

**Human and Organisational factors surrounding the interaction between staff in two key operational roles
- Senior Authorised Persons (SAPs) and Competent Persons (CPs)**

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1. Foreword

Electricity network operators are committed to attaining the highest possible standards of health and safety. With the support of key stakeholders, a collaborative approach and shared learning, network operators seek to establish best practices for health and safety management within their organisations. For this reason, Industry works with employees and their representatives on the most important challenges, and, by embracing the concepts of continuous learning, it aims to eliminate incidents and prevent injuries.

Guided by these principles, a key part of the journey to zero harm is an improved understanding how human errors can affect safety performance by identifying and eliminating underlying and contributory causes. The Health and Safety Executive (HSE) explains human factors as referring to environmental, organisational and job factors, and human and individual characteristics, which influence behaviour at work in a way which can affect health and safety.

With this definition in mind, and as part of the Powering Improvement programme, the Electricity Network Association's (ENA) Safety, Health and Environment (SHE) Committee commissioned a study into the human and organisational factors of two fundamental roles for effective coordination of safety during work on electricity networks: Senior Authorised Persons (SAPs) and Competent Persons (CPs). Alongside the many other factors that are considered crucial to ensuring safe outcomes in the workplace, such as training, competency, supervision and incident investigation, the effective coordination at the point of work between these two crucial roles is paramount.

On behalf of members, ENA would like to thank the Health & Safety Laboratory (HSL) for performing this research to develop new insights into the potential human factors that influence safety performance outcomes. By concentrating its consultation on the leadership, behavioural and process aspects of these two front-end roles, we hope to use the research findings to inform an agreed plan of future work which tests their validity and, as appropriate, to introduce improvement measures that are applied on a wider scale across the industry.. The challenge is considerable; nevertheless, our members are open to learning what more they can do to help employees work more effectively and to eliminate harm from all activities. By working together in an open and honest way, we are confident that this will provide the necessary impetus to further build upon the transformation in the safety performance of the Industry already achieved.

We would also like to thank the SAPs and CPs who took the time to attend the various workshops. It is only with their support and professionalism that we can deliver upon our shared objectives. Our members will be seeking to take the key learning from this work and together with stakeholders explore opportunities for further improvements. It is unlikely that all member companies will agree with the views and opinions captured

by the study. However, even where there are disagreements, there are opportunities to close the gaps in mutual understanding by the sharing of information and learning.

The following companies contributed to the project.

- Electricity North West
- GTC
- National Grid
- Northern Ireland Electricity Networks
- Northern Powergrid
- ScottishPower Energy Networks
- Scottish & Southern Electricity Networks
- UK Power Networks
- Western Power Distribution.

2. Background

The intention during 2018/19 was to focus action specifically on the human and organisational factors surrounding the interaction between staff in two key operational roles - Senior Authorised Persons (SAPs) and Competent Persons (CPs), i.e. how well they interact to ensure safe outcomes .

The focus was on how staff in these key roles communicate with one another (verbally and in writing). For example, the study asked “is there a culture that allows an adequate level of challenge (upwards as well downwards) when safe systems of work are being developed, agreed or issued?” In the interest of health and safety staff need to be comfortable and willing to, when necessary, challenge and be challenged; this is something the study explored.

The goal was for SAPs (despite their seniority, competence and the fact that they issue safety documents daily) to understand that challenge is positive and to be accepted, and that those receiving safety documents are willing to challenge when justified. Ultimately this is about ensuring staff in these key roles work well together to achieve good results and safe outcomes.

To structure the overall work, HSL explored three areas of influence on the health and safety outcomes of work involving SAPs/CPs, these were:

1. Leadership (i.e. the influence of senior and local/supervisory leadership on working practices; are workers encouraged to stop and challenge when they have H&S concerns?);
2. Processes (i.e. are the written and established procedures and ways of doing this correct? Are procedures available, well written and easy to follow? Are procedures practical to follow and effective?);

3. Behaviours (i.e. why do people do what they do? what causes behaviours to deviate from training standards and company procedures? what do we need to do to ensure our industry culture is just and fair?).

During 2017/18, within the GB electricity networks sector, HSE undertook a proactive inspection intervention that targeted (amongst other things) how network operators manage the competence of SAPs. One driver for this was the fact that HSE had concluded that between 2002 and 2017 some 13 fatal incidents involving SAPs (and/or authorised persons) had occurred in the electricity networks sector for which setting to work issues had often been identified as a contributory factor. These included nine electrocutions.

The 2018/19 theme was championed by Sue Ferns, Deputy General Secretary of the Trade Union Prospect and Peter Emery, CEO Electricity North West. Having joint champions for the 2018/19 theme mirrored the successful approach taken in 2013 (when in the first Phase of Powering Improvement the annual theme was 'Human and Organisational Factors: Behavioural Safety and Personal Responsibility').

The annual theme provided an opportunity to define and promote relevant human and organisational factor related messages not only for 2018/19, but to 2020 and beyond. The Powering Improvement Steering Group (PISG) under the governance of the electricity industry National Health and Safety Advisory Committee (HESAC), and industry committees (overseen by the ENA's SHE Committee and Energy UK's Safety Leaders Group) were responsible for setting the priorities in, and managing implementation of, the Delivery Plan. PISG comprises of representatives from ENA, Energy UK, electricity companies, the Trade Unions and HSE.

3. 2013 Achievements

During 2018/19 we have built on Phase 1 of Powering Improvement when in 2013 the annual delivery theme was 'Human and Organisational Factors: Behavioural Safety and Personal Responsibility'. It's therefore worth reflecting on the key outputs of 2013, these included:

- A review of the behavioural safety initiatives and programmes that had been undertaken by electricity companies at that time;
- Production and publication of overarching guidance – Human & Organisational factors in the Electricity Sector – High Level Principles, available on the Powering Improvement website.
- Publication of a special edition SHE Review which included examples of good practice from both ENA and Energy UK member companies, and the principles to be adopted when developing behavioural safety programmes (available on the Powering Improvement website).
- Publication of a suite of Case Studies from energy companies and contractors programmes (available on the Powering Improvement website).
- National workshops hosted by both ENA and Energy UK.

- As an outcome, the 2013 delivery plan set out to ensure that by the end of 2013 workers in the electricity industry (from senior manager to employees) were more aware of how their behaviour can impact on the health and safety performance of their company and also companies and trade unions had worked together to ensure that employees are comfortable and supported in challenging unsafe acts and conditions

4. 2018 – View of the Champions

Peter Emery, Chief Executive Officer, Electricity North West:



“I was pleased and excited to take on the role of a Champion during 2018/19 focusing on Human and Organisational Factors. My experience working in large refineries, power stations and more recently in electricity networks and the construction industry show that even with the best systems, policies and procedures in place, top class safety performance will not be achieved without positive and constructive working relationships at all levels both in and between organisations. The fundamental ingredient that underpins all this is trust and this is only sustained through action and safety leadership in the widest sense. I will continue to highlight the importance of these factors to secure a safe working environment for all.”

Sue Ferns, Senior Deputy General Secretary, Prospect:



“Despite reductions in accident rates, we still have a long way to go to achieve our joint aim of ensuring that everyone in the sector returns home after a day at work uninjured and without any harm to their health.

2018/19’s work on human and organisational factors has focused our minds so:

- *Everyone is trained to work safely and to recognise when to stop the job;*
- *We build a culture where people are encouraged and supported to work safely;*
- *We improve communication so individuals both give and accept challenges to the way they work;*

A safe working environment is also a productive working environment: moreover a culture that values individuals will appeal to all parts of society as the industry aims to recruit an unprecedented number of new entrants.

Prospect, and the other unions in the sector, worked at national and company level throughout 2018/19 promoting improvements in working culture so staff felt safe and valued.”

5. 2018 Delivery Plan

5.1 Background

In 2018 ENA Safety Health and Environment Committee (SHEC) commissioned a human and organisational factors review into the roles and responsibilities of Senior Authorised Persons (SAPs) and Competent Persons (CPs) in the electricity networks sector. It is recognised that both SAP and CP roles involve the identification and control of electrical hazards and non-electrical hazards. The focus of this review was on electrical safety and therefore this review was about how these two roles work together to achieve good results and electrical safety outcomes. The review was driven by the annual delivery plan for the electricity industry's health and safety strategy, Powering Improvement, and the desire to take action relating to human and organisational factors. The Powering Improvement Strategy itself was developed from an earlier 2009 HSL research report into the challenges facing the electricity industry.

5.2 Workshops

The main part of the research involved consultation with SAPs and CPs in a series of five one-day workshops across five UK locations – Tipton, London, York, Glasgow and Buxton. A total of 108 SAPs and CPs attended the workshops, comprised of 69 SAPs and 39 CPs who participated in workshops between March and April 2019. The table below shows the number of SAPs and CPs that took part in each workshop.

Location	Number of SAPs per workshop	Number of CPs per workshop
Tipton	12	10
London	13	10
York	14	6
Glasgow	17	7
Buxton	13	6
Number of SAPs and CPs	69	39
Total	108	

5.3 Method

As indicated earlier, key issues in the areas of leadership, behaviours and processes were explored to identify their influence on the electrical safety outcomes of work involving SAPs and CPs. Key leadership issues explored included the provision of support and recognition, the promotion of fairness and trust, and organisational

learning. For the purposes of this research, behaviours refers to the competence assurance system in place to support SAP and CP behaviour, and processes refers to the usability of processes and procedures for SAPs/CPs.

The research used two main sources of data collection: (i) a desk-based high level review of a sample of safety documentation and (ii) face-to-face consultation with a total of 108 SAPs and CPs. As part of the workshops, individual questionnaires were also completed. The sample of SAPs and CPs used may be considered small relative to the total population of SAPs and CPs and therefore is not statistically representative of the SAP and CP population. It is not possible to comment on how far the results can be extrapolated across the SAP and CP population, but consistency between workshops and triangulation of data (i.e. review of safety documentation, group consultation and use of individual questionnaires) provides some assurance that key relevant themes for the sector have been identified.

The findings from the workshop data reflect the perceptions of SAPs and CPs from a diverse range of organisations in the electricity networks sector and therefore represent an appropriate spectrum of views and experiences from which to draw conclusions. The scope of this work did not require any identification of organisations or distinctions between transmission and distribution employees.

