting best practice and developing high level guidance demonstrating the link between asset management and health and safety. This work and the importance of asset management was showcased at ENA and individual company workshops.

Much of the work to produce the outputs detailed in the Delivery Plan for the year were carried out by an expert sub-group (see Appendix 2 for details). ENA and Energy UK companies will consider how best to utilise the outputs within their own asset management systems.

## DELIVERY PLAN FOR 2012

### DEFINITIONS

#### Asset management:

Systematic and organised practices through which an organisation optimally manages its physical assets and their associated performance, risks and expenditures over their life cycles for the purpose of achieving its organisational strategic plan (BSI PAS55).

#### Maintenance:

Planned/preventive maintenance – planned actions, including inspections, at specific intervals to keep physical assets in safe working order.

Corrective maintenance – maintenance required when an asset has failed or worn out in order to bring it back into working order.

### DELIVERABLES

#### Output 1

**The National HESAC Powering Improvement Asset Management sub-group will develop, in partnership with other stakeholders (e.g. IAM and IET) as appropriate, industry competency guidelines for managers, supervisors and operational staff involved in and/or responsible for asset management.**

#### Output 2

**The National HESAC Powering Improvement Asset Management sub-group will develop high level guidance for the electricity sector highlighting the link between asset management, process safety and the successful management of health and safety risks, to both workers and members of the public.**

### Output 3

The National HESAC Powering Improvement Asset Management sub-group will gather learning from within and outside our sector and produce a suite of case studies highlighting best practice in managing the health and safety risks from asset management and maintenance activities - including lessons learned from both managing equipment failures and failures to manage equipment.

### Output 4

The National HESAC Powering Improvement Asset Management sub-group will engage with managers, supervisors and operational staff and their representatives to highlight asset management and maintenance issues throughout the year.

## STATEMENT FROM 2012 CHAMPION



**Robert Davis**  
Group CEO  
EA  
Technology

As an Honorary Fellow and ex-President of the Institute of Asset Management I was pleased last year to accept the invitation to be annual Powering Improvement Champion when the theme was Asset Management and Maintenance particularly as managing assets safely is vitally important to the electricity sector.

Throughout the year I have had the opportunity to speak at a number of events, not least the annual SHE Management Conference and SHE Reception where I met a wide range of stakeholders that have contributed to the year's success – health and safety

managers, operational managers, asset management specialists as well as representatives from the trade unions and HSE.

A range of outputs have been delivered in support of the theme including industry competency guidelines for staff involved in asset management, high level guidance highlighting the link between asset management and the management of health and safety risk to workers and the public and a range of case studies. These are all available on the Powering Improvement website at [www.poweringimprovement.org](http://www.poweringimprovement.org) and I would recommend that you read them and consider any potential implications for you and your organisation.

I have also heard good reports about the interactive workshops that have been held in ENA companies –

and continue to be held in the first half of this year. As I indicated in last year's annual report, work in support of the asset management theme did not end on 31 December 2012 but rather will continue this year and up to the end of the Powering Improvement strategy at the end of 2014.

Your main focus now turns to this year's theme of Human and Organisational Factors: Behavioural Safety and Personal Responsibility and I wish you every success.

## ACHIEVEMENTS

### Output 1

The National HESAC Powering Improvement Asset Management sub-group will develop, in partnership with other stakeholders (e.g. IAM and IET) as appropriate, industry competency guidelines for managers, supervisors and operational staff involved in and/or responsible for asset management.

This high level guidance was produced and is available on the Powering Improvement website at [www.poweringimprovement.org/tools/asset-management-tools](http://www.poweringimprovement.org/tools/asset-management-tools).

### Output 2

The National HESAC Powering Improvement Asset Management sub-group will develop high level guidance for the electricity sector highlighting the link between asset management, process safety and the successful management of health and safety risks, to both workers and members of the public.

This guidance was produced and can be seen at Appendix 3 to this report. It is also available on the Powering Improvement website at [www.poweringimprovement.org/tools/asset-management-tools](http://www.poweringimprovement.org/tools/asset-management-tools).

### Output 3

The National HESAC Powering Improvement Asset Management sub-group will gather learning from within and outside our sector and produce a suite of case studies highlighting best practice in managing the health and safety risks from asset management and maintenance activities - including lessons learned from both managing equipment failures and failures to manage equipment.

Six case studies were produced which are available on the Powering Improvement website at [www.poweringimprovement.org/case-studies/asset-management-and-maintenance-case-studies](http://www.poweringimprovement.org/case-studies/asset-management-and-maintenance-case-studies).

- > BP Texas City explosion
- > FMJL current transformer failure
- > Explosion at oil filled Ring Main Unit
- > Incidents involving poles
- > Fatalities to members of the public at a substation
- > Catastrophic failure of tap changer

### Output 4

The National HESAC Powering Improvement Asset Management sub-group will engage with managers, supervisors and operational staff and their representatives to highlight asset management and maintenance issues throughout the year.

A company workshop was held at Northern Powergrid on 21 November 2012.

Further workshops are planned at other companies throughout 2013. There has been a delay in arranging the workshops to allow a case study to be developed based on the lessons learned from a catastrophic failure of a tap changer. The court case was only completed in late 2012, however the company concerned is keen for all to understand the lessons learned from this accident. The workshops will continue throughout 2013.



## ACTIVITIES CARRIED OUT DURING 2012

### Workshop held on 22 March at ENA offices

A successful workshop was held in March to promote the aims and goals for the year. Stephen Morris (President, Institute of Asset Management) gave a brief talk outlining IAM's purpose and the ways in which it aligns with Powering Improvement. Martin Sedgwick (ScottishPower) delivered a multimedia presentation on the BP Texas City disaster and process safety principles more generally. Peter McCormick (ENA Powering Improvement Coordinator) delivered a case study to the attendees on an historic incident in which two industry staff members were killed following the catastrophic failure of an 11kV Ring Main Unit.

