EXECUTIVE SUMMARY

This report summarises the key findings of over 2000 utility strikes across the UK during 2014 from 24 participants. It highlights what caused the most damages and provides scope and recommendations to:

1. Avoid future damages
2. Improve the ability to analyse the strike data in future years

It also provides a comparison against the previous year’s (2013) data; it was found that many of the issues were replicated across the two periods which strengthens the conclusions made.

The main conclusions for the causes were:

1. Better preparation in advance of works commencing, through availability of more accurate plans and more robust location and survey practices was critical
2. Behavioural issues on site during the execution of the works is a key issue and a recommendation for further investigation

What you can do to help the industry and reduce asset strikes

- Distribute this report within your organisation and to your wider industry contacts
- Support the initiative by submitting data for the 2015 and 2016 reports
- Contact us via data@utilitystrikeavoidancegroup.org with any comments

PREPARED BY THE FOLLOWING MEMBERS OF THE USAG DATA & REPORTING WORKING GROUP

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INTRODUCTION AND GENERAL COMMENTS

WHY THIS REPORT IS IMPORTANT

There are many groups and organisations actively engaged and working hard in the pursuit of elimination of utility strikes and significant improvements have been made as a result of these efforts.

To keep improving safety in the pursuit of eliminating strikes, the industry needs a collaborative effort to ensure effective and sustainable change. A widely reported statistic within the industry is that there are over 60,000 cable strikes per annum so there is still a significant problem. Whilst there is no "silver bullet", USAG is aiming to achieve the following:

1. Analysing the results received (when, where, how, what)
2. Understanding the potential causes (why)
3. Creating a baseline to understand current performance and to measure future continued improvement
4. Raising the profile of the issues faced by the industry

By doing so USAG and all contributors can collectively prevent injury, damage, disruption and raise the performance standards of our industry.

LEARNING FROM INTERNATIONAL BEST PRACTICE

Similar reports are produced annually in other parts of the world including the USA, Canada and Australia which have been instrumental in reducing utility strikes.

It is important to learn from our international colleagues, showing that the UK is equally committed to improving our practices, to continue to reduce damages and ensure everyone goes home safe each and every day.

HOW THE REPORT IS STRUCTURED

This report builds on the findings of the inaugural 2013 report. The data was collected from 24 USAG Members which includes over 2000 utility strikes.

These strikes have been analysed in the following areas:

• When the strike occurred
  o Month
  o Day
  o Time
• Where the strike occurred
  o Location type
• How the asset was damaged
  o Equipment used
• What the damage was
  o Asset type
• Why the asset was damaged
  o Nature of works
  o Cause of damage-planning
  o Cause of damage-execution

Each section shows a figure (graph), a brief commentary on the data, comparison with the previous report and some guideline industry recommendations for improvement.
DEVELOPING THE KNOWLEDGE OF WORKS UNDERTAKEN

Current situation

It is important to understand how many works are taking place across the UK in order to understand the current position and measure future improvement. Widely reported figures within the industry suggest that there are approximately four million excavations and 60,000 cable strikes per annum. The source of these figures is not known but it is not thought to include all works or annual variations.

Problem

It is estimated that, based on the number of strikes reported, the overall volume of works (including those not resulting in strikes) for this report is approximately 200,000.

Proposed solution

1. Agree uniform metrics (no. of excavations/man hours worked on site/services crossed etc.)
2. Get more from each contributor in future years
3. Continue to use indicative pan industry figures (where available) as a guide.

This will be an area of specific focus over the next two “period” years.

IMPROVING THE VOLUME OF STRIKE DATA SUBMITTED

Current situation

The volume of data received from the 2014 request was significantly reduced from those received from the 2013 request.

Problem

More data inevitably leads to more reliable conclusions but more questions leads to lower submissions. Slightly more information for 2014 was asked for to improve the analysis but it is felt that this resulted in fewer submissions than the 2013 request.

Proposed solution

1. Keep it fairly simple to encourage completion
2. Minimise any changes between years
3. Get to a point where strikes can be submitted during the year they occur
4. Ensure that as many people in each organisation encourage submission
5. Allow each contributor to benchmark and analyse their own figures through enhanced request forms

DATA COLLECTION

The data used within this report was gathered through a survey period following requests to USAG Members, associated CECA Members as well as other key stakeholders.

The request included the following:

1. Letter (Appendix 1) introducing the report and our intentions
2. Non-Disclosure Agreement (Appendix 2) to overcome any reticence of sharing sensitive data
3. Strike Data Template (Appendix 3) in a standard (Excel) format
4. Questionnaire (Appendix 4) for the collation of various opinion and records based information such as the volume of annual works
5. Data Categories (Appendix 5) to help collate information for the spreadsheet

ACKNOWLEDGEMENTS

Thank you to all of those that responded with utility strike information, sharing your data for the wider good of the industry. Your support is very much appreciated.
USAG 2014 STRIKE ANALYSIS
WHEN THE STRIKE OCCURRED - MONTH

As for last year’s data, the number of enquiries received through the LinesearchbeforeUdig (LSBUD) service has been used as it is the only source of data available to indicate the volume of works being undertaken across the UK. The results still show some correlation although the need remains to get more sources of data for the volume of works undertaken.