6. Main Findings

6.1 Challenges for SAPs and CPs

Combined evidence from SAP and CP consultation, documentation reviews and individual questionnaire results have highlighted a number of influences that can present barriers to SAPs and CPs working effectively. From a 'leadership' perspective, the influences included provision of resources particularly in relation to numbers and workload of SAPs and perceived pressures to 'keep the lights' on from management, a pressure that was perceived by workshop participants in this study to stem from Ofgem targets. Limitations in how the industry learns from accidents and some perceptions of a blame culture were also highlighted. Limitations of the competence assurance system, as viewed by SAPs and CPs, fostered a lack of trust when working with unknown SAPs and CPs. An overload of procedures, procedural changes and lack of operational input into procedure development were highlighted as challenges in relation to processes. These findings on the challenges for SAPs and CPs were consistent across all workshops.

6.2 Practices enabling good performance for SAPs and CPs

It was evident that there were positive features of leadership, behaviours and processes that enabled SAPs and CPs to work together, achieve good results and desired electrical safety outcomes. The positive relationship between SAPs and CPs,

evident from workshop discussions, and the respectful appreciation of the pressures both roles face suggests good team working between SAPs and CPs. The widespread recognition from both roles on the importance of challenging each other in their verbal and written safety critical communications to meet electrical safety standards suggests that the messages (about the importance of challenge) from management and/or the competence assurance systems that are in place are being understood and enacted upon by SAPs and CPs.

Some specific examples of good practice were provided by SAPs and CPs. These examples were not consistently discussed in all the workshops, but they illustrate the range of good practice that was identified across the different workshops.

6.2.1 Leadership:

- Use of 'customer champions' to alleviate pressure from SAPs/CPs;
- Supervisory support on site;
- Prompt stand downs and interviews following incidents are all indications of leadership demonstrating consideration for SAPs/CPs and providing support;
- Management intervention to send SAPs/CPs home if their hours were considered excessive and/or SAP/CP experiencing fatigue.

6.2.2 Behaviours:

- Local mentoring of SAPs/CPs;
- Opportunities for face-to-face discussion where electrical safety knowledge and practices are shared;
- Readers to view training accreditation and/or operational authorisations in the field;
- Training that includes a good mix of classroom teaching and on site experience.

6.2.3 Processes:

- Ease of access to procedures (e.g. via Ipads);
- Useful challenge provided by safety champions to procedures;
- Effective communication regarding procedural change.

7. Opportunities for Improvement

Opportunities for improvement for the industry were identified. Efforts to provide support and recognition for SAPs/CPs, organisational learning, demonstration of genuine care for SAPs and CPs, and promotion of fairness and trust were identified as areas of leadership where improvements could enhance electrical safety outcomes for SAPs and CPs. Competency standards that define the knowledge, skills, attitudes and behaviours expected for SAPs and CPs and are then used to inform training, recruitment and authorisation processes would help to address limitations in the

competence assurance system. Operational input into procedures relevant to SAPs and CPs and a review of how changes in relevant procedures are communicated were also identified as opportunities to enhance electrical safety outcomes for these roles. Specific opportunities for improvement for the three areas explored are outlined below in 7.1.

7.1 Leadership:

1. Ensure there are clear two-way communications between management and SAPs/CPs about the resource required for SAPs and CPs to undertake their work. This should involve ongoing two-way discussions between management and SAPs/CPs to ensure a common understanding about the resources required to get the job done safely.
2. Ensure there is greater clarity of the SAP role and/or organisational priorities to enable SAPs to focus on dynamic electrical safety risk management. Strive to ensure that SAPs and CPs feel valued at work by providing timely, specific and constructive positive feedback when they demonstrate good performance in electrical safety.
3. Acknowledge and understand the potential for fatigue amongst managers and SAPs/CPs and the impact this can have on SAP and CP performance. Review fatigue risk management practices in the industry to identify any steps that can be taken to reduce the likelihood of fatigue related accidents and optimise SAP/CP alertness.
4. Review accident investigation processes to ensure human factors are integrated into the process and there is identification of contributory causal factors at an individual, job and organisational level.
5. Consider leadership styles and practices in relation to the communication of safety messages to the workforce to ensure leadership behaviour and practices foster open and trusting communication.
6. Help to enable a fair and just culture to improve trust and confidence with SAPs and CPs in the reporting and investigation system. Emphasise a desire to learn at an organisational level in discussion with workers at all levels and provide SAPs/CPs with timely feedback on investigation progress and outcomes.

7.2 Behaviours:

7. Review/develop competency standards for the role of SAPs and CPs with a view to ensuring there is clarity about the required knowledge, skills, attitudes and behaviours of SAPs and CPs.
8. Review how competence is developed, assessed and maintained, by comparing the current training provision against the defined competency standards

for SAPs and CPs, including arrangements for mentoring opportunities and face-to-face discussion sessions between SAPs, CPs and other relevant workers (e.g. Control Engineers) where appropriate.

7.3 Processes:

9. Involve a range of end-users (including SAPs and CPs) in the development and updating of procedures. With end-user involvement in updates, gather views on whether any procedures/processes can be streamlined or removed. There may also be opportunities to improve usability, or alternative formats, such as checklists and decision aids (rather than 'text heavy' documents).

10. Review how changes in procedures and processes are made and communicated to SAPs and CPs to ensure they are fit for purpose. It is human nature to make assumptions and unless changes are clear, these could easily be overlooked. Ensure there is clarity on document ownership and version control.

Full comprehensive details of the HSL report entitled “*Review of Senior Authorised persons and Competent Person Roles*” can be found in Appendix 1

8. Next Steps

The next steps is for the member companies ENA, Energy UK, the Trade Unions and HSE to consider the key findings of the study and ensure that the findings and recommendations of the study are built into the next phase of Powering Improvement strategy (2020-2025) and also considered for inclusion in local member company business plans those opportunities for improvement identified in the HSL study in particular focusing on how the two key roles of the SAP and CP perform and interact to ensure safe outcomes.

9. Appendix 1

Report by Health & Safety Laboratory (HSL)

“Review of Senior Authorised Persons and Competent Persons Roles”



Review of Senior Authorised Person and Competent Person Roles: Support for the Energy Networks Association

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The following companies contributed to the project by allowing staff to participate in the one-day workshops. Their open and committed involvement has made this work possible:

- Electricity North West
- GTC
- National Grid
- Northern Ireland Electricity Networks
- Northern Powergrid
- ScottishPower Energy Networks
- Scottish and Southern Electricity Networks
- UK Power Networks
- Western Power Distribution

EXECUTIVE SUMMARY

Background

The Energy Networks Association's (ENA's) Safety Health and Environment (SHE) Committee commissioned a human and organisational factors review into the roles and responsibilities of Senior Authorised Persons (SAPs) and Competent Persons (CPs) in the electricity networks sector. It is recognised that both SAP and CP roles involve the identification and control of electrical hazards and non-electrical hazards. The focus in this review was on electrical safety and therefore this review was about how these two roles work together to achieve good results and electrical safety outcomes. The review was driven by the annual delivery plan for the electricity industry's health and safety strategy, Powering Improvement, and their desire to take action relating to human and organisational factors.

Method

Key issues in the areas of leadership, behaviours and processes were explored to identify their influence on the electrical safety outcomes of work involving SAPs and CPs. Key leadership issues explored included the provision of support and recognition, the promotion of fairness and trust and organisational learning. For the purposes of this research, behaviours refers to the competence assurance system in place to support SAP and CP behaviour and processes refers to the usability of procedures and processes for SAPs/CPs.

The research used two main sources of data collection: (i) a desk-based high level review of a sample of safety documentation and (ii) face-to-face consultation with a total of 108 SAPs and CPs (69 SAPs and 39 CPs) in a series of five one-day workshops across the UK. As part of the workshops, individual questionnaires were also completed. The sample of SAPs and CPs used may be considered small relative to the total population of SAPs and CPs and therefore is not statistically representative of the SAP and CP population. It is not possible to comment on how far the results can be extrapolated across the SAP and CP population but consistency between workshops and triangulation of data (i.e. review of safety documentation, group consultation and use of individual questionnaires) provides some assurance that key relevant themes for the sector have been identified.

The findings from the workshop data reflect the perceptions of SAPs and CPs from a diverse range of organisations in the electricity networks sector and therefore represent an appropriate spectrum of views and experiences from which to draw conclusions. The scope of this work did not require any identification of organisations or distinctions between transmission and distribution.

Main Findings

Challenges for SAPs and CPs

Combined evidence from SAP and CP consultation, documentation reviews and individual questionnaire results have highlighted a number of influences that can present barriers to SAPs and CPs. From a 'leadership' perspective, the influences included provision of resources particularly in relation to numbers and workload of SAPs and perceived pressures to 'keep the lights' on from management, a pressure that was perceived by workshop participants in this study to stem from Ofgem targets. Limitations in how the industry learns from accidents and some perceptions of a blame culture were also highlighted. Limitations of the competence assurance system, as viewed by SAPs and CPs, fostered a lack of trust when working with unknown SAPs and CPs. An overload of

procedures, procedural changes and lack of operational input into procedure development were highlighted as challenges in relation to processes. These findings on the challenges for SAPs and CPs were consistent across all workshops.

Practices enabling good performance for SAPs and CPs

It was evident that there were positive features of leadership, behaviours and processes that enabled SAPs and CPs to work together, achieve good results and desired electrical safety outcomes. The positive relationship between SAPs and CPs, evident from workshop discussions, and the respectful appreciation of the pressures both roles face suggests good team working between SAPs and CPs. The widespread recognition from both roles of the importance of challenging each other in their verbal and written safety critical communications to meet electrical safety standards suggests that the messages (about the importance of challenge) from management and/or the competence assurance systems that are in place are being understood and enacted upon by SAPs and CPs.

Some specific examples of good practice were provided by SAPs and CPs. These examples were not consistently discussed in all the workshops but they illustrate the range of good practice that was identified across the different workshops:

Leadership:

- Use of 'customer champions' to alleviate pressure from SAPs/CPs;
- Supervisory support on site;
- Prompt stand downs and interviews following incidents are all indications of leadership demonstrating consideration for SAPs/CPs and providing support;
- Management intervention to send SAPs/CPs home if their hours were considered excessive and/or SAP/CP report fatigue.