The workshop was attended by a mixture of H&S practitioners, occupational health specialists and safety representatives from ENA and Energy UK companies as well as HSE and the trade unions. Delegates considered in workshop sessions the four outputs; this paved the way for further work by the sub-group.

### ENA-ISSA Workshop held at Linowsee on 27 – 29 March

This workshop was a joint event organised by ENA and the Electricity Section of the International Social Security Association and was held 27 to 29 March 2012 at the Training Centre in Linowsee near Berlin. The vision of Powering Improvement is that the UK Electricity Industry will be a world leader in health and safety and it is therefore important to benchmark performance against companies based outside the UK.

### Objectives

*To support the UK Electricity Industry's vision, as stated in Powering Improvement (PI), to be a world leader in H&S by 2015 this workshop is an opportunity to benchmark performance outside the UK and share best practice in*

*managing H&S risks particularly with reference to the 2012 and 2013 PI focus on asset management and behavioural safety respectively and also the overall themes of leadership, competence and worker involvement.*

*Delegates will comprise representatives from ENA, Energy UK, trade unions and HSE.*

*Outcomes from the workshop will inform the work to support PI up to 2015.*

The workshop largely focused on asset management issues and presentations from companies such as E.ON and Airbus but looking forward to the 2013 theme there was also a presentation on Human Factors from a speaker from the German Institute for Work and Health.

### Energy UK Behavioural Safety Workshop, Manchester Metropolitan University, 19 April

Speakers from Drax, HSE, Prospect, Manchester Metropolitan University, PJD and Energy UK provided their perspectives on behavioural safety. One outcome of the workshop was a list of behavioural safety material that attendees would like to develop as part of the 2013 delivery year. Following the event Energy UK plan to share information and best practice within the sector.

### SHE Management Conference, Tower Guoman Hotel, London, 3 – 4 May

Robert Davis was a keynote speaker at the health and safety conference held at the Tower Guoman Hotel in London. There were several other high profile presentations on asset management related issues and one from John Steed (HSE Principal Specialist Electrical Inspector).

### Institute of Asset Management Conference, London, 20 June

Peter McCormick and Richard Le Gros (ENA) facilitated a workshop session at the IAM conference in London on 20 June.

### **SHE Reception, One Whitehall Place, London, 11 September**

At the 6th Annual SHE Reception Robert Davis commended the industry on the efforts that had been made in support of this year's theme. Frank Mitchell (CEO, ScottishPower Energy Networks) and Mike Clancy (General Secretary, Prospect) as champions for 2013 introduced that year's theme of human and organisational factors focussing on behavioural safety and personal responsibility.

### **First company workshop, Northern Powergrid Offices, 21 November**

Attended by 40 delegates – a mixture of operational, asset management and health and safety staff.

### **Network of Advocates Workshop, Prospect House, 5 December**

The workshop was attended by nearly 30 delegates to discuss and agree how best to support and empower the network.

## **PURPOSE**

- > To act as a focal point and conduit to promote Powering Improvement and provide feedback to National HESAC and the PISG on local initiatives and activities that support it.

## **ROLE**

- > To disseminate information provided by the PISG. This information will be provided in a format for easy incorporation in company intranets, in-house magazines etc.
- > To gather information on local activities in support of PI and provide details to the PISG.
- > To attend workshops and other events throughout the year as appropriate to be briefed on PI developments and to network with fellow Advocates.

## **MEMBERSHIP**

- > ENA SHE Managers Group
- > ENA Communications Managers
- > Energy UK Health & Safety Forum representatives.
- > Trade Union advocates - typically lead H&S reps on company HESACs

Plus other company and trade union contacts as appropriate.

### **ENA – ISSA Workshop, ENA Offices, London, 6 December**

This was a follow up to the workshop held in Germany earlier in the year. The workshop was attended by representatives from ENA and Energy UK companies plus trade unions and HSE. Presentations included John Steed, HSE on the link between asset management and safety as well as Neal Stone from British Safety Council on some behavioural safety case studies.

### **Company workshops:**

Further asset management workshops are to be held at ENA companies in 2013.

### **In addition:**

Also in 2012, Asset Management case studies were made available on the dedicated Powering Improvement website, [www.poweringimprovement.org](http://www.poweringimprovement.org).

Publication of a special edition of ENA SHE Review dedicated to sharing lessons learned from asset management incidents, [www.energynetworks.org/news/publications/she-review.html](http://www.energynetworks.org/news/publications/she-review.html).

Updates provided to the ENA Board in May and October.

Updates provided to Judith Hackitt, HSE Chair, at a meeting on 11 December.

Update provided to Geoffrey Podger, HSE CE together with members of the HSE Senior Management Team on 20 December.



Presentation at Process Safety Managers Forum in November.

Mike Leppard (ENA) gave a presentation at an ISSA conference in Paraguay.

Peter Coyle (ENA) gave a presentation to the Electrical Engineers Association in Auckland.

Sarah Page (Prospect) gave a presentation at the British Safety Council conference in February.

Peter McCormick and Mike Leppard presented at a Policy Connect seminar in March.

Articles were published in EnergyLines and other periodicals including the British Safety Council

magazine, Utility Week and specialist engineering publications.

A reporting template was developed for companies to report back to National HESAC on initiatives and activities carried out in support of the aims of Powering Improvement. This will begin at the first meeting of National HESAC in 2013.

An online "Survey Monkey" questionnaire has been set up to gauge awareness of Powering Improvement in ENA and Energy UK companies. See [www.surveymonkey.com/s/PIAwarenessSep12](http://www.surveymonkey.com/s/PIAwarenessSep12).