Due to the reduced volume of strike data received (particularly from larger contributors) there is less confidence in the results. Please also note that a major contributor to the data has been shown in a different colour as the firm changed its procedures towards the end of the year, reporting many more strikes from September onwards which had a significant effect on the trends seen.

The periods above are classified into three periods:

- Jan- Mar. This is shown as the end of typical financial year and the high volume of strikes could be due to schemes being under pressure to be completed by end of March.
- Apr-Aug. This is fairly typical with increases in July/August possibly due to longer working days, perhaps with mixed teams and holiday cover.
- Sep-Dec. September and October appeared to be months where a high volume of works were undertaken so the higher volume of strikes may be related to result of this. Whilst there were sharp falls for November and December which would be expected due to downturn in works completed and shorter working days, the strikes are not reflective of the volume of LSBUD enquiries in that month.

Comparison with 2013 data
Figure 1 has a different profile and it must be considered that there were significant less reports in 2014 so bigger contributors are likely to have had a more significant skew effect on the data. There are still similar issues in the summer months, which may point to behavioural issues.

There could be many reasons for this but the initial indication may be that the types of personnel undertaking the works is a more significant factor than first thought.

Guideline industry recommendations
1. Be aware of higher risk months and ensure that guidance is in place to mitigate any of the factors above
2. Each contributor to consider their own results and provide commentary
3. Measures of the work undertaken across the industry to be provided through an agreed metric. We are also keen to add any other industry sources to compare in addition to the LSBUD data as this is critical for the effectiveness of the analysis

Figure 1: Number of utility strikes by month in 2014

2014 - Strikes by Month

- Jan
- Feb
- Mar
- Apr
- May
- Jun
- Jul
- Aug
- Sep
- Oct
- Nov
- Dec

0
50
100
150
200
250

Strikes

LSBUD Enquiries

All others

Major Contributor
The trend initially showed what was expected in that there was a reduction of strikes over the weekend when the work was significantly reduced. There was a minor peak through the middle of the week (Tues & Weds) with a tail off towards the latter part of the week which could be as a result of more setting up works at the beginning of the week and backfilling/closing down sites towards the end of the week.

The severity of strikes each day was then analysed. The results were largely as expected but with a lower proportion of medium risk strikes on a Saturday. It is unknown why this would be but is an area that will be reviewed with next year’s data.

Comparison with 2013 data

Generally, very similar profile found.

Guideline industry recommendations

1. Be aware of higher risk days and ensure that guidance is in place to mitigate any of the factors above
2. Each contributor to consider their own results and provide commentary
USAG 2014 STRIKE ANALYSIS
WHEN THE STRIKE OCCURRED - TIME OF DAY

Most strikes reported took place between 0900 and 1600 which is not altogether surprising due to ‘typical’ working days. There are spikes in mid-morning (approx. 1000), at 1200 and a significant spike after the typical lunchtime period (approx. 1400).

The severity of the strikes across the time periods was then analysed which showed that the spike at 1400 was predominantly low severity strikes. These spikes are considered likely to be related to behavioural issues on site.

Comparison with 2013 data
Very similar profile found.

Guideline industry recommendations
1. Be aware of higher risk time periods and ensure that guidance is in place to mitigate any of the factors above
   a. Consider cultural practices such as encouraging healthy eating to manage behavioural factors. As an example, the group is aware of a case study for work at the Olympics 2012 site where an uptake of porridge breakfasts was found to reduce accident rates. Further information available in HSE Research Report 955 “Pre-conditioning for success”.
2. Each contributor to consider their own results and provide commentary

Figure 4: Number of strikes by time of day in 2014

Figure 5: Number of strikes by time of day and severity in 2014
There were more options than the previous request although footpaths and carriageways remain where most of the strikes occurred. This is not unexpected as this is where the majority of utilities are located; a relatively small area with a relatively congested amount of utilities. Much of the excavation works undertaken across the industry to effect the installation or repair of utilities is therefore within these areas.

Comparison with 2013 data
Very similar profile found in that most strikes occur in the footpath and carriageway.

Recommendations for 2015 data report
1. Addition of Railway option

Guideline industry recommendations
1. Be aware of higher risk areas and ensure that guidance is in place to mitigate any of the factors above
2. Each contributor to consider their own results and provide commentary
Hand Tools and Mini-diggers have again been shown to represent the highest numbers for the type of equipment being used when a strike event occurred. This is likely to be aligned with them being the most used pieces of equipment across the industry.

Combining ‘excavator’ and ‘mini digger’ as one source (i.e. mechanical excavation) resulted in them as the highest source of strikes compared to using hand tools and other ground breaking equipment.

The equipment used in each location was then analysed:
This showed two key results:
1. Hand tools in the footpath were the key contributor
2. Mini-diggers in the carriageway (and then footpaths) were the second (and third) highest contributors

Comparison with 2013 data
Very similar profile found.

Guideline industry recommendations
1. Be aware of higher risk equipment and ensure that guidance is in place to mitigate the factors above
2. Consider alternative excavation practices, e.g. vacuum excavation, machine controls and similar to reduce strikes
3. Consider risks to operatives when using specific types of equipment
4. Each contributor to consider their own results and working areas and to provide opinion
The highest volume of strikes is against Low Voltage electricity cables (<1000V) which whilst classified separately to street lighting cables is likely to include a proportion of them. These types of cable are mainly located in footpaths, are rarely identified on plans, are often difficult to locate and are shallow.