Behaviours:

- Local mentoring of SAPs/CPs;
- Opportunities for face-to-face discussion where electrical safety knowledge and practices are shared;
- Readers to view training accreditation and/or operational authorisations in the field;
- Training that includes a good mix of classroom and on site experience.

Processes:

- Ease of access to procedures (e.g. via ipads);
- Useful challenge provided by safety champions to procedures;
- Effective communication regarding procedural change.

Opportunities for Improvement

Opportunities for improvement for the industry were identified. Efforts to provide support and recognition for SAPs/CPs, organisational learning, demonstration of genuine care for SAPs and CPs and promotion of fairness and trust were identified as areas of leadership where improvements could enhance electrical safety outcomes for SAPs and CPs. Competency standards that define the knowledge, skills, attitudes and behaviours expected for SAPs and CPs and be used to inform training, recruitment and authorisation processes would help to address limitations in the competence assurance system. Operational input into procedures relevant to SAPs and CPs and a

review of how changes in relevant procedures are communicated were also identified as opportunities to enhance electrical safety outcomes for these roles. Specific opportunities for improvement for the three areas explored are outlined below:

Leadership:

1. Ensure there are clear two-way communications between management and SAPs/CPs about the resource required for SAPs and CPs to undertake their work. This should involve ongoing two-way discussions between management and SAPs/CPs to ensure a common understanding about the resources required to get the job done safely.
2. Ensure there is greater clarity of the SAP role and/or organisational priorities to enable SAPs to focus on dynamic electrical safety risk management. Strive to ensure that SAPs and CPs feel valued at work by providing timely, specific and constructive positive feedback when they foster good performance in electrical safety.
3. Acknowledge and understand the potential for fatigue amongst managers and SAPs/CPs and the impact this can have on SAP and CP performance. Review fatigue risk management practices in the industry to identify any steps that can be taken to reduce the likelihood of fatigue related accidents and optimise SAP/CP alertness.
4. Review accident investigation processes to ensure human factors are integrated into the process and there is identification of contributory causal factors at an individual, job and organisational level.
5. Consider leadership styles and practices in relation to the communication of safety messages to the workforce to ensure leadership behaviour and practices foster open and trusting communication.
6. Help to enable a fair and just culture to improve trust and confidence with SAPs and CPs in the reporting and investigation system. Emphasise a desire to learn at an organisational level in discussion with workers at all levels and provide SAPs/CPs with timely feedback on investigation progress and outcomes.

Behaviours:

7. Review/develop competency standards for the role of SAPs and CPs with a view to ensuring there is clarity about the required knowledge, skills, attitudes and behaviours of SAPs and CPs.
8. Review how competence is developed, assessed and maintained, by comparing the current training provision against the defined competency standards for SAPs and CPs, including arrangements for mentoring opportunities and face-to-face discussion sessions between SAPs, CPs and other relevant workers (e.g. Control Engineers) where appropriate.

Processes:

9. Involve a range of end-users (including SAPs and CPs) in the development and update of procedures. With end-user involvement in updates, gather views on whether any procedures/processes can be streamlined or removed. There may also be opportunities to improve usability, or alternative formats, such as checklists and decision aids (rather than text 'heavy' documents).
10. Review how changes in procedures and processes are made and communicated to SAPs and CPs to ensure they are fit for purpose. It is human nature to make assumptions. Unless changes are clear, these could easily be overlooked. Ensure there is clarity on document ownership and version control.

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1 INTRODUCTION

1.1 STUDY CONTEXT

The Energy Networks Association's (ENA's) Safety Health and Environment (SHE) Committee commissioned a human and organisational factors review into the roles and responsibilities of Senior Authorised Persons (SAPs) and Competent Persons (CPs) in the electricity networks sector. It is recognised that both SAP and CP roles involve the identification and control of electrical hazards and non-electrical hazards. The focus in this review was on electrical safety and therefore this review was about how these two roles work together to achieve good results and electrical safety outcomes.

This review was driven by the annual delivery plan for the electricity industry's health and safety strategy, Powering Improvement, and their desire to take action relating to human and organisational factors. It was also driven by an analysis of accidents which happened between 2002 and 2017 when it was identified that 13 fatal incidents involving operational persons occurred within the electricity networks sector. These included electrocutions (HSE, 2018).

The purpose of the work was to consider, from an electrical safety perspective, how SAPs and CPs interact when operating to complete work on electrical systems. Three areas of influence on the electrical safety outcomes of work involving SAPs and CPs were explored: (i) Leadership i.e. the influence of senior and local/supervisory leadership on working practices and (ii) Behaviours i.e. why do people do what they do? What causes behaviours to deviate from training standards and company procedures? (ii) Processes i.e. the written procedures and processes in place.

This review was supported by all ENA member companies i.e. all UK Transmission Network Operators (TNOs) and Distribution Network Operators (DNOs).

2 METHODS

There were two main sources of data collection: (i) a desk-based high level review of a sample of documentation and (ii) face-to-face consultation with SAPs and CPs in a series of workshops. As part of the workshops, individual questionnaires were also completed.

2.1 DESK-BASED REVIEW

The high-level review of a sample of safety documentation (relevant to the two roles) included incident summaries, procedure and policy documents regarding accident reporting and investigation and Powerpoint accounts of any significant incidents. The primary purpose of this review was to gain an understanding of the sector and organisational context relating to SAPs and CPs, and to inform the content of workshop materials.

2.2 CONSULTATION WITH SENIOR AUTHORISED PERSONS AND COMPETENT PERSONS: WORKSHOPS

2.2.1 Workshop Participants

The main part of the research involved consultation with SAPs and CPs in a series of five one-day workshops across five UK locations – Tipton, London, York, Glasgow and Buxton. A total of 108 SAPs and CPs attended the workshops, that is 69 SAPs (making up 64% of the sample) and 39 CPs (making up 36% of the sample) participated in workshops between March and April 2019. Table 1 shows the number of SAPs and CPs that took part in each workshop.

Table 1 Number of SAPs and CPs consulted across five UK locations

Location	Number of SAPs per workshop	Number of CPs per workshop
Tipton	12	10
London	13	10
York	14	6
Glasgow	17	7
Buxton	13	6
Number of SAPs and CPs	69	39
Total	108	

The following nine organisations were represented:

1. National Grid
2. Northern Ireland Electricity Network
3. Norther Powergrid
4. Scottish Power
5. Scottish and Southern Energy
6. Scottish and Southern Electricity Networks
7. UK Power Networks
8. Western Power Distribution

9. GTC

2.2.2 Workshop materials

The workshops consisted of a series of face-to-face discussion sessions facilitated by HSL researchers. Morning discussion sessions lasting between one hour and one hour 30 minutes were held with SAPs only and CPs only. A joint collaborative discussion with both SAPs and CPs was held in the afternoon. At the start of the workshop, details about the purpose of the research and assurances about anonymity and confidentiality were reiterated to participants.

Semi-structured question guides for the workshop discussions were developed as informed by the results of the high level desk-based review and established models of leadership and human factors. The topic areas covered in the semi-structured question guides were designed to obtain views on the following:

- Roles and Responsibilities of SAPs and CPs;
- Skills, attitudes, knowledge and behaviours of SAPs and CPs;
- Safety critical communication;
- Provision of support;
- Promotion of fairness and trust;
- Organisational learning;
- The usability of procedures.

In the morning sessions, when one group (SAPs or CPs) were involved in workshop discussion sessions, the other group were asked to complete individual questionnaires. The questionnaires, compiled by HSL researchers, consisted of a series of 30 statements under the following three categories: (i) support, communications and learning (ii) day-to-day practices on the job and (iii) procedures and processes. Participants were required to indicate the extent to which they agreed or disagreed with each statement on a five-point Likert scale from 'strongly agree' to 'strongly disagree'. As part of this exercise, SAPs and CPs were also asked to choose any areas they thought their organisation should address as a high priority. Appendix A provides an example of the statements used in the individual questionnaires.

2.3 DATA ANALYSIS

2.3.1 Consistency with good practice

Three areas of influence on the electrical safety outcomes of work involving SAPs and CPs were explored: 'leadership', 'behaviours' and 'processes'. In order to evaluate the influence of each of these areas, key findings were summarised and assessed against a human and organisational factors framework derived from relevant HSL leadership research and human factors guidance (HSE, 1999; 2012; 2011). An overview of the framework used in this review and key issues considered in each area of leadership, behaviours and processes is provided in Figure 1.

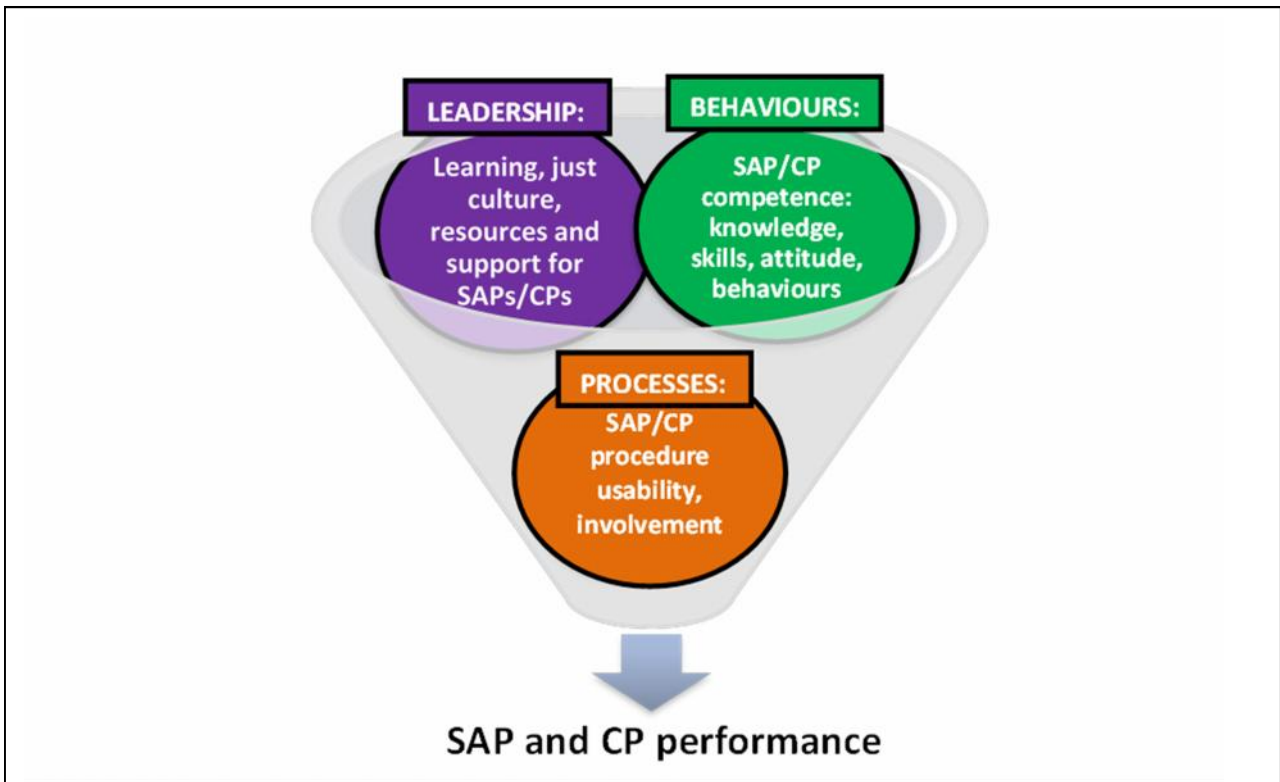


Figure 1 Framework summarising some of the key issues in each of the areas of ‘leadership’, ‘behaviours’ and ‘processes’ and their influence on the electrical safety performance of SAPs and CPs.