## 2012 – STAKEHOLDERS' VIEWS

"I would like to commend the efforts of all who continue to ensure Powering Improvement is a success. It is an example for other sectors of what can be achieved through a partnership approach. Leadership remains critical throughout this work and I know from the updates at every ENA Board Meeting that senior management within our members remain committed and fully supportive of the strategy and its aims."

**David Smith, Chief Executive, ENA**

"Energy UK is delighted to support the Powering Improvement 2013 Human Factors strategy. Through the effort of our members we recognise the importance of continued development and adoption of safe behaviours

as part of a constructive hierarchy of risk management control. Through open exchange between members, through our support chain, and between the employer and employee, the opportunity to learn and improve upon workplace knowledge is a positive step for the whole of the energy sector. Furthermore, by engaging with employees and working towards a risk free workplace, a concept which is at the core of the Powering Improvement strategy, we increase employee satisfaction, ensure a long-term commitment, and promote a legacy to be proud of."

**Dave Beese, Head of Health and Safety, Energy UK**

"The Powering Improvement strategy continues to provide a relevant and challenging agenda for our industry to revisit and address the key

issues that will help improve our overall health and safety performance."

**Doug Wilson, UK Director General Services, ScottishPower, chair of ENA SHE Committee and company-side chair to National HESAC**

"Unite is committed to improving health and safety throughout the power industries and supports the Powering Improvement strategy. At national, regional and local level Unite health and safety activists are working with power companies to make a difference on health and safety."

**Kevin Coyne, National Officer – Energy & Utilities Sector, Unite the Union**

## 2012 – STAKEHOLDERS' VIEWS CONTINUED

“I was delighted to be part of the Powering Improvement Sub-Group during the Asset Management Year of 2012. In parallel with Powering Improvement, I developed a simple model that illustrates that good health and safety management underpins good asset management. This is so vitally important to recognise with all the many challenges that the industry now faces from so many sources. Powering Improvement gives me a platform to demonstrate and encourage the industry to reflect on the important elements that make up good health and safety management.”

**John Steed, HSE HM Principal Specialist Inspector, Electrical Networks**

“The Powering Improvement advocates workshop was a productive start on what we hope will be a significant improvement in the industry’s safety performance. We have some way to go however with regards to the use of the Powering Improvement brand across the individual companies and the geographic spread of company side attendees. On a positive note the companies have invited the union advocates to attend Distribution Network Operators /National Grid

SHE managers meetings on a quarterly basis, the first of which was held on Monday 21st January 2013 at Eastwood Hall near Nottingham.”

**Steve Stott, Electricity North West Prospect Health & Safety Rep.**

“Powering Improvement has generated a welcome impetus for health and safety improvement, with collaboration being key to its success. Our growing networks of advocates are committed to supporting and making visible the health and safety measures agreed within their organisations in pursuit of the Powering Improvement strategy, demonstrating the added value unions bring: we support what we help create. We particularly welcome the openness around asset-related incidents because of the industry’s mature determination to prevent recurrences of these damaging and often tragic events.”

**Sarah Page, Prospect H&S Officer**

“Last year was another successful year for the Powering Improvement strategy demonstrating again the benefits of companies, trade unions and regulator working together as partners to achieve real improvements in health and safety performance. I would particularly like to thank the members of the Asset

Management Sub-Group for their sterling efforts throughout 2012 (continuing into this year) in support of the wide range of outputs outlined in the Delivery Plan.”

**Peter McCormick, ENA Powering Improvement Co-ordinator**

“The new asset management guidance that was produced during 2012 provides a valuable resource for the electricity industry; it is evidence of the interrelationship between good asset management and working safely. One example is the collection of case studies in the Review of Asset Related incidents publication which provides a fresh opportunity to remember past incidents and share/implement the lessons learned by others. It is particularly encouraging that, as a direct result of Powering Improvement activity in 2012, work has now started nationally on the integration of human asset management systems into physical asset management systems and standards.”

**Nick Summers, HSE, Head of Utilities Section Manufacturing, Transportation and Utilities Sector - Operational Strategy Division**

## 2010 THEME – LEADERSHIP

Effective leadership runs to the very heart of the Powering Improvement strategy. At the beginning of each year the champion(s) for that year write to senior management in ENA and Energy UK companies highlighting the activities planned for the year and seeking continued support. This is always forthcoming. The strategy continues to be actively supported at the highest levels of management within the sector and is regularly discussed at board room level.

In 2012 Powering Improvement was a standing agenda item at the ENA SHE Committee meetings as you would expect but also at the ENA Board. Peter McCormick attended both Board meetings (held in May and October) in person to provide an update on progress.

## 2011 THEME – OCCUPATIONAL HEALTH AND WELL-BEING

Powering Improvement has provided the opportunity to specifically raise the profile and importance of occupational health within the workplace, and this was the priority topic of focus during 2011. The ENA Occupational Health Committee oversaw the introduction of initiatives developed in support of the strategy, and during 2012 has continued to apply the published sector guidance to individual company practices. Achievements were outlined in the Powering Improvement Annual Report for 2011 and all of the information is freely available via the Powering Improvement web site.

Going forward the Committee will review progress and address any new issues as they arise to maintain the momentum in raising awareness of occupational health. An integrated approach to the management of occupational health is still required via the use of awareness programmes, employee engagement, specialist OH healthcare provision and ongoing support at all levels of the organisation. This is achieved through the continued implementation of suitable health surveillance systems and fitness to work

programmes that not only maintain the health, wellbeing and welfare of employees, but also provide business cost benefits.