Strikes to the Telecoms networks (Copper and Fibre) are likely to be common due to being shallow and similarly difficult to locate on site.

Low pressure gas and water also showed significant volumes which is likely to be due to location difficulties with equipment typically used on site as well as due to service connections.

The location type for each asset damaged was then analysed:
These results suggested that:
1. LV electricity cables in the footpath were the most likely assets to suffer a strike
2. Telecoms in the footpath were second highest
3. LV electricity and LP gas in the carriageway were third most likely to suffer a strike

The equipment used for each asset damaged was then analysed:
The takeaway result from this is that LV electricity was the asset stuck most regularly by a specific piece of equipment which was ‘hand tools’. This represents a significant risk for operatives undertaking this work.

Comparison with 2013 data
Very similar profile found (where similar analysis was made).

Guideline industry recommendations
1. It appears that assets which require more effort to accurately locate on site were hit most often. This would suggest the following would be sensible:
   a. Ensure plans of all known services are collated before works commence
      i. High quality plans would help but must not be solely relied upon
   b. Undertake high quality surveys to locate assets (recommended to be PAS128 levels)
   c. Ensure that the Genny is used when using the Locator
d. Develop Locator training

2. Be aware of the risks associated with using hand tools and consider the use of PPE such as insulated hand tools as a last line of defence

3. Please refer to Cause of Damage Recommendations here and here.
USAG 2014 STRIKE ANALYSIS
WHY THE STRIKE OCCURRED: NATURE OF WORKS UNDERTAKEN

<table>
<thead>
<tr>
<th>Strikes by nature of works</th>
<th>Severity of strike</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature of works</td>
<td>Strikes</td>
</tr>
<tr>
<td>Planned</td>
<td>636</td>
</tr>
<tr>
<td>Unplanned/ reactive</td>
<td>89</td>
</tr>
<tr>
<td>Emergency</td>
<td>15</td>
</tr>
</tbody>
</table>

Most strikes reported were defined as low severity and due to planned works which is not surprising due to the likely nature of most works being undertaken. Figure 12 shows the profile of the three work categories in percentage terms for planned, unplanned/reactive and emergency:

- The planned column shows most strikes in the low severity category, a significant proportion in the medium severity and few in the high category. We would have expected more in the low severity rather than medium severity classifications.
- The unplanned/reactive column shows most strikes in the low severity category, suggesting that this type of work was more likely to result in a lower severity strike than the planned works which is typically unlikely. This may be related to differing procedures and personnel on site for these works.
- The emergency works (albeit based on only 15 strikes) suggests that strikes here lead to much higher severity strikes, with the majority in the medium severity category and 20% in the higher severity category.

Comparison with 2013 data
N/A

Guideline industry recommendations
1. Be aware that the data suggests that strikes when undertaking emergency works are likely to lead to higher risk strikes.
2. Be aware that planned works are still leading to medium and high risk strikes.
3. Each contributor to consider their own results and provide commentary.
USAG 2014 STRIKE ANALYSIS
WHY THE ASSET WAS DAMAGED - STRIKE CAUSE (PLANNING)

This section is opinion/judgement based and that must be considered against the other sections which are based on facts. Please be aware that the root causes of each strike could be in multiple areas but only one is asked for in the request.

Inadequate survey was the biggest cause, followed by the general quality of plans (assets not on relevant plans + plan of asset damaged not present + inaccuracy of plans). Although not fully conclusive, the type of survey was linked to the likelihood of having a greater proportion of lower risk strikes:

Figure 13: Number of strikes by cause of damage (planning) in 2014.
USAG 2014 STRIKE ANALYSIS
WHY THE ASSET WAS DAMAGED - STRIKE CAUSE (PLANNING)

Strikes by Survey Level in accordance with PAS128

<table>
<thead>
<tr>
<th>Survey Level</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>D - Desk Top</td>
<td>62%</td>
<td>38%</td>
<td>0%</td>
</tr>
<tr>
<td>C - Ste Reconnaissance</td>
<td>52%</td>
<td>46%</td>
<td>2%</td>
</tr>
<tr>
<td>B - Detection</td>
<td>92%</td>
<td>6%</td>
<td>2%</td>
</tr>
<tr>
<td>A - Verification</td>
<td>90%</td>
<td>10%</td>
<td>0%</td>
</tr>
<tr>
<td>NON PAS128</td>
<td>83%</td>
<td>17%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Figure 14: Percentage of strikes survey level in 2014

The relationship between the asset damaged and the survey type was then analysed as shown on the next page:
As shown above, there are spikes in LV electricity, LP gas, telecoms, water and street lighting, all relating to site reconnaissance being the type of survey used, which would suggest that this type of survey should be reviewed.

**Comparison with 2013 data**
Analysis developed (as recommended in 2013 report) but generally similar profile found.

**Guideline industry recommendations**
1. Focus on improving the information available before works commence through the following processes:
   a. Ensuring all utility record plans available are present on site, referencing industry guidance, e.g. HSG47
   b. Focus on site reconnaissance being a contributor to utility strikes
   c. Undertake high quality PAS128 level surveys to locate assets, including the use of appropriate locators

2. Asset owners to ensure plans are as high quality as possible and readily available to those undertaking works

3. Each contributor to consider their own results against those reported
This section is opinion/judgement based and that must be considered against the other sections which are more based on fact.