The framework shown in Figure 1 is simply that - a framework for understanding the factors that can influence the performance of SAPs and CPs and the ease in which they can achieve desired electrical safety outcomes. Any one factor does not necessarily fall under ‘leadership’, ‘behaviours’ or ‘processes’ but often has elements of all three.

‘Leadership’

Some of the key values of safety leadership include:

- **Providing support and recognition** e.g. providing the necessary time and resource (i.e. human and equipment) to promote healthy and safe working amongst SAPs and CPs and ensuring SAPs and CPs feel valued at work;
- **Being considerate and responsive** e.g. demonstrating consideration for SAP/CP health, safety and welfare by being proactive and prompt in dealing with safety issues, supporting decisions to stop work on safety grounds;
- **Promoting fairness and trust** e.g. fostering a just culture where SAPs and CPs are able to be open and honest and there is two-way trust between SAPs/CPs and senior leaders;
- **Encouraging improvement and innovation** e.g. learn from past mistakes, near misses and incidents.

'Behaviours'

Behaviours are strongly influenced by numerous factors - resources, processes, leadership, the design of the work environment etc. For the purposes of this research, consideration of 'behaviours' was about evaluation of the competence of SAPs and CPs and their ability to undertake responsibilities and to perform activities to a recognised standard on a regular basis. Therefore, this includes SAP and CP knowledge and skills (technical and non-technical skills), the attitude of SAPs and CPs and the behaviour of SAPs and CPs.

'Processes'

For the purposes of this research, consideration of processes refers to the procedures in place for SAPs and CPs and other elements of their physical working environment. This includes the:

- usability and accessibility of procedures;
- involvement of SAPs and CPs in procedure development;
- arrangements for review and update of procedures e.g. communication of procedural changes;
- design of their physical working environment.

2.3.2 Analysis of workshop discussion findings

A thematic approach to analysis was adopted to identify the main themes from workshops. It involved familiarisation with the workshop notes to obtain an initial understanding of the information and begin to formulate emerging themes; development of an analytical framework, and summarising the key issues that emerged for each theme.

2.3.3 Analysis of individual questionnaires

Responses to all 108 completed individual questionnaires were analysed for all three categories: (i) support, communications and learning (ii) day-to-day practices on the job and (iii) procedures and processes. To take account of reverse scoring, results were presented as percentages of favourable, neutral and unfavourable responses.

2.3.4 Considerations for interpretation of data

The findings from the workshop data reflect the perceptions of SAPs and CPs from a diverse range of organisations in the electricity networks sector and therefore represent an appropriate spectrum of views and experiences from which to draw conclusions. The scope of this work did not require any identification of organisations or distinctions between transmission and distribution.

The sample of SAPs and CPs (i.e. 69 SAPs and 39 CPs) used may be considered small relative to the total population of SAPs and CPs and therefore is not statistically representative of the SAP and CP population. It is not possible to comment on how far the results can be extrapolated across the SAP and CP population but consistency between workshops and triangulation of data (i.e. review of safety documentation, group consultation and use of individual questionnaires) provides some assurance that key relevant themes for the sector have been identified.

The HSL researchers also noted that the workshop participants valued the opportunity to talk about their experiences and were actively engaged in the discussions.

3 KEY FINDINGS AND ANALYSIS

The main source of data gathered in this review (i.e. workshop discussions) suggested that there was a positive relationship between SAPs and CPs, and a respectful appreciation of the pressures both roles face. There was widespread recognition from both roles of the importance of challenging each other in their verbal and written safety critical communications to meet electrical safety standards. Both roles perceived that they could stop work if they believed electrical safety rules were being compromised.

To ensure electrical safety standards were not compromised, both SAPs and CPs, but particularly SAPs, perceived that they were required to cope with significant pressures to overcome barriers in their daily work. They perceived that there was a need to be strong willed and confident to challenge colleagues at all levels including senior management. The factors influencing the performance of SAPs/CPs and the electrical safety standards they can achieve may be categorised as leadership, behaviours and processes, as defined in the Methods section, 2.3.1, of this report.

The following summary presents the key findings and analysis under 'leadership', 'behaviours' and 'processes'. Key findings are included from workshop discussions, the high level review of safety documentation and individual questionnaires.

3.1 'LEADERSHIP'

A number of key elements of leadership were considered and these included providing support and recognition, being considerate and responsive, promoting fairness and trust and encouraging improvement and innovation.

3.1.1 Providing support and recognition - provision of necessary time and resource

Workshop discussion findings

In workshop discussions, it was evident that some participants perceived that there were challenges associated with the provision of the necessary time and resources particularly in relation to the role of SAPs. Some SAPs/CPs had the following views:

- Insufficient numbers of SAPs/high workload of SAPs - Whilst it was considered that SAPs were always available by phone, it was perceived by some that it was sometimes difficult to get technical SAP support back on site because of the large geographical area a SAP may have to cover. Some SAPs/CPs perceived that the workload of SAPs was particularly high. It was described as including project management, design, customer management etc. but still considered as a 'bolt on' responsibility to the main job.
- Other support on site - Some SAPs and CPs referred to a site supervisor¹. Some perceived that because site supervisors were not as available as they used to be, the job was harder (e.g. there used to be site supervisors to travel around sites but now they are office-based). Others reported that their experience was that a site supervisor has the potential to undermine a SAP or CP (the site supervisor instructs CP to do things differently than the SAP) and this was perceived as a possible limitation with regards to electrical safety.

¹ Some workshop participants used the term 'foreman' instead of site supervisor.

- Resource changes - Some perceived that problems arose when a different team turned up than the one requested by a SAP. It meant that the SAP had to manage an unexpected set of competencies;
- Budgets - Some perceived that Ofgem did not provide sufficient resources to get the job done safely.

Some workshop participants also commented on the difference between fault work and planned work. There were perceptions that there were fewer incidents on fault work. Participants perceived that one of the reasons for this was that there was a tendency for more resource to be dedicated to fault work and that it was more likely that the SAP would be able to stay on site.

Providing support and recognition: examples of good practice from workshop discussions:

- Site Supervisors are available, can be involved in planning and can usefully deal with site issues that may arise;
- Having the right disciplines involved and available for planning jobs.

Individual Questionnaires

Perceptions in workshop discussions regarding the provision of resources were consistent with results from questionnaires completed individually by SAPs and CPs in the course of the workshop day. For example, for Q5: *'My organisation makes sure that there are sufficient resources (e.g. competent people, equipment) to ensure compliance with the organisation's electrical safety rules'*, results showed that a total of 43.5% gave a favourable response, 36.1% gave an unfavourable response and 20.4% gave a neutral response to this statement. This statement had the highest unfavourable response under 'support, communications and learning'. This suggests that whilst 43.5% of participants perceived that their organisation provided sufficient resources, more than a third of participants (i.e. 36.1%) perceived that their organisation did not provide sufficient resources to ensure electrical safety. In the individual exercise, SAPs and CPs were also asked what area they thought their organisation should address as a high priority. This same statement on resources was chosen by SAPs and CPs to act on as a high priority.

Providing support and recognition is also about leaders recognising good performance in SAPs and CPs. Individual questionnaire results also showed that, under 'day to day' practices, the least favourable result was Q17: *'Supervisors/Managers recognise and praise behaviours that demonstrate compliance with the electrical safety rules'*. For this statement, 28.7% of participants gave a favourable response, 35.2% gave an unfavourable response and 36.1% gave a neutral response. This suggests that more than a third of participants (i.e. 35.2%) perceived that supervisors/managers did not praise positive behaviours. This statement was chosen by most SAPs/CPs as an area they would like their organisation to address as a high priority implying that SAPs/CPs perceived that it would be beneficial for supervisors/managers to praise positive behaviours.

Appendix B provides results of responses for all 30 statements in the individual questionnaires including all favourable, neutral and unfavourable responses (see Appendix B: Figures 1, 2 and 3). It also highlights the areas chosen by most SAPs/CPs as the areas they would like their organisations to address as a high priority.

3.1.2 Being considerate and responsive - demonstrating consideration for SAP/CP health, safety and welfare

Workshop discussion findings

Workshop discussion findings suggested that there may be conflicting messages from management for SAPs and CPs regarding the need to 'keep the lights on' and the importance of electrical safety. In workshop discussions, SAPs and CPs perceived that they could stop work if they believed electrical safety rules were being compromised. It was also evident from workshop discussions that some SAPs and CPs perceived that they experienced pressure from senior management to 'keep the lights on' and the source of this pressure was perceived as stemming from targets set by Ofgem. Pressure was considered greater during fault work and sometimes manifested as numerous phone calls or text messages from management. Some CPs perceived that sometimes this pressure came more directly from SAPs but it was understood that this was due to SAPs themselves getting pressure from management.