The Committee has now identified the need to review the indicators of success that are applied to occupational health initiatives. Whilst established data collection routes will continue to be used to provide continuity and benchmark progress to date, there is also a need for leading indicators of performance and additional reporting metrics to be employed. The Committee is therefore looking to develop high level monitoring protocols based on existing indicators that could be adopted by all the companies, thereby enabling both a sector wide review of progress and inter-company comparison. A combination of health data (lagging) and proactive initiatives (leading) are proposed as suitable indicators of performance, which once developed will enable progress to be measured throughout the lifetime of the Powering Improvement strategy. These indicators are likely to be based on sickness absence data, health surveillance programmes, occupational health KPIs and achievements of initiatives on specific topics.

Industry initiatives have developed alongside consideration of Government policy on occupational and public health matters. Companies are working to integrate the new Medical Fit Note within their procedures, a recommendation arising from Dame Carol Black's review. The introduction of the Responsibility Deal invited businesses to help tackle public health issues within the workplace, and where possible member companies are implementing programmes in support of the Health at Work Pledges on chronic conditions, occupational health services, employee health and wellbeing and healthy eating. The Government's Sickness Absence Review was commissioned to look at ways of improving support to employers, individuals and the State in the assistance given to those either in or in danger of entering long term unemployment. The report included recommendations on routes to keeping employees in work and their rehabilitation following illness, and companies

will again consider how best to align company practices with Government policy.

The Occupational Health Committee will continue to draw on the medical expertise of the Occupational Health Advisory Group and engage with the Energy UK Occupational Health Forum to ensure a partnership approach to the management of occupational health issues in the sector is maintained.

## MEASURING PROGRESS

### LEADING INDICATORS

When Powering Improvement was launched it was agreed that progress should be measured by a mixture of lagging and leading indicators. The following indicators were agreed by the Powering Improvement Steering Group (see Appendix 4 for membership).

#### Activity

- > Level of penetration of Powering Improvement into the industry (percentage of target organisations engaged either through attendance at an event, or through a positive written acknowledgement of support for the activities); this will be monitored through the survey monkey questionnaire. A baseline of awareness was established in 2012.
- > Percentage of target organisations who report to have taken activity based on the strategy; this is being monitored through reports back to National HESAC.
- > Number of hits on the Powering Improvement website.
- > Powering Improvement Communications log; this is regularly updated and will be available on the Powering Improvement website.
- > Number of new case studies uploaded to the Powering Improvement website; six asset

management case studies were uploaded since the last annual report together with the publication of the ENA SHE Review that contains a wide range of asset management case studies.

#### Awareness

- > Coverage of specific issues raised in industry and in-house publications; a number of articles were published in industry and engineering periodicals.
- > Results of an Annual industry Powering Improvement awareness survey; this is being monitored via the survey monkey questionnaire.
- > Number of company tool box talks on Powering Improvement (or delivery plan issues) delivered.

#### Impact

- > Self-report from each participating organisation of the strategy's impact – extent of influence and perceptions of change; this is being monitored through companies providing reports to meetings of National HESAC.
- > Percentage of organisations who have done something that they otherwise would not have done in response to the strategy; again, this is being monitored by National HESAC.

An indication of such work carried out in 2012 can be found in the Powering Improvement Communications Log, which will be available on the Powering Improvement website.

### LAGGING INDICATORS

ENA member companies have given a commitment to continue to collect the data that was collated for the previous industry Health & Safety initiative, SAFELEC 2010, in order to monitor the sector's performance during Powering Improvement. These figures are regularly monitored by the ENA SHE Committee. Energy UK member companies also monitor their performance.



## LOOKING FORWARD – DELIVERY PLAN 2013

The theme for 2013 is Human and Organisational Factors: Behavioural Safety and Personal Responsibility and will be championed by Mike Clancy, General Secretary of the trade union Prospect and Frank Mitchell, CEO ScottishPower Energy Networks.

To help focus efforts during the year, HSE's definition of Human Factors will be used: the environmental, organisational and job factors, and human and individual characteristics, which influence behaviour at work in a way which can affect health and safety. This definition includes three interrelated aspects that must be considered: the job, the individual and the organisation. "Behavioural safety" is used as short hand for the wide range of initiatives and programmes designed to influence workers' motivation and ability to make decisions and act in way that ensures safety.

Focusing on behaviours is a fundamental part of an effective safety management system that follows the provision of protection for workers through adequate engineering design. A narrow focus on the actions of individual operators could potentially ignore latent conditions that underlie accidents and incidents and might imply that incidents can be prevented simply by operators "taking more care".

Creating the right "safety mind set" is not a strategy which can be effective in dealing with hazards about which workers have no knowledge and which can only be identified and controlled by management.

It is recognised that management and organisational factors have a large influence on accidents and incidents, either directly or through their impact on the behaviours of employees.

Good behavioural safety programmes get to the heart of underlying influences and change these.

Behavioural safety interventions are only one aspect of 'human factors' and are just one tool in the safety practitioner's toolbox.

It is recognised that ENA and Energy UK companies will be at different stages in their approach to behavioural safety interventions. It is not the intention that each company should roll out such a programme in 2013. The intention is to review and share lessons from behavioural safety initiatives – from inside the electricity sector and also from other high hazard industries – to raise awareness of their potential benefit to both companies and individuals within those companies. By the end of 2013 workers at all levels in the electricity industry (from the most senior managers to operational staff) should be aware of how their behaviour can impact on the safety performance of their company.

The findings of the HSL Report issued in 2009 Investigation of Human Factors Safety Issues within the ENA will also inform activities throughout the year.

On behalf of National HESAC the delivery plan will be overseen by the Powering Improvement Steering Group which comprises representatives from ENA and Energy UK companies, the trade unions and HSE. Full membership details can be found in Appendix 3. Unlike last year there will be no dedicated sub-group set up to oversee the delivery plan. The ENA SHE Managers Group will provide the focus for ENA companies. Trade unions will be invited to attend the four seminars planned for 2013 and outcomes will be shared with Energy UK via National HESAC.