Excavation practices not sufficient is the biggest cause (defined as No or inadequate development/implementation/enforcement of Safe System of Work), followed by misuse of tools and a number of causes that point to behavioural impact.

Please be aware that the root causes of each strike could be in multiple areas but only one is asked for in the request.

**Comparison with 2013 data**

Analysis developed (as recommended in 2013 report) but generally similar profile found.

**Guideline industry recommendations**

1. Focus on improving the behavioural activity on site during works with the following recommendations:
   a. Checking any different results with different gangs
   b. Improved/accredited training courses that focus on excavating around/adjacent to utility assets.
   c. Undertaking interviews and site team competency audits with behaviour as the focus area.

2. Each contributor to consider their own results against those reported.
QUESTIONNAIRE RESPONSES

Purpose
The purpose of the questionnaire was to get more data to support the understanding of volumes of works undertaken across the industry, including when the works usually took place and what equipment was used. This could be referenced against the strike data received to investigate if a specific type of work was more likely to lead to a strike or whether it was as a result of the volume of works undertaken.

The final question asked for opinion on the costs of utility strikes.

Commentary on Questions asked
There were 11 responses to the questionnaire and these responses included a wide variety of results. Where possible, meaningful trends from the data have been analysed but it must be noted that this is based on a very limited sample size.

Total works undertaken
This was very difficult to analyse and no accurate / reliable conclusions were drawn.

Time of works
90% works were during the day (80% certainty).

Nature of works
95% of works were planned works (rather than emergency or reactive) (80% certainty).

Cost of strikes
Based on the questionnaire responses, the average strike cost estimates typically ranged between £2000 and £7500 with an average of £3600, which was mainly made up of direct costs.

Based on an estimated value of £3600 per strike, the total direct costs of strikes reported for 2014 is approximately £7,000,000.

Once indirect costs including project overrun, traffic delays, downtime, back office time and social costs such as loss of productivity to businesses are taken into account the true cost of a utility strike increases significantly.

Based on a report recently undertaken entitled “What do Utility Strikes Really Cost?, for 16 case studies in an urban area, it was shown that for every £1 spend on the direct cost, £29 is spent on the indirect and social costs. Based on the above direct costs, this results in the average true cost of a utility strike of over £100,000.


Taking consideration of the indirect costs, the total value of all of the strikes reported in this report exceeds £200 million. Based on the widely reported statistic of 60,000 strikes per annum across the UK being 30 times the reported figure, the scale of the problem is staggering.
Recommendations for 2015 report

We will reduce the paperwork and administrative requirements for the request, simply asking contributors for their preference on the measure of works for future years, with the following options available:

- Number of jobs/excavations
- Number of man hours on site
- Number of utilities known / crossed / struck

As stated earlier, understanding the total volume of works is critical to measuring future years’ data and understanding industry performance.

USAG Members will be encouraged to submit data by making the submission of data a requirement of the USAG Charter.
CONCLUSION

We hope that the report has been useful for you with respect to the trends, analysis and guideline recommendations discussed.

We need more strikes to be reported in the coming years to help develop the analysis given and conclusions made. This will be most effective by having a greater understanding of the volume of works undertaken across the industry and when and where these works are undertaken. By having more data to analyse we can significantly develop the usefulness and value of the report.

Please help us do this by forwarding the 2015 and 2016 request spreadsheets to your relevant team members; we hope that by the end of 2016 we can be in a position where strikes are reported on a monthly basis and ensure that all involved in the industry can take advantage of the current information available. Submission of data will soon become a condition of the USAG Charter in the interests of all.

We leave you with ten takeaway points for digestion and look forward to receiving the data for 2015 to data@utilitystrikeavoidancegroup.org. Thank you.

Ten takeaway points

1. Asset owners to improve quality, accuracy and access to plans
2. Undertakers of works to use plans more effectively in accordance with improved survey practices
3. Visual site reconnaissance as a standalone survey practice is not sufficient to avoid utility strikes
4. The most usual asset struck using a specific type of equipment is LV electricity using hand tools in the footpath
5. Emergency works lead to higher likelihood of high risk strikes
6. Behavioural issues are showing increasing importance and all contributors should review their results accordingly
7. True costs of utility strikes remain largely unknown but much higher than most estimate them to be
8. We need more industry data to draw better conclusions and allow better benchmarking
9. We need to agree work volume metrics across the UK
10. Analysis will develop in years to come but questions asked need to be easy to answer to encourage submission of data
Appendices

1. ABOUT USAG
2. DEFINITIONS
3. LETTER TO INDUSTRY
4. NON-DISCLOSURE AGREEMENT
5. STRIKE DATA TEMPLATE
6. QUESTIONNAIRE
7. DATA CATEGORIES
ABOUT USAG

The Utility Strike Avoidance Group (USAG) is the established body within the utility, excavation and construction industries to reduce the number and severity of underground utility strikes arising from work activities in proximity to such services.

The primary role of USAG is to provide a forum for employers and industry partners to influence and promote improved standards of health and safety within the utility sector. It has become the leading provider of industry knowledge for safe excavation around utilities and as such has been endorsed by both the HSE and IOSH. It was the winner of the Innovation award for the NJUG Awards in 2012 and the USAG Charter currently has over 150 signatories.