There was widespread comment in workshop discussions that restoration times were reported on league tables and some perception that senior management were primarily concerned about these numbers. This results in setting up the potential for taking shortcuts and/or working long hours to get the job done. Regarding working hours, some workshop participants perceived that sometimes long work hours were required to get the job done (e.g. 16-hour shifts) and that there was little monitoring of work hours or any meaningful risk assessment in relation to fatigue management (e.g. SAPs/CPs commented that they may get a 'welfare text' from management if they were on the job for 16 hours, but this was considered insufficient).

Dealing with pressure was considered more challenging by some because they perceived that senior management did not understand the electrical safety challenges of SAP/CP work. This made it difficult to have technical safety conversations with a manager.

Being considerate and responsive: Examples of good practice from workshop discussions:

- Having roles such as a 'Customer Champions' role dedicated to dealing directly with customers or an 'Incident co-ordinator' role to help mediate all calls during a fault has helped to alleviate pressure for SAPs/CPs.
- Management review hours and send SAPs/CPs home if their hours are considered excessive and/or SAP/CP report they are fatigued.

Individual Questionnaires

Perceptions of conflicting messages from management was also apparent in results of individual questionnaires. For example, responses to Q20: '*In my organisation, management walk the walk and talk the talk. They make it explicit that electrical safety is a priority, or equal to productivity*' are also relevant here. For this statement, 44.4% of participants gave a favourable response, 27.8% gave an unfavourable response and 27.8% gave a neutral response. This suggests that just over a quarter of workshop participants (27.8%) perceived that management did not prioritise electrical safety.

3.1.3 Promoting fairness and trust e.g. fostering a just culture where SAPs and CPs are able to be open and honest

Workshop discussion findings

There were some perceptions of a blame culture in workshop discussions and this may result in under reporting of incidents. There was some concern expressed that incidents may not be reported because of fear of the consequences. Following an incident, the rationale for immediate removal of authorisations and drugs and alcohol testing was largely understood however there were perceptions that investigations could often be lengthy with little feedback from management in the process. Some participants commented that this was a stressful experience. Sharing of electrical safety work experiences was described by some as taking place on an informal basis (with no management involvement because SAPs/CPs fear their involvement) e.g. having their own 'Whats App' to discuss work issues. Others commented that there were targets attached to near miss reporting and this has resulted in reports being submitted that are not safety focused.

Promoting fairness and trust: Examples of good practice from workshop discussions

Some participants reported that honest near miss reports were being shared (though it had taken some time to get to that stage). This has been facilitated by a Director promoting and emphasising that the focus was not on blame, but that root cause was most important.

3.1.4 Encouraging improvement and innovation - learning from past mistakes, near misses and incidents

Workshop discussion findings

There were mixed perceptions about whether organisations learnt lessons following incidents. Some perceived that the root causes of incidents were not always established and that it would be beneficial to have more understanding of electrical safety incidents and why they occurred. Others expressed concerns that those who carried out investigations or communicated about investigation outcomes lacked the required experience including electrical safety experience. This sometimes resulted in changes being made after an incident without the required operational knowledge to improve safety. Others reported that recommendations made following an incident could be improved e.g. some commented that management need to say more than reiterate a procedure or safety rule. Others commented that some recommendations were considered heavy handed or not fit for purpose (e.g. wear full scale PPE when this was not physically feasible to do the job).

Encouraging improvement and innovation: Examples of good practice from workshop discussions

- Good learning and communication through safety stand downs (being called off shift) quickly after an incident occurs;
- Sharing of electrical safety incidents between organisations;
- Interviews following an incident happen quickly (e.g. within 5 days) with strict timescale for investigation outcomes.

Review of accident material

A high level review of accident material also provided insight into the ability of the industry to learn from accidents and incidents.

Six examples of accidents involving SAPs and/or CPs were sent to HSL from a few different ENA member organisations. The accidents spanned approximately 12 years between 2006 to 2018 and occurred at various UK locations. One organisation sent a one-page table showing 32 switching incidents that had occurred over the course of a six-year period. The type of accident report material varied in detail and purpose. Material included Powerpoint presentations of accidents presented by senior management, investigation reports and safety bulletins designed to share lessons learnt. There was variation in the accident consequences in the data, ranging from minor injuries through to fatalities. Examples of root/contributory causes noted in accident reports were varied and included violation of safety rules, lack of supervision and poor safety critical communication.

Individual Questionnaires

Perceptions regarding organisational learning were also apparent from the results to Q25 in individual questionnaires: *'Electrical incident investigations take place but the lessons and follow up interventions/solutions are not well thought out, or poorly applied. The same sorts of accidents happen time and again.'* In response to this statement, 49.1% gave a favourable response, 38% gave an unfavourable response and 15.7% gave a neutral response. This suggests that more than a third of workshop participants (i.e. 38%) did not have positive perceptions about how their organisations learnt from incidents.

3.2 'BEHAVIOURS'

'Behaviours' related to the competence of SAPs and CPs and their ability to undertake responsibilities and to perform activities to a recognised standard on a regular basis. This includes SAP and CP knowledge and skills (technical and non-technical skills), the attitude and behaviour of SAPs and CPs.

Workshop discussion findings

In workshop discussions, SAPs and CPs commented that it was much more difficult when SAPs and CPs did not know the SAP or CP they were working with because it was harder to determine his/her competence and know his/her strengths and limitations as a CP/SAP. There were repeated concerns about the competence assurance system for SAPs and CPs and this lack of trust in the 'system' has contributed to a lack of trust in working with unknown CPs/SAPs. Issues raised suggested the recognised standard may be compromised due to a number of issues including:

- Lack of site experience: SAPs/CPs may arrive on site as 'trained' but lack the required site experience;
- Quality of training: There were repeated comments about the quality of training for both SAPs and CPs. Some commented that there was too much computer-based training. With computer-based training, they did not receive feedback on the questions that they got wrong and therefore were not learning from the exercise. Lack of site experience during

training and opportunities for interactive discussion of electrical safety issues were also highlighted as limitations to training;

- Refresher training not being frequent enough;
- Insufficient mentoring after training; and,
- Authorisation and recruitment approval processes were considered lacking because of little or no input from experienced SAPs who understand the requirements of the job.

There was awareness of a high demand for SAPs and CPs, and concerns about the impact this demand was having on good competence development. The lack of trust in competence development had the potential of raising several questions for SAPs/CPs e.g. 'Has this unknown SAP/CP been fast tracked through the system?', 'Do they have enough electrical safety experience for this particular job or do they just have broad brush experience? Some expressed concern that working with unknown SAPs/CPs (including contractors) was made more difficult as they often had no photo identification so 'How do you know they are who they say they are?'

Language barriers (where English was not a first language) and working with unknown contractors were also reported as barriers by some. SAPs/CPs commented that language barriers, difficulty determining competence of unknown SAPs/CPs and/or contractors could negatively impact on the time taken to do the job.

Competence Assurance: Examples of good practice from workshop discussions:

- Ability to review authorisations and experience of CP or SAP before he/she arrives on site;
- Mentoring CPs to become SAPs has been done locally but not industry wide;
- Experienced SAPs providing training;
- Reader to scan what qualifications and authorisations a SAP/CP has;
- Having a good mix of classroom and on site experience during training; and,
- Refreshers that are discussion focused where electrical safety knowledge and practices are shared face-to-face.

3.3 PROCESSES

Consideration of processes refers to usability of procedures in place for SAPs and CPs, involvement of SAPs and CPs in procedure development and other key features of the design of their physical working environment.

Workshop discussion findings

Workshop participants commented that there were a number of challenges associated with procedures. The key issues raised were:

- There was too much paperwork and this had become particularly burdensome given the removal of supportive administrative roles. Some paperwork such as risk assessments and methods statements (RAMS) were considered to be a hindrance because they had become overcomplicated and grown out of all proportion; they did not highlight what was required to do the job yet they were used to fall back on when something went wrong;

- There were constant changes to procedures and it was challenging to keep up-to-date with these. This meant that SAPs/CPs were sometimes unsure if they had the latest version of the procedure. Some changes were not viewed positively because they were thought to be kneejerk reactions and the easy option following incidents because the accident root cause had not been found;
- The manner in which changes to procedures were communicated was viewed by some as unhelpful. For example, when changes were communicated by email, some missed these changes because of insufficient downtime and others commented that it was not possible to easily check understanding of the changes when they were sent by email;
- A lack of operational input into procedures (e.g. procedures being written by policy and not involving people who are doing the job) was viewed as problematic. For example, some perceived that procedures were geared towards transmission and not distribution. Others commented that there were situations where procedures were not fit for purpose (e.g. suggest full PPE when this was not feasible for the task). Electrical safety rules were viewed positively by some but if a circumstance was considered unique then they were thought to 'fall down' because separate processes were not always easy to find.

Some commented that there were occasional challenges related to the physical site environment. For example, different coloured cones meant different things to different organisations and this has created some confusion on site.

Processes and Procedures: Examples of good practice from workshop discussions:

- Some procedures were on ipads and this was useful because 'Control' can tell what work has been carried out;
- Bulletins were provided outlining procedural changes that usefully specify what has changed, where and why.
- Having a safety champion role to challenge safety procedures where they are not fit for purpose;
- Communication of changes has worked well when different means of communication was used for different changes e.g. for significant changes, work was stopped and time was taken to brief the team and discuss them. For less important changes, there were Powerpoint presentations.

Individual Questionnaires

Workshop perceptions of procedures were consistent with individual questionnaire results on procedures. For example, for Q30: *'There is a significant number of procedures, to the extent that some are not even known about let alone followed'* was the statement with the highest number of unfavourable responses - 22.2% gave an unfavourable response, 20.4% gave a neutral response and 57.4% gave an unfavourable response. This suggests that more than half of the participants (i.e. 57.4%) perceived that procedures were burdensome in terms of the amount they had to be aware of.

Review of safety documentation

A high level review of a small sample of documents (i.e. accident investigation and reporting methods and policies) provided by ENA member organisations showed the following:

- Examples of accident investigation and reporting methods and policies were varied and included identification of roles and responsibilities during the investigation process, an outline of the investigation process and methods of reporting near misses and accidents;
- In descriptions of accident investigation processes, there was limited reference to human factors or of an approach to suggest immediate causes (active failures) and contributing factors (latent conditions) were identified at job, individual and organisational levels;
- Some documents had named owners, others had job titles and others had no reference to an owner;
- Some documents listed all document changes and linked this to document versions and others showed no evidence of version control.