### Outcomes

- By the end of 2013 workers in the electricity industry (from senior managers to front line employees) will be more aware of how their behaviour can impact on the health and safety performance of their company.
- By the end of 2013 companies and trade unions will have worked together to ensure that employees are comfortable and supported in challenging unsafe acts and conditions.

## Outputs

> Review and document the range of behavioural safety initiatives and programmes that have been undertaken by electricity companies to date.

> Identify and collate national and international best practice from high-hazard industries.

The proposed delivery plan timeline for 2013 is set out in Appendix 5.

## STATEMENT BY 2013 JOINT CHAMPION



**Mike Clancy**  
General  
Secretary,  
Prospect

I was pleased to accept the invitation to be one of the Powering Improvement champions for 2013.

Good health and safety management remains integral to the work of trade unions as it has been proven that workplaces with the right management controls in place, with trade union support, are statistically safer. Powering Improvement provides a platform for further collaboration between the unions and the companies that compose the electricity sector.

I hope that this year we will be able to ensure through our well-established partnership approach that the level of mature discussion between trade unions and companies at a national level, via such groups as National HESAC, is also reflected at a local and company level.

I am pleased that the theme for 2013, whilst focussing on safe behaviours and personal responsibility, also includes human and organisational factors. The aim will be to create an environment where everyone feels able to participate, and which builds faith in the occupational health and safety systems that are employed throughout the sector.

Managers set the tone, but the worker is at the centre and also has a responsibility to actively participate and challenge where necessary.

It will be appreciated that there are some sensitivities amongst trade unions regarding “behavioural safety” initiatives which, if managed badly could potentially narrowly focus on the actions of individuals ignoring management and organisational factors that have led to those actions. I think it reflects highly on the mature relationship between trade unions and companies in the electricity sector that we can continue to work in partnership despite such sensitivities. As with all relationships, establishing and maintaining ‘trust’ will be

essential. We need to trust that we share a common agenda of improvement and trust that we will learn and not blame.

Finally, I acknowledge that ENA and Energy UK companies will be at different stages in their approach to behavioural safety interventions and support the intention that each company should not be required to roll out a “behavioural safety programme” in 2013. The intention, quite rightly, is to review and share lessons from behavioural safety initiatives – from inside the electricity sector and also from other high hazard industries – to raise awareness of their potential benefit to both companies and individuals within those companies.

I look forward to a challenging but successful year.



## STATEMENT BY 2013 JOINT CHAMPION



**Frank Mitchell**  
CEO,  
ScottishPower  
Energy  
Networks

I was delighted to accept the invitation to be co-champion for Powering Improvement 2013. The subject of behavioural safety is an area of great interest to me as at its heart is the realisation that the vast

majority of safety incidents are avoidable by bringing the potential risks to the front of mind and by ensuring those undertaking the work are competent to do so. These seem simple concepts but over the years shortfalls on either or both have led to many people being needlessly injured. We all have to remain vigilant to ensure the gains made by our industry over recent years are not eroded by

complacency or the transition of experienced staff leaving as many reach retirement. This will require strong leadership and I am committed to champion this focus across our industry. I like to keep it simple, when people working in our industry finish their shift, their families have a right to expect them home safe.

## APPENDIX 1

### Details of ENA Companies formally supporting Powering Improvement

Northern Powergrid  
UK Power Networks  
Electricity North West Ltd  
Inexus  
Manx Electricity  
National Grid  
Northern Ireland Electricity  
SSE  
ScottishPower  
Western Power Distribution

### Details of Energy UK Companies formally supporting Powering Improvement

Centrica  
E.ON  
Magnox  
EDF  
ScottishPower  
Welsh Power  
Doosan Power  
RWE  
Manx Electricity  
Drax Power  
Eggborough Power

### Trade Unions formally supporting Powering Improvement

Prospect  
Unite  
Unison  
GMB

## APPENDIX 2

### Asset Management Sub-Group 2012

Peter McCormick  
ENA (Chair)

John Steed  
HSE

Martin Sedgwick  
ScottishPower

David van Kesteren  
Northern Powergrid (for Prospect)

Peter Coyle  
ENA

Richard le Gros  
ENA

Meetings held on 16 November 2011, 11 January 2012, 8 February 2012, 12 March 2012, 10 May 2012, 11 September 2012, 5 December 2012, and 14 February 2013.

Teleconferences held on 30 January 2012, 19 July 2012 and 21 October 2012.

## APPENDIX 3

### High level guidance for the electricity sector highlighting the link between asset management, process safety and the successful management of health and safety risks to both workers and members of the public

The National HESAC Powering Improvement Asset Management sub-group will develop high level guidance for the electricity sector highlighting the link between asset management, process safety and the successful management of health and safety risks, to both workers and members of the public.

### DEFINITIONS

#### Asset management

Systematic and organised practices through which an organisation optimally manages its physical assets and their associated performance, risks and expenditures over their life cycles for the purpose of achieving its organisational strategic plan.

BSI PAS 55-1 requires organisations to establish, implement and maintain an asset management policy, strategy, objectives and plans. It then describes in some detail the typical elements that are expected within each category. However, the scope of PAS 55 is primarily focussed on the management of physical assets and asset systems. It recognises that the management of physical assets are at the 'heart' of the business and are inextricably linked with human assets, information assets, intangible assets and financial assets. As far as human assets are concerned, PAS 55 recognises that human factors such as leadership, motivation and culture are not directly addressed in the document, but that they are critical to the successful achievement of asset management and require due consideration. This focus on human assets mainly relates to issues of skills and competence but there are other factors to bear in mind.