Terms of Reference

The primary role of USAG is to provide a forum for employers and industry partners to influence and promote improved standards of health and safety within the utility sector.

This will include:

• The development of a consistent approach by all members to ensure that legal duties are complied with as an absolute minimum
• The sharing and promotion of good practice in all work activities carried out in proximity of utility services
• The support of industry initiatives and campaigns designed to reduce the incidence of utility strikes
• The promotion of the reporting and analysis of data to identify any industry trends with a view to developing responsive actions
• The maintenance of close liaison with other relevant groups within the utility sector
• The maintenance of close dialogue with HSE and other relevant regulatory bodies and stakeholders as necessary
• Raising awareness amongst other parties including designers, training providers and equipment manufacturers of Their responsibilities for and influence on the provision of utility services
• The identification of new and emerging hazards and risks
• The development and promotion of industry wide programmes and initiatives and relevant guidance as necessary to promote training and skills related issues
Aims & Objectives

USAG has the following aims and objectives:

• To manage and oversee all information published within the USAG framework of committees

• To ensure duties under health and safety legislation are implemented consistently by all partners and to discuss and assess the impact of and application of draft legislation

• To promote health and safety practice throughout the utility sector via an agreed programme of work, to be kept under regular review

• To share and exchange any other relevant information affecting the utility sector

• To provide a forum for HSE to raise issues of operational policy that may impact on the represented industries

Working Groups

To deliver the aims above, USAG has three main working groups:

- Toolkit Development
- Data & Reporting
- Training & Competence

These groups are supported by Communication, Website Development and Membership teams who support the overall delivery of the USAG groups.

How to become involved

USAG is always looking for additional members/participants so if you would like to become involved please visit www.utilitystrikeavoidancegroup.org where you can:

1. Download the USAG Charter – This Charter is designed to help change the way we all work around utilities and to set a minimum standard for adoption across the industry.

2. View and download our Toolkit, the toolkit includes section for:
   a. Planning
   b. Responsibilities
   c. Training
   d. Permits, Calibration and Daily Inspection
   e. Key Risk Guidance
   f. Personal Protection
   g. Investigation Process and Record
   - View previous strike reports and related information.
   3. Contact us via email; info@utilitystrikeavoidancegroup.org
DEFINITIONS

Utility Strike: Any service (as defined below) damaged during works involving drilling, excavation/backfilling or heavy loads where sheath or protective wrap has been pierced or damaged, or the service has been severed, crushed or dented. This also applies to services that are damaged if the asset owner hasn’t given express written permission to break them out.

Near miss: A near miss is where a utility strike was narrowly avoided or could have happened due to an avoidable strike but by sheer good fortune didn’t occur.

Services: Any above or below ground cables (telecoms, data, control cables, electricity (all voltages), pipes (gas, district heating systems (all temps), water, sewer, fuel, oil), ducting and drains including any associated features or unidentified utilities either individually or collectively within containment.
Dear Sir/Madam,

Utility Asset Strikes
Request for 2014 Information

I write to you on behalf of the Utility Strike Avoidance Group (USAG) and more specifically the Data & Reporting Working Group. USAG is a collaborative group of over 150 Asset Owners, Contractors, Service Providers and Associations and Regulators that are striving to ensure the highest standards of safety and best practice when carrying out essential work to avoid utility strikes. As part of this drive, USAG has set up some specific Working Groups to focus on key areas to assist the utilities industry as a whole, of which the Data and Reporting Group is one.

The primary objective of the Data and Reporting Group is to highlight trends in asset damage throughout the UK to help all involved improve our practices, reduce damages and delays and most importantly to increase the safety of all persons affected by working in and around utilities. Long established annual reports are produced in other parts of the world including the US, Canada and Australia with voluntarily submitted data that generate some real insights to the world of utility damage prevention so we learning from international best practice.

Following a successful request for information last year resulting in the provision of information on over 5800 strikes, I am delighted to be able to attach a copy of the inaugural 2013 Utility Strike Data Report for your perusal. It may be that your organisation supplied information for the report through you or a colleague and for this we are extremely grateful. The report provides a baseline to measure this continued improvement from as well as supply information to help raise the performance standards of our industry to prevent injury, damage and disruption. It will also assist in raising the profile of the reduction of utility strikes to the wider audience to help achieve our objectives.

In order to develop the findings and conclusions and keep momentum on such an important issue, we are now asking for your data relating to strikes during 2014. As for the 2013 data, the sharing of such information is recognised as being of sensitive nature so please be assured that we anonymise the data for the report. We are also able to offer a Non-Disclosure Agreement which is attached. We trust that this will be sufficient to enable you to complete the required template and share industry data for the overall betterment of our industry and the community at large.

Please also find attached a data request spreadsheet which is provided for submission of your strike data. You may notice that there are some additional fields this year to help gather more information on the location, type of asset, severity of strike and cause of damage in order to develop the conclusions that we can make. The explanation of the fields is in the comments section in each title cell as well as being on a separate glossary document. In addition, a very brief separate questionnaire has also been prepared and your assistance in completing this would be much appreciated.

Please provide as much relevant data as you hold in each column (more information on each strike allows us to make more meaningful conclusions) and return via the email address below: data@utilitystrikeavoidancegroup.org.