4 SUMMARY AND OPPORTUNITIES FOR IMPROVEMENT

4.1 SUMMARY

The focus of this human and organisational review was on how SAPs and CPs work together to achieve good results and enhance electrical safety outcomes. The influence of 'leadership', 'behaviours' and 'processes', as defined, on the work of SAPs and CPs and their ability to achieve desired electrical safety outcomes was explored.

4.1.1 Barriers to SAP and CP performance

Combined evidence from consultation with SAPs and CPs (the main source of data gathered in this review), review of safety documentation and individual questionnaire results have highlighted a number of influences. From a leadership perspective, the influences included provision of resources particularly in relation to numbers and workload of SAPs and perceived pressures to 'keep the lights' on from management, a pressure that was perceived by workshop participants in this study to stem from Ofgem targets. How the industry learns from accidents and some perceptions of a blame culture were also highlighted. Limitations of the competence assurance system, as viewed by SAPs and CPs, fostered a lack of trust when working with unknown SAPs and CPs. An overload of procedures, procedural changes and lack of operational input into procedure development were highlighted as challenges in relation to 'processes'.

4.1.2 Enablers to SAP and CP performance

It was evident (from workshop discussions, safety documentation and individual questionnaire results) that there were positive features of 'leadership', 'behaviours' and 'processes' that enable SAPs and CPs to work together and achieve good results and desired electrical safety outcomes. The positive relationship between SAPs and CPs evident from workshop discussions, and the respectful appreciation of the pressures both roles face suggests there can be good team working between SAPs and CPs. The widespread recognition from both roles of the importance of challenging each other in their verbal and written safety critical communications to meet electrical safety standards suggests that the messages from management and/or the competence assurance systems that are in place are being understood and enacted upon by SAPs and CPs. The use of 'customer champions' to alleviate pressure from SAPs/CPs, the support of foremen for some, prompt stand downs and interviews following incidents are all indications of leadership demonstrating consideration for SAPs/CPs and providing the right type of support.

Mentoring of SAPs/CPs and opportunities for face-to-face discussion where electrical safety knowledge and practices are shared provide evidence of good practice in the development of SAP and CP competence. Ease of access to procedures (e.g. on ipads for some), the useful challenge provided by safety champions to procedures and effective communication regarding procedural change also provide evidence of good practice from a 'behaviours' and 'processes' perspective.

4.2 OPPORTUNITIES FOR IMPROVEMENT

The following section outlines recognised good standards of practice, the rationale for priority of action and the opportunities for improvement under leadership, behaviours and processes.

4.2.1 Leadership

A number of key elements of leadership were considered and these included providing support and recognition, being considerate and responsive, promoting fairness and trust and encouraging improvement and innovation.

Providing support and recognition

Recognised good standards of practice

Effective leadership for SAPs/CPs involves providing a supportive environment that rewards and recognises good performance and that nurtures SAPs/CPs in line with business and individual needs. This includes the provision of the necessary time and resource that allows leaders and SAPs/CPs to promote electrical safety and healthy working.

Rationale why this is a priority for action

Findings suggest that there are challenges for the industry in the provision of resources (time and competent SAPs/CPs) to meet current business and electrical safety targets. Workshop discussions showed that, for some, there was a shortage of SAPs. Some SAPs were struggling with work overload and working hours of SAPs/CPs were sometimes excessive. In the small sample of accidents provided, the provision of competent resource was acknowledged as a contributing factor.

Based on workshop discussions, workshop participants perceived that the challenges related to the provision of resources, stemmed from an attempt to meet targets set by Ofgem. Therefore, to bring about improvement in this area, there may be value in a review and discussion about resources with SAPs/CPs. Specifically, there may be value for each organisation (given each organisation has its own operating parameters) to ensure there are clear two-way communications as to how resources enable SAPs and CPs to undertake their work safely. This will involve ongoing two-way discussions between management and SAPs/CPs to ensure a common understanding about the resources required to get the job done safely.

- 1. Opportunity for Improvement** - Ensure there are clear two-way communications between management and SAPs/CPs about the resource required for SAPs and CPs to undertake their work. This should involve ongoing two-way discussions between management and SAPs/CPs to ensure a common understanding about the resources required to get the job done safely.

Based on workshop discussions, work demand on some SAPs was excessive and included numerous tasks such as project management, design and customer management as well as on site risk management. Yet the SAP role was still considered a 'bolt-on' responsibility to their main job. It appears that one of the most important aspects of the SAP role is the dynamic electrical safety risk management they provide yet they can be pulled away from this with other more administrative tasks. There may be value in ensuring there is greater clarity of their role and/or organisational priorities and more access to support (e.g. administrative support) to enable SAPs to focus on the high priority parts of their job. Enabling this focus for SAPs and then recognising/praising SAP and CP

behaviours when they foster good performance in electrical safety (as highlighted in individual questionnaire results) is an opportunity for improvement for the industry.

2. Opportunity for Improvement - Ensure there is greater clarity of the SAP role and/or organisational priorities to enable SAPs to focus on dynamic electrical safety risk management. Strive to ensure that SAPs and CPs feel valued at work by providing timely, specific and constructive positive feedback when they foster good performance in electrical safety.

Being considerate and responsive

Recognised good standards of practice

Effective leadership involves demonstrating consideration for SAPs'/CPs' health, safety and welfare by being proactive and prompt in dealing with safety issues, providing support to stopping work and demonstrating genuine care.

Rationale why this is a priority for action

Based on workshop SAP and CP perceptions, the working hours of both SAPs and CPs were sometimes excessive. Workshop participants explained that, during fault work in particular, SAPs/CPs may work 16 hour shifts (or greater) 'to keep the lights on' and were sometimes expected to work the next day. Some SAPs/CPs perceived that there was little monitoring of work hours or any meaningful fatigue risk assessment in relation to the impact of working long shifts and/or driving following working long shifts. Some good practice in fatigue management was identified (e.g. there was evidence of management intervention to send SAPs/CPs home if their hours were considered excessive). However this was not a consistent finding across all workshops and there is an opportunity for improvement for the industry on this topic.

HSE guidance outlines that the risk of errors due to fatigue has been found to rise with increasing shift length, be higher on night shift, increase over successive shifts and when there are not enough breaks. Effective fatigue risk management involves acknowledgement and understanding of the potential for fatigue and the impact this can have on SAP and CP performance. It involves monitoring working hours, structuring work tasks, shifts, rest breaks and routines to make the best use of peak alertness times, and to mitigate for low alertness times and cumulative fatigue. Effective fatigue risk management is important for SAPs and CPs to ensure safety critical tasks can be conducted with alertness e.g. issuing clear and comprehensive safety documents and challenging safety documents.

3. Opportunity for Improvement - Acknowledge and understand the potential for fatigue amongst managers and SAPs/CPs and the impact this can have on SAP and CP performance. Review fatigue risk management practices in the industry to identify any steps that can be taken to reduce the likelihood of fatigue related accidents and optimise SAP/CP alertness.

4.2.2 Encouraging improvement and learning

Recognised good standards of practice

Effective leadership for the industry involves creating a climate of continuous learning and encouraging different perspectives on how electrical safety can be improved. This involves learning from past mistakes, near misses and accidents and learning from others where relevant. It also involves awareness of leadership style, and a willingness to take on board feedback regarding leadership style and performance.

Rationale why this is a priority for action

Results suggest that there are opportunities for improvement in how the industry encourages improvement and learning. Some workshop perceptions of SAPs and CPs were that those who carried out investigations did not have the required competence to do so. Others thought that recommendations made following an incident were kneejerk reactions (e.g. procedural changes) and/or not useful (e.g. reiteration of electrical safety rules).

The high-level review of accident material also indicates that there is scope for improvement in this area. Whilst there was some evidence provided of senior management commitment to communication of accident outcomes and learning points (e.g. provision of Powerpoint presentations and safety bulletins), there appeared to be a number of areas that would benefit from review and these are outlined below:

- In the root and contributory causes noted, there appeared to be a focus on individual active failures associated with SAPs and CPs. There was limited reference to job and organisational level factors in communications about accident investigation outcomes. Therefore it is questionable how much the accident investigations carried out involved investigation of factors which may be described as individual, job and organisational level factors i.e. active and latent failures. Organisational factors have the greatest influence on individual and group behaviour and tend to affect the performance of everyone in an organisation as compared to those that affect the performance of a particular job (HSE, 1999). A range of organisational factors can increase the likelihood of errors and violations and these include time pressure (e.g. over-demanding work schedules), goal conflicts (e.g. time pressures vs safety), organisational culture, work pressures, manning levels (e.g. insufficient workers to carry out the job);
- The language used when communicating about accidents may not be conducive to inviting open discussion and learning with SAPs and CPs but instead result in a defensive reaction. It is important that such language does not conflict with a just culture, inadvertently create the perception of a blame culture or heighten fear of reporting;
- There was a tendency for accident learning points/recommendations to focus on highlighting or reiterating the Distribution Safety Rules and/or recommending revision of procedures, rather than understanding and addressing root causes.

The examples of accident investigation and reporting methods and policies provided, useful definitions of roles and responsibilities when an accident happens (e.g. roles and responsibilities of line managers, investigation leads), provision of guidance on investigation process, and user friendly information for accident/near miss reporting. However, there was limited evidence of any guidance on how human factors was integrated into the accident investigation process to ensure individual, job and organisational level factors are identified in the accident investigation process.

4. Opportunity for Improvement – Review accident investigation processes to ensure human factors are integrated into the process and there is identification of contributory causal factors at an individual, job and organisational level.

Specific leadership styles, attitudes, behaviours and practices can enhance a number of safety outcomes. Managers can have a positive influence on safety by embracing more supportive leadership styles. Training interventions may be an effective way of helping managers to develop leadership skills. Of particular importance is how leaders communicate and frame safety messages to the workforce to foster open and trusting safety communication. Developing good working relationships characterised by openness, support and mutual respect, behavioural consistency, as well as demonstration of concern are some factors that help promote trust. Based on observations relating to accident communications, it appears there would be value in managers/leaders reviewing their own leadership styles and how safety messages are communicated to the workforce.

5. Opportunity for Improvement – Consider leadership styles and practices in relation to the communication of safety messages to the workforce to ensure leadership behaviour and practices foster open and trusting communication.