## Process safety

Process safety for the electricity sector means making sure the whole electricity system from generation through transmission to distribution is well designed, safely operated and properly maintained. The application of management systems for the identification, understanding, and control of process hazards to prevent process-related injuries and incidents is designed to prevent incidents of high consequence but low frequency.

Process safety in the electricity sector, however, is not just concerned with the quality of pipe-work and/or valves at power stations and the effects of corrosion, and metal fatigue. It is also concerned with human factor issues and the types of factors that could lead to errors and influence people's behaviour and similarly lead to an unintentional release of dangerous substances at a power station or the catastrophic failure of a transformer at a substation.

A common tool used to explain the various different but connected systems related to achieving process safety is described by the Swiss Cheese model. In this model, barriers (Risk Control Systems) that prevent, detect, control and mitigate a major accident are depicted as slices (each having a number of holes (measured and known as Lagging Indicators) The holes represent imperfections in the risk control system. The better the barrier is managed, the smaller the holes will be. When a major accident happens, this is invariably because all the imperfections in the barriers (the holes) have become significant and have lined up. It is the multiplicity of the barriers (which may be physically-engineered containment or behavioural controls dependent on people) that provide the protection.

Process safety programmes focus on design and engineering, maintenance of equipment, effective alarms, effective control points, procedures and training. It is sometimes useful to consider process safety as the outcome or result of a wide range of technical, management and operational disciplines coming together in an organised way.

Effective process safety is the by-product of two distinct activities – excellence in asset management as portrayed by adherence to standards such as PAS 55, and through the development of performance indicators to give improved assurance of control over major hazard risks (e.g. as documented in the HSE's HSG 254 guidelines, Developing Process Safety Indicators). Although the principles of process safety are particularly applicable to large single-site complexes such as generating stations, the same procedures are equally applicable to, for example, the DNO or transmission network operator.

## Personal safety

Occupational health and safety primarily covers the management of personal safety (incidents of low consequence but high frequency). However, well developed management systems will also address process safety issues. The tools, techniques, programs etc. required to manage both process and occupational safety can sometimes be the same (for example a Work Permit system) and in other cases may have very different approaches.

## Personal versus process safety

The distinction between personal and process safety is a distinction between different types of hazards. Process safety hazards are those arising from the processing activity in which a plant may be engaged. Typical process safety incidents involve the escape of toxic substances, or the release of flammable material which may result in fires or explosions. Many process safety incidents either damage the plant or have the potential to damage the plant. Moreover, they have the potential to generate multiple fatalities and harm members of the public. Personal safety hazards, on the other hand, affect individuals but have little to do with the processing activity of the plant. Typically they give rise to incidents such as falls, trips, crushings, electrocutions and vehicle accidents.

Injury and fatality statistics tend to reflect how well an organisation is managing personal safety hazards rather than process safety hazards. Any

organisation that seeks to assess how well it is managing process safety hazards cannot therefore rely on injury and fatality data; it must develop indicators that relate specifically to process hazards (hence the need to measure leading and lagging indicators.)

Safety on major hazard sites is frequently measured by Lost Time Injuries (LTIs). However, a number of such sites that have suffered major accidents have also demonstrated good management of personal safety, based on measures such as LTIs. How can this be when they have managed LTI rates to such low levels? The reason why companies with good LTI records still have major accidents is that the causes of personal injuries and ill-health are not the same as the precursors to major accidents. Measures of injury or fatality rates do not provide an indication of how well major accident risks such as major fires and explosions are managed. Measures such as LTIs are not an accurate predictor of major accident hazards and sites may thus be unduly complacent in this respect. Although a focus on personal injuries is important, there must be the correct balance between resources addressing personal health and safety and those addressing process safety. Too much focus on measures such as LTIs can draw attention away from those aspects relating to major hazard safety.

## KEY PRINCIPLES

### Link between physical asset management and safety

Duty holders need to ensure that equipment is constructed, installed, protected, used, maintained and decommissioned in such a way as to prevent danger, so far as is reasonably practicable. There is a duty, so far as is reasonably practicable, to inspect assets with sufficient frequency to ensure awareness of any action needed to ensure compliance. The “stewardship” of the assets is therefore risk-based and asset owners have to factor this into their whole business process.

This stewardship is shown in diagrammatic form in Figure 1. Here, the asset database is populated with information from new assets as well as data from the condition of in-service assets. The database itself drives the inspection and preventive maintenance processes, both of which have a policy foundation. For example, many asset owners have moved away from traditional time-based preventive maintenance regimes in favour of condition-based or reliability-centred approaches. The results from such fieldwork, including from day-to-day operations and failures in service are then fed into the decision-making process labelled “Operations Management” in which various decisions are needed to be made regarding the remaining life of the asset. Underpinning this is the policy which should assist in the decision-making process, for example in simple terms whether to do more work at the time or to defer further work and organise more testing. Above all, the central management function must provide guidance on prioritising remedial work based on the criticality of the asset and/or network. Apart from the asset database routinely issuing work orders for inspection and maintenance, much of the rest of the process is human-driven. Those involved in this process need to have the necessary skills to drive the process and competence to understand and act on the results.