We thank you in advance for your help; the deadline date for return of information will be 07 November 2015 and your efforts to keep to this deadline are appreciated as it will enable the finalised report to be compiled and made available early in the early months of 2016.

Yours faithfully

Richard Broome
Data & Reporting Group
For and on behalf of Utility Strike Avoidance Group

www.utilitystrikeavoidancegroup.org
NON-DISCLOSURE AGREEMENT

Non-Disclosure Agreement

Dated:

BETWEEN: Energy Network Association ("ENA")
whose registered office is at Dean Bradley House, 52 Horseferry
Road, London, SW1P 2AF, on behalf of the Utility Strikes Avoidance
Group ("USAG")

AND Company Name, Company Number, Registered Address ("The
Data Provider")

(each a "Party" and together the "Parties").

USAG and the Data Provider wish to exchange information relating to the current and potential future
joint arrangements that the Parties are considering, relating to the USAG Data & Reporting Group
("Project").

The Parties are entering into this Agreement ("Agreement") for their mutual benefit in order to define
their respective rights and obligations in relation to the disclosure of Confidential Information by any
Party (the "Disclosing Party") to any other Party (the "Receiving Party") in connection with the Project.

1 Definitions

In this Agreement:

1.1 "Confidential Information" means:

1.1.1 Information which by its nature is confidential, is designated by the Disclosing Party as
confidential or which the Receiving Party knows or ought to know is confidential and which is
disclosed by or on behalf of the Disclosing Party to the Receiving Party, or otherwise is in the
possession of the Receiving Party, in connection with the Project; in each case whether disclosed
before, on or after this Agreement including information which is disclosed orally, in writing, or by
any other medium including (without limitation) print, magnetic or documentary form,
electronic format, visually by way of model or demonstration and, in each case, any copy
thereof.

1.2 Notwithstanding Clause 1.1 above, Confidential Information shall not include information which:

1.2.1 entered or subsequently enters the public domain without breach of this Agreement or any
other obligation of confidence by the Receiving Party;

1.2.2 the Receiving Party can demonstrate was already in its possession or
known to it by being in its use or being recorded in its files or computers or other recording
media prior to receipt from the Disclosing Party and was not previously acquired from the
Disclosing Party under any obligation of confidentiality;

1.2.3 is disclosed to the Receiving Party by a third party without breach by
the Receiving Party or such third party of any obligation of
confidentiality owed to the Disclosing Party;

1.2.4 the Receiving Party can demonstrate is independently developed or discovered by or for it not
as a result of any activities relating to the
Project;

1.2.5 is disclosed by the Receiving Party with the prior written permission of the Disclosing Party;

1.2.6 subject to clause 3, is required to be disclosed in accordance with FOIA, if applicable, or
otherwise is required to be disclosed by law, regulation or order of court or any other
governmental or other regulatory authority.

1.3 "FOIA" means the Freedom of Information Act 2000.

1.4 "Group" means in relation to a Party that Party and every subsidiary undertaking or parent
undertaking of such Party and any subsidiary undertaking of such parent undertaking from time
to time and for the purposes of this definition "subsidiary undertaking" and "parent undertaking"
shall have the meanings given to them by section 1162 Companies Act 2006;

1.5 "Purpose" means any discussions and negotiations between or within the parties concerning or
in connection with the Project;

2 Restrictions on Disclosure and Use

In consideration of the mutual exchange and disclosure of Confidential Information, and
subject always to the requirements of Clause 3, each of USAG and The Data Provider
undertakes as Receiving Party:

2.1 to keep the Confidential Information confidential at all times;

2.2 to use it only for the Purpose and not for any other purpose including (without limitation) not to
make any commercial use of it and not to use the same for the benefit of itself, its Group or any
third party other than pursuant to a further written agreement with the Disclosing Party;

2.3 to ensure that the Confidential Information, when used for the Purpose, is sufficiently
anonymised such that the identity of the Disclosing Party and the fact that the Confidential
Information was made available by the Disclosing Party cannot be ascertained by any other
person;

2.4 not to disclose, without the Disclosing Party's prior written consent:

2.4.1 the fact that the Confidential Information has been made available to the Receiving Party or
any other person;

2.4.2 the fact of discussions or negotiations between the Receiving Party and the Disclosing Party
in relation to the Project;

2.4.3 any proposed or possible terms or conditions which are applicable in relation to the Project;
NON-DISCLOSURE AGREEMENT

2.6 to take reasonable security precautions (at least as comprehensive as the precautions the Receiving Party takes to protect its own confidential information) to keep confidential the Confidential Information;

2.6 Subject to the conditions set out in Clause 2.2 above, not to disclose Confidential Information to any person except in confidence as is necessary for the Purpose to such of its directors, employees and professional advisers and the directors and employees of the members of the Group who need access to the Confidential Information solely for the Purpose and provided that all such persons to whom Confidential Information is so disclosed are informed of the terms of the Agreement and either (i) are obliged by their contracts of employment or service, or by a professional duty of confidence not to disclose the same or, as the case may be, (ii) enter into legally binding confidentiality agreements on equivalent terms to this Agreement;

2.7 to be responsible for the performance of Clauses 2.1, 2.2, 2.3 and 2.4 above on the part of its directors, employees and professional advisers to whom Confidential Information is disclosed pursuant to Clause 2.6 above;

2.8 not to copy, reproduce, summarise or reduce to writing any part of any Confidential Information except as may in reasonably necessary for the Purpose and not to reverse engineer, decompile or disassemble any software disclosed by the Disclosing Party.