4.2.3 Promoting Fairness and Trust

Recognised good standards of practice

Effective leadership involves fostering a just culture where people are able to be open and honest with leaders about electrical safety issues and trust that the decisions that leaders make are in their best interests, whilst taking account of business needs.

Rationale why this is a priority for action

There was some evidence of a blame culture within organisations and/or parts of organisations, lengthy investigations and slow investigation processes.

Therefore results suggest that there are opportunities for improvement for creation of a just culture and one that encourages speaking openly about error. A just culture is characterised by open reporting systems for near misses and accidents without fear of punishment, follow up of accident investigation outcomes and fostering a sense of personal accountability for safety. Such a culture is much more likely to encourage openness and honesty during investigations, and therefore enable greater learning. Blame cultures tend to suppress reporting; reduce honesty and openness during investigations; and, ultimately limit organisational, and sector learning.

6. Opportunity for Improvement – Help to enable a fair and just culture (i.e. a learning culture) to improve trust and confidence with SAPs and CPs in the reporting and investigation system. Emphasise a desire to learn at an organisational level in discussion with workers at all levels and provide SAPs/CPs with timely feedback on investigation progress and outcomes.

4.2.4 Behaviours

Competence Assurance

Recognised good standards of practice

Behaviours refers to the competence of SAPs and CPs and their ability to undertake responsibilities and to perform activities to a recognised standard on a regular basis. Effective competence assurance systems for SAPs and CPs should recognise the importance of addressing all aspects of competence including SAP and CP knowledge and skills (technical and non-technical skills) and the attitude and behaviour of SAPs and CPs.

Rationale why this is a priority for action

Workshop findings showed that SAPs and CPs perceived that they often needed to manage, what they viewed as, limitations in the competence assurance system. There were perceptions of poor quality training, insufficient mentoring and SAPs and CPs with insufficient electrical safety on site experience, and insufficient time for discussing electrical safety face to face. It was evident in the workshops that attendees were extremely engaged in discussions and really valued the opportunity to discuss issues pertaining to their roles within their own organisations and with other organisations.

Results suggest that there would be value in ensuring there is an understanding of the competence standards required for SAPs and CPs. This should include reference to the knowledge, skills, attitudes and behaviours expected of SAPs and CPs. There would be value in using this understanding to inform the recruitment and authorisation process for both roles. The processes/system should be pragmatic and practical enough to ensure personnel are assured that those identified as competent meet expectations, thus ensuring that the system is trusted.

7. Opportunity for Improvement – Review/develop competence standards for the role of SAPs and CPs with a view to ensuring there is clarity about the required knowledge, skills, attitudes and behaviours of SAPs and CPs.

8. Opportunity for Improvement – Review how competence is developed, assessed and maintained, by comparing the current training provision against the defined competency standards for SAPs and CPs, including arrangements for mentoring opportunities and face-to-face discussion sessions between SAPs, CPs and other relevant workers (e.g. Control Engineers) where appropriate.

4.2.5 Processes

User involvement and communications on procedures

Recognised good standards of practice

Effective processes and procedures ensure end user involvement in procedure/process development to optimise procedure usability and accessibility. Arrangements for communications (e.g. time being protected to take on board procedure updates), review and update of procedures are in place.

Rationale why this is a priority for action

Workshop findings, safety documentation review and individual questionnaire results suggested that there were opportunities for improvement in the area of processes and procedures. Workshop participants perceived that there was a lack of operational input into procedures and processes and that there was a continuous stream of updates in procedures and processes that was difficult to keep on top of. Individual questionnaire results showed the highest levels of unfavourable and neutral related to this area.

9. Opportunity for Improvement – Involve a range of end-users (including SAPs and CPs) in the development and update of procedures. With end-user involvement in updates, gather views on whether any procedures/processes can be streamlined or removed. There may also be opportunities to improve usability, or alternative formats, such as checklists and decision aids (rather than text ‘heavy’ documents).

10. Opportunity for Improvement – Review how changes in procedures and processes are communicated to SAPs and CPs to ensure they are fit for purpose. It is human nature to make assumptions. Unless changes are clear, these could easily be overlooked.

5 REFERENCES

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6 APPENDICES

6.1 APPENDIX A: EXAMPLE OF AN INDIVIDUAL QUESTIONNAIRE

INDIVIDUAL REFLECTION AND ACTION PLANNING

This exercise aims to gather your views about operational safety practices in your organisation. The information that you provide is confidential and anonymous, and it will be combined along with other data collected as part of this project to give an insight into practices in the industry as a whole.

PART 1: SUPPORT, COMMUNICATIONS AND LEARNING

Instructions for completion:

Please read the following statements and indicate the extent to which they apply to your organisation. Circle only **one** answer for **each** statement.

No.	Support, Communications and Learning					
1	Management understand the electrical safety challenges of our work and speak to us regularly about these.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
2	There are good communications (e.g. toolbox talks, lessons learnt) in my organisation about the electrical safety rules.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
3	In my organisation, management support decisions to stop work on electrical safety grounds.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
4	Management really care about the health and safety of the people who work here.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
5	My organisation makes sure that there are sufficient resources (e.g. competent people, equipment) to ensure compliance with the organisation's electrical safety rules.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
6	Individuals with technical expertise are consulted in electrical safety critical situations and decisions are made on the front line.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
7	Safety critical tasks on the electrical network are not sufficiently checked or supervised.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
8	I do not trust my managers with decisions that affect my ability to operate safely on the electrical network.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree

No.	Support, Communications and Learning					
9	My supervisor/manager listens to my ideas on how to improve on site electrical safety.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
10	In my organisation, when incidents happen whilst working or operating on the electrical network, all possible causes are examined to help learn and prevent their recurrence.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree

PART 2: DAY TO DAY PRACTICES ON THE JOB

Please read the following statements and indicate the extent to which they apply to your organisation. Circle only **one** answer for **each** statement.

No.	Day to day practices on the job					
11	Electrical risk awareness is low. Workers are often displaying 'at risk' behaviours because they don't recognise the hazards.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
12	Supervisors sometimes turn a blind eye to workers who are not complying with the electrical safety rules.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
13	Workers here are sometimes pressured to work unsafely by their workmates.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
14	There are circumstances where breaking the electrical safety rules is required to get the job done safely.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
15	My supervisor often talks to me about compliance with the electrical safety rules.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
16	In my organisation, unsafe behaviour is challenged.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
17	Supervisors/Managers recognise and praise behaviours that demonstrate compliance with the electrical safety rules.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
18	In my organisation supervisors devote sufficient effort to improve electrical safety.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
19	Management always act quickly over electrical safety rule concerns.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree

No.	Day to day practices on the job					
20	In my organisation, management walk the walk and talk the talk. They make it explicit that electrical safety is a priority, or equal to productivity.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree

PART 3: PROCEDURES AND PROCESSES

Please read the following statements and indicate the extent to which they apply to your organisation. Circle only **one** answer for **each** statement.

No.	Procedures and Processes					
21	Procedures reflect how people actually do their job and are user friendly.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
22	There are good processes in place for communicating electrical safety-critical task information (e.g. permit to work system).	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
23	Useful tools to minimise the risk of errors such as checklists and decision aids are rarely used.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
24	Procedures such as the electrical safety rules are reviewed and updated as and when required.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
25	Electrical incident investigations take place but the lessons and follow up interventions/solutions are not well thought out, or poorly applied. The same sorts of accidents happen time and again.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
26	The process of version control is very unclear with some workers using an out of date safety rule/procedure/instruction.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
27	In my organisation, we have SAP and CP training and mentoring programmes in place to ensure knowledge and skills, attitudes and behaviours are appropriate and up-to-date.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
28	In my organisation, SAPs and CPs are encouraged to be involved in the development of electrical safety procedures and processes.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree

No.	Procedures and Processes					
29	Emergency scenarios are not trained frequently enough to ensure rapid and accurate response in plausible high consequence emergencies.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
30	There is a significant number of procedures, to the extent that some are not even known about let alone followed.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree