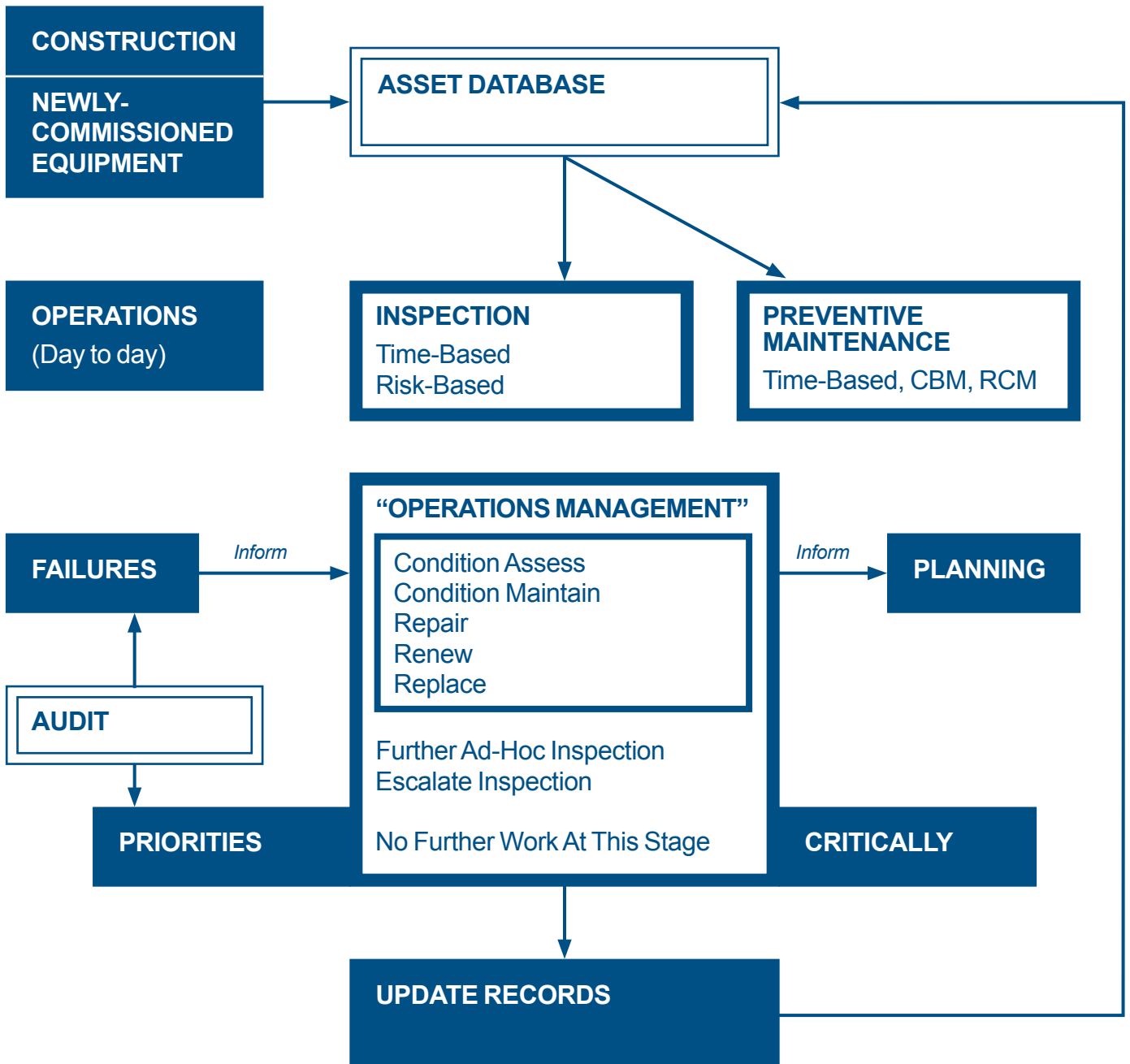
Although much of the process shown in Figure 1 is automated, much is human-driven and there is considerable scope for errors to occur. Three examples come to mind, in one instance, a scaffolder received severe electric-shock injuries while manoeuvring a pole under an 11,000-volt overhead line which oversailed his depot yard. In this case, although the overhead line circuit had been in existence for many years and patrolled, the significant use of the land had not been prompted by the asset database system - nor therefore recorded - so the inspector incorrectly classified the risk of danger. Neither did the inspector have the opportunity to “manually override” the inspection report, for example to alert the network planners of a scaffold yard under an 11,000-volt overhead line circuit; and this practice had perpetuated over more than one cycle of inspections. Other

instances (involving accidents) have arisen involving the use of non-standard equipment which had failed. For example (i) the inspector was unfamiliar with the equipment, (ii) the equipment had not formed part of the training, (iii) the equipment did not form part of a “drop-down menu” for recording and (iv) there was no consequent risk rating – therefore the asset database was not ‘aware’ of the equipment.

In other cases, accidents have happened as a result of a combination of incidents involving for example: incorrect application of switchgear interlocks, failure of the safety management system, incorrect procedures and a fatigued operator. Reason, states that it has become fashionable to claim that human error is implicated in 80 – 90% of all major accidents. Bates, more recently looked at 162 major electrical and control system incidents over 9 years and found the human error proportion to be 91%. So with this large proportion of possible human error in mind, it is vital that the asset owner considers human asset management.

However good the asset database is, as well as the operations management process (i.e. applying company procedures etc), the successful management of physical assets is largely dependent on human intervention and decision making. Some of the aspects of this are highlighted in the following section.

**Figure 1 The asset management process**





## Link between process safety and personal safety

The link between process and personal safety leads back to the three main themes of Powering Improvement: leadership, competence and worker involvement, supported by effective management systems.