3 Notification of Unauthorised Disclosure

The Receiving Party shall notify the Disclosing Party immediately upon discovery of any unauthorised use or disclosure of Confidential Information by the Receiving Party or any person to whom it discloses pursuant to this Agreement, or on any other breach of this Agreement by the Receiving Party or such other person, and will cooperate with the Disclosing Party in every reasonable way to help the Disclosing Party regain possession of the Confidential Information and prevent its further unauthorised use.

4 Return of Confidential Information

4.1 Upon receipt of the Disclosing Party’s request in writing, and in any event upon the termination of the Agreement, the Receiving Party shall, and shall procure that any persons to whom it discloses Confidential Information pursuant to this Agreement shall, return to the Disclosing Party all documents and materials containing Confidential Information (including any copies, reproductions, summaries and reductions to writing thereof) or, at the Disclosing Party’s option, destroy and certify the destruction of the same.

4.2 Notwithstanding the completion of the Purpose or the return or destruction of documents as contemplated in Clause 4.1 above or the termination of this Agreement, the Receiving Party shall continue to be bound by the undertakings set out in Clause 2.

5 Termination

This Agreement may be terminated by either party in writing.

6 Property in Confidential Information

All Confidential Information is and shall remain the property of the Disclosing Party notwithstanding anything added thereto by the Receiving Party. By disclosing information to the Disclosing Party, the Disclosing Party does not grant any express or implied right to the Receiving Party to or under any of the disclosing Party’s patents, copyrights, trademarks, or trade secret information. No warranty or representation, express or implied, is given as to the accuracy, efficiency, completeness, capability or safety of any materials or information provided under this Agreement.

7 General

7.1 Neither Party shall assign or transfer any of its obligations under this Agreement without the prior written consent of the other Party.

7.2 This Agreement constitutes the entire understanding between the Parties related to the disclosure and protection of the Confidential Information disclosed under it.

7.3 This Agreement shall be construed in all respects in accordance with English law and the Parties hereby submit to the exclusive jurisdiction of the English Courts.

In witness whereof this Agreement has been duly executed on the date first written above.

Signed for and on behalf of the Utility Strike Avoidance Group

Name of signatory: 
Richard Broome
Title of signatory: 
USAG Data & Reporting Group

Signed for and on behalf of the Data Provider

Name of signatory: 

Title of signatory: 

Please print

Please print
<table>
<thead>
<tr>
<th>Strike Event</th>
<th>Time of Occurrence</th>
<th>City/Town</th>
<th>County</th>
<th>Location Type</th>
<th>Street Address</th>
<th>Severity of Damage</th>
<th>Cause of Damage</th>
<th>Equipment Affected</th>
<th>Nature of Equipment Affected</th>
<th>Duration of Service Interruption</th>
<th>Recovery Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
QUESTIONNAIRE

Our Ref: USAG/DRG2014USRQ/RWB
Your Ref: 
Date: 01 September 2015

QUESTIONNAIRE

We would be grateful if you could complete the questions below to help us understand the total volume of works undertaken by those submitting data for the 2014 report. The more information you can supply, the better the analysis and conclusions can be; we envisage that it should take no more than 10-15 minutes and will be extremely valuable in the conclusions we can make.

For all responses, please indicate the approximate certainty and the basis on which the figures are provided (e.g. own estimate/actual figures/company published figures)

1. Please give an estimate of the total works undertaken by your company during 2014:

   a. total jobs
   b. man hours worked (on site)

2. Did you report on utility strikes in your organisation during 2014 and if so, on what basis?

   a. Strikes reported Yes / No
   b. Basis on which reported

3. What proportion of works that you undertook in 2014 were in the following categories?

   a. % during daylight hours
   b. % during night time hours
   c. % planned jobs
   d. % emergency jobs

4. What percentage of jobs were the following tools used during 2014 in your usual works?

   a. % hand tools
   b. % mini diggers
   c. % excavators

5. In your experience, what do you estimate to be the typical cost of an asset strike and what does this include:

   Typical total cost per strike

   Factors considered
   % certainty
   Basis on which figures provided
   
   Delays
   Fines
   Compensation
   Downtime
   Legal
   Community
   Other: ______________________

   www.utilitystrikeavoidancegroup.org
### Data Categories

#### Location of works (town)

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town</td>
<td>The nearest town to the utility strike or part of City, e.g. Westminster.</td>
</tr>
</tbody>
</table>

#### Location of works (county)

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>The county within which the utility strike occurred.</td>
</tr>
</tbody>
</table>

#### Environment of works

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inner City</td>
<td>A typically highly congested area in the middle of a city.</td>
</tr>
<tr>
<td>Suburbs</td>
<td>The outer reaches of a City.</td>
</tr>
<tr>
<td>Town</td>
<td>A typical town environment</td>
</tr>
<tr>
<td>Village</td>
<td>A typical village environment</td>
</tr>
<tr>
<td>Urban/Industrial</td>
<td>An urban or industrial area out of town, such as a Business Park where services are likely to be less congested</td>
</tr>
<tr>
<td>Rural</td>
<td>A typical rural setting</td>
</tr>
<tr>
<td>Other</td>
<td>Including other environments such as airports, barracks, hospitals etc.</td>
</tr>
</tbody>
</table>