6.2 APPENDIX B: INDIVIDUAL QUESTIONNAIRE RESULTS

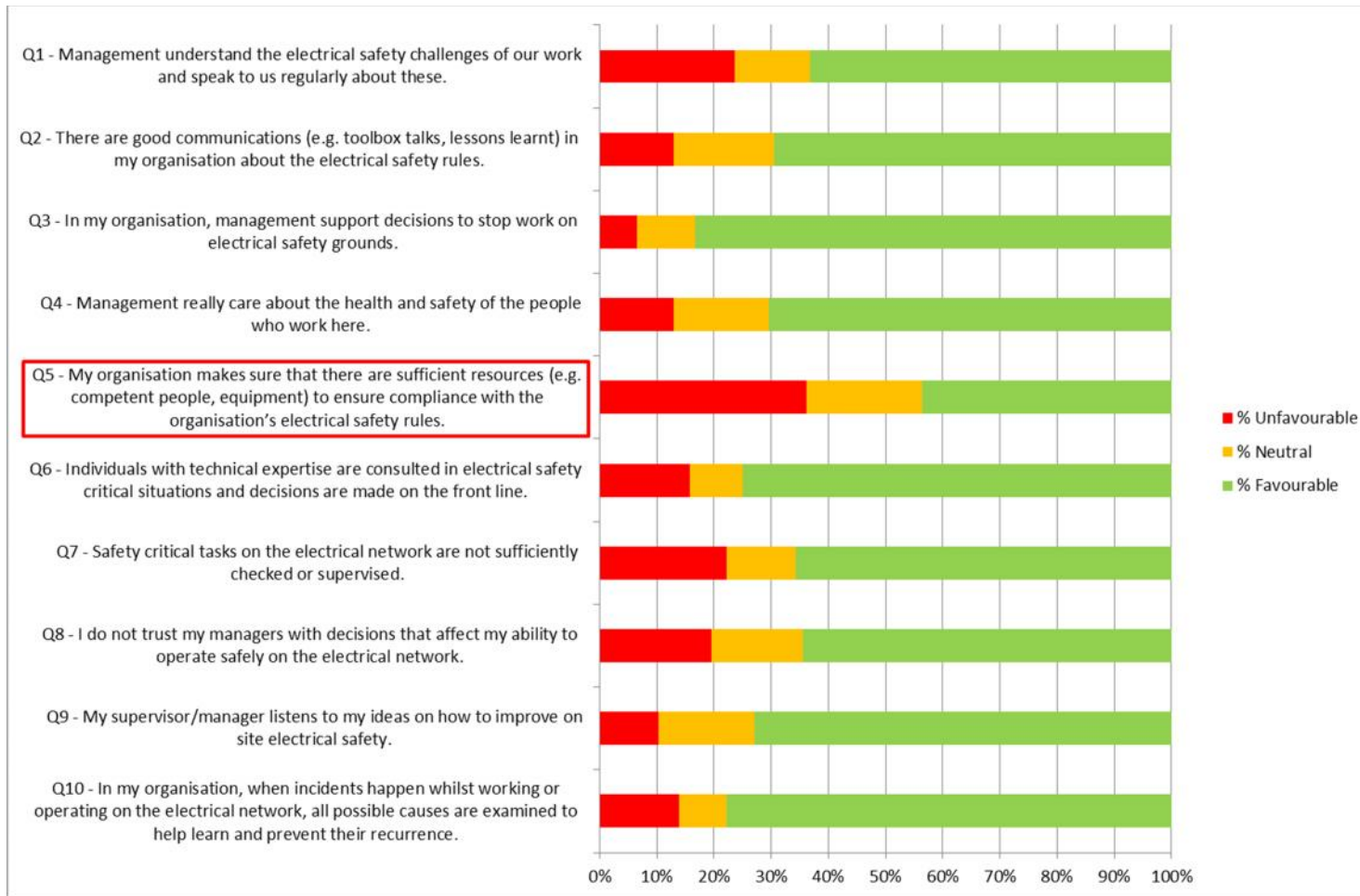


Figure 1 Response to statements under ‘support, communications and learning’. The statement outlined in red, Q5, was chosen by most SAPs/CPs as the area they would like their organisation to address as a high priority. These results are the aggregated results from SAPs and CPs, SAP only and CP only results were not analysed as part of this work.

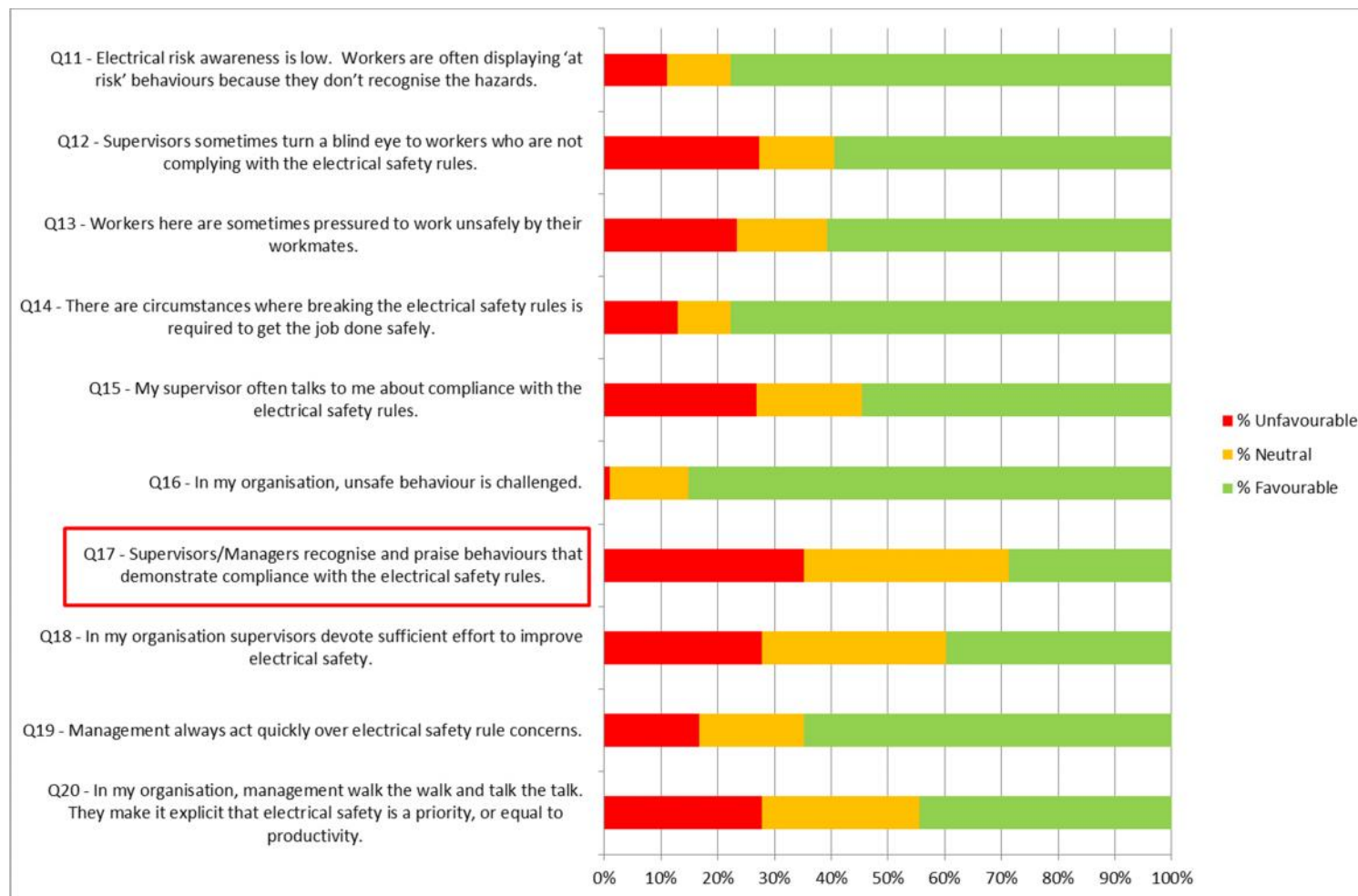


Figure 2 Response to statements under 'day-to-day practices'. The statement outlined in red, Q17, was chosen by most SAPs/CPs as the area they would like their organisation to address as a high priority. These results are the aggregated results from SAPs and CPs, SAP only and CP only results were not analysed as part of this work.

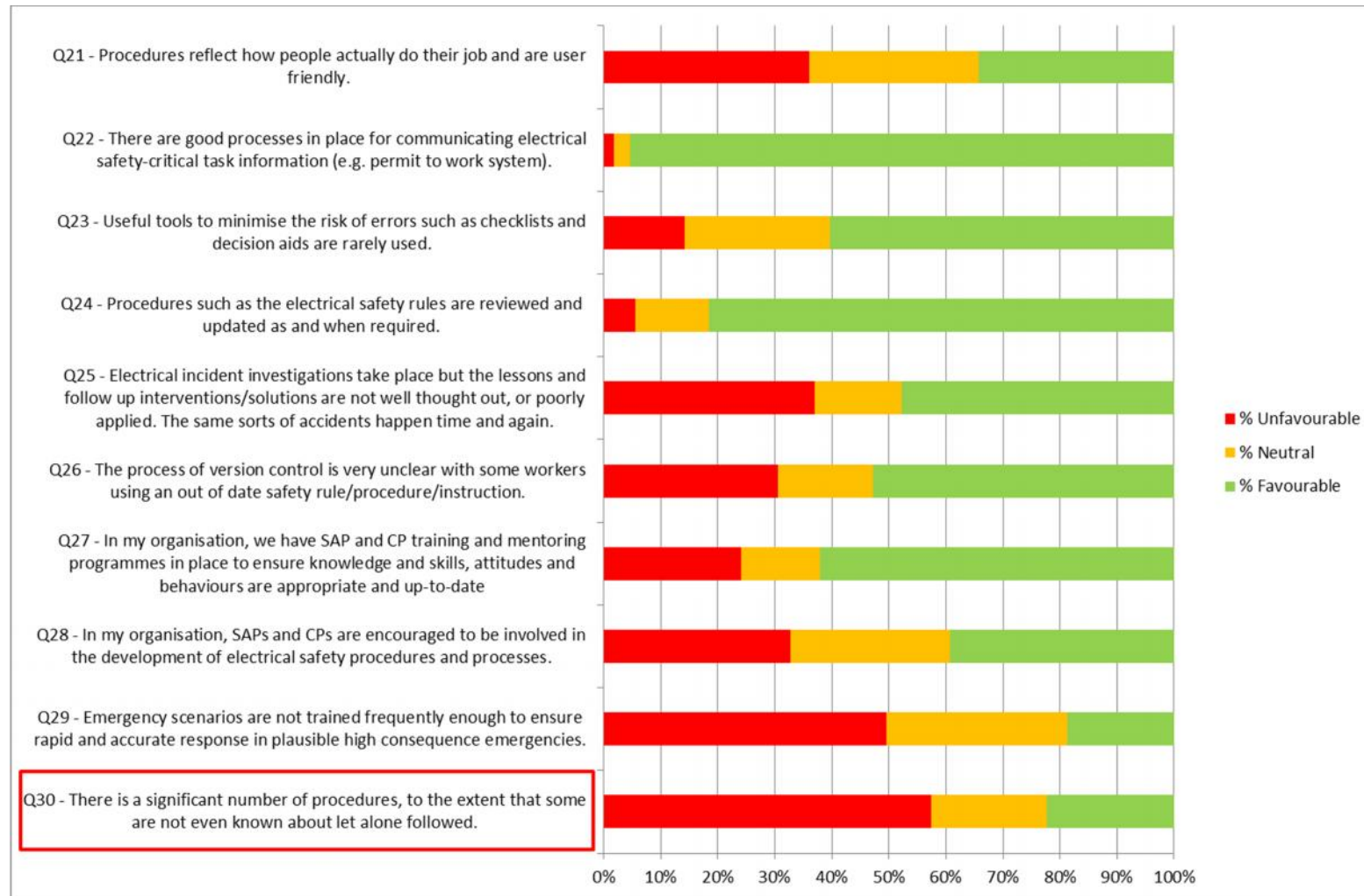


Figure 3 Response to statements under ‘processes and procedures’. The statement outlined in red, Q30, was chosen by most SAPs/CPs as the area they would like their organisation to address as a high priority. These results are the aggregated results from SAPs and CPs, SAP only and CP only results were not analysed as part of this work.



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PARTNERS

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

Energy UK is the trade association for The UK electricity generation and retail Companies.

TRADE UNIONS

GMB
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GOVERNANCE

Powering Improvement is managed and directed by National Health, Safety and Environment 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 reside with the Energy UK Safety Leaders Group