Cultural or behavioural interventions will only be successful if engineering, technical and systems aspects are in place and adequately managed. Companies should:

- Ensure that all hazards have been identified.
- Ensure that human performance issues have been identified and managed - particularly in relation to safety critical roles and activities.
- Ensure that the “hierarchy of control” has been applied to prevent the realisation of identified hazards, or minimise their consequences should they occur.
- Ensure that the specific asset (from power plant level to switch gear) has the required engineering, operating and maintenance resource and experience (including appropriate staffing levels).
- Ensure that accurate operating procedures are available for all eventualities, including process upsets and emergencies.
- Ensure that operators are fully prepared to deal with all conditions, including process abnormalities. This will include identification of training needs, training, assessment, rehearsal and re-assessment. This training should include underlying knowledge of the process, so that operators can ‘troubleshoot’ - identify and respond to abnormal situations as they develop – it should not just provide the minimum knowledge required to operate the plant. This will help to manage ‘residual risk’ arising from hazards that were not identified or effectively addressed.
- Ensure that lessons have been learnt from site, company and industry experience.
- Ensure that succession planning ensures that corporate knowledge is retained.
- Ensure that safety management arrangements and risk control measures are regularly reviewed to ensure that they remain usable and relevant.
- Set high level goals on process safety and demonstrate top level leadership on process safety.
- Establish an integrated and comprehensive process safety management system.
- Ensure that appropriate process safety knowledge and expertise is present at all levels of the organisation, including contractors.
- Develop an open, trusting, positive process safety culture.
- Define management and supervisory accountabilities and set expectations on process safety.
- Provide suitable support for line management on process safety.
- Establish a set of leading and lagging process safety performance indicators and regularly monitor performance against them. Consult with regulators and industry groups to establish the best indicators.
- Implement an effective process safety audit system.

Once engineering and technical and systems issues have been addressed, personal safety issues can be addressed. Companies should ensure that:

- There is visible and real management of health and safety.
- There is management commitment and the resources to see it through.
- There is a high level of trust between management and employees.
- The focus is not just on what can be easily measured.
- Management understand the principles of process safety.

- > The importance of asset integrity and maintenance is recognised at all levels within the company.
  - > There is visible process safety leadership.
- Principles to note:
- > Process safety is never fixed – it requires constant attention.
  - > “Safety in design” requires follow-up with “safety in operation”.
  - > Process automation and management systems can bring huge benefits but may also create a false sense of security.
  - > There is usually a lack of practice and experience in dealing with unusual situations.
  - > The impact of changes to a process may take some time to manifest themselves.
  - > Asset integrity, maintenance and inspection become increasingly important as plant ages.

## FURTHER INFORMATION

J Reason, “Managing the Risks of Organizational Accidents”, Ashgate, 1997.

W F Bates, “Electrical Safety – A Perspective Based on Incidents”, IET, 4th International Conference on System Safety, October 2009.

J C Steed, Safety is Critical to Asset Management in the GB Electricity Industry, IET & IAM Asset Management Conference, November 2011.

Health and Safety Executive, “Leadership in the major hazard industries”, [www.hse.gov.uk/pubns/indg277.pdf](http://www.hse.gov.uk/pubns/indg277.pdf).

Health and Safety Executive, “Case Study: ScottishPower – Power generation company gets to grips with process safety”, [www.hse.gov.uk/comah/case-studies/case-study-scottish-power.pdf](http://www.hse.gov.uk/comah/case-studies/case-study-scottish-power.pdf).

## APPENDIX 4

Powering Improvement Steering Group for 2012:

Peter McCormick, ENA (Chair)

Nick Summers, HSE

Sarah Page, Prospect

Kevin Coyne, Unite (from August 2012)

Stephen O’Neill, Energy UK

Peter Coyle, ENA

Mike Leppard, ENA

New members from January 2013:

Dave Beese (Energy UK), Bud Hudspith (Unite) and Peter Vujanic (SSE).

Meetings held on: 9 March, 28 June, 9 July (via teleconference), 14 September and 14 December.

## APPENDIX 5

### 2013 DELIVERY PLAN – TIMELINE

#### January

Champions send joint letter to ENA and Energy UK companies and trade unions.

Produce video of champions to show before meetings and post on Powering Improvement website.

#### 21 January

First ENA SHE Managers seminar.

## February

### 26 February

Meeting of PISG.

### 27 February

Meeting of National HESAC.

Produce first case study on PI website by the end of February.

## March

Hold first national workshop.

Issue Powering Improvement 2012 Annual Report.

## April

### 15 April

Second ENA SHE Managers seminar.

Produce second case study on Powering Improvement website.

## May

### 1 – 3 May

SHE Management Conference (Champions Frank Mitchell and Mike Clancy to speak).

### 7 May

Meeting of PISG.

### 14 May

Meeting of National HESAC.

Issue review of initiatives and programmes undertaken by electricity companies to date.

Champions to speak to ENA Board and at ENA Well-Connected event.

## June/July

### 15 July

Third ENA SHE Managers Seminar.

Produce third case study on PI website by the end of June.

Have completed the identification and collation of international best practice from high-hazard industries by the end of July.

## August/September

### 17 September

Meeting of PISG.

### 18 September

Meeting of National HESAC.

Produce fourth case study on Powering Improvement website by the end of August.

Produce first draft of high level principles and guidance by the end of September.

## October/November

Hold second national workshop.

Issue ENA SHE Review.

### 14 October

Fourth ENA SHE Managers seminar.

Produce fifth case study on Powering Improvement website by the end of October.

Produce second draft of high level principles and guidance by mid-October.

## December

### 4 December

Meeting of PISG.

### 4 December

SHE Reception (Champions to speak).

Produce sixth case study on Powering Improvement website by the end of December.

Issue high level principles and guidance document at SHE Reception on 4 December.



#### **PARTNERS**

Energy Networks Association (ENA) is the industry body for the UK electricity transmission and distribution companies.

Energy UK is the trade association for the UK electricity generation companies.

#### **TRADE UNIONS:**

GMB  
Prospect  
Unison  
Unite

#### **GOVERNANCE**

Powering Improvement is managed and directed by National Health and Safety Advisory Committee (HESAC) comprising representatives from Energy UK and ENA member companies, the industry trade unions (GMB, Prospect, Unison and Unite) and HSE.

Executive decisions on behalf of ENA member companies rest with the ENA SHE Committee and ultimately the ENA Board.

Executive decisions on behalf of Energy UK companies rest with the Energy UK Health and Safety Forum and ultimately the Energy UK Board.