#### Location Type

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carriageway (Inc Motorways/Runways etc)</td>
<td>A constructed surface used by motor vehicles or airplanes</td>
</tr>
<tr>
<td>Footpath</td>
<td>A constructed surface used for walking by pedestrians</td>
</tr>
<tr>
<td>Garden</td>
<td>A privately owned area of land next to a house</td>
</tr>
<tr>
<td>Private drive way</td>
<td>A vehicular access to a house</td>
</tr>
<tr>
<td>Private Land/Field</td>
<td>An enclosed area of land predominantly in agricultural use</td>
</tr>
<tr>
<td>Car Park</td>
<td>An area dedicated to vehicle parking</td>
</tr>
<tr>
<td>Unmade ground</td>
<td>An unconstructed/temporary surface used for vehicular access or parking</td>
</tr>
<tr>
<td>Verge</td>
<td>A grassed area located adjacent to footpath or carriageway</td>
</tr>
<tr>
<td>Watercourse</td>
<td>Any watercourse including rivers, streams, ditches etc and their banks</td>
</tr>
<tr>
<td>No Location recorded</td>
<td>Location not reported</td>
</tr>
</tbody>
</table>

#### Asset Damaged

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elec - LV (&lt;1000)</td>
<td>An electrical service cable carrying a load of up to 1000v not including street lighting cables</td>
</tr>
<tr>
<td>Elec - HV (&gt;1000)</td>
<td>An electrical service cable carrying a load above 1000v</td>
</tr>
<tr>
<td>Elec - Street Lighting Cable</td>
<td>A cable supplying electricity to street lighting columns</td>
</tr>
<tr>
<td>Gas - LP (&lt;7bar)</td>
<td>A gas pipe which operates up to a pressure of 7 bar</td>
</tr>
<tr>
<td>Gas - HP (&gt;7bar)</td>
<td>A gas pipe which operates over a pressure of 7 bar</td>
</tr>
<tr>
<td>Pipeline</td>
<td>A pipe that conveys fuel e.g. oil</td>
</tr>
<tr>
<td>Telecom - Copper</td>
<td>A telecommunication cable</td>
</tr>
</tbody>
</table>
### Asset Type

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main</td>
<td>An underground principal utility</td>
</tr>
<tr>
<td>Service</td>
<td>An underground supply from the principal utility to the end user</td>
</tr>
<tr>
<td>Overhead</td>
<td>Any service suspended on pylons, poles etc.</td>
</tr>
</tbody>
</table>

### Service Interruption

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Any interruption in supply</td>
</tr>
<tr>
<td>No</td>
<td>No interruption in supply</td>
</tr>
</tbody>
</table>

### Severity of Strike

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>None / minor injuries, none / minor delays or disruption incurred, no interruption to supply</td>
</tr>
<tr>
<td>Medium</td>
<td>Reportable injury, significant delays or disruption incurred, minor interruption to supply</td>
</tr>
<tr>
<td>High</td>
<td>Serious / fatal injuries, major delays or disruption incurred, threat to public safety, media coverage, significant interruption to supply</td>
</tr>
</tbody>
</table>

### Cause of Damage—Planning

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insufficient competency</td>
<td>Insufficient competency, including training and experience</td>
</tr>
<tr>
<td>Insufficient gang skills</td>
<td>Insufficient skills of gang chosen</td>
</tr>
<tr>
<td>Insufficient scheduling</td>
<td>Insufficient scheduling of activities</td>
</tr>
<tr>
<td>Assets not on relevant plans</td>
<td>Plans of relevant utility did not show utility asset damaged</td>
</tr>
<tr>
<td>Plan of asset damaged not present</td>
<td>Plans of utility damaged not present</td>
</tr>
<tr>
<td>Inaccuracy of plans</td>
<td>Utility asset damaged not shown correctly on plans on site</td>
</tr>
<tr>
<td>Inadequate assessment of works</td>
<td>Insufficient assessment of works required including not sufficient equipment provided etc</td>
</tr>
<tr>
<td>Insufficient time allowed</td>
<td>Insufficient time allowed to complete works in given timeframe</td>
</tr>
<tr>
<td>Inadequate survey</td>
<td>Survey practices not sufficient</td>
</tr>
</tbody>
</table>

### Cause of Damage—Execution

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insufficient survey practices</td>
<td>Inadequate use of locating equipment</td>
</tr>
<tr>
<td>(use of locating equipment)</td>
<td></td>
</tr>
</tbody>
</table>
**DATA CATEGORIES**

<table>
<thead>
<tr>
<th>Misuse of tools/equipment</th>
<th>Inappropriate/misuse of plant, tools or equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not following procedure</td>
<td>Identified that Company Procedures were not being fully followed by individual or by group</td>
</tr>
<tr>
<td>Incipient/voluntary error</td>
<td>Followed Company Procedures but adjudged as human error</td>
</tr>
<tr>
<td>Clearance not maintained</td>
<td>Recommended HSG47 guideline separation distance between plant and utility not followed</td>
</tr>
<tr>
<td>Inadequate workplace environment</td>
<td>Congested or poorly laid out workplace environment (not relating to density of services) including congested or restricted motion or inadequate or excessive illumination</td>
</tr>
<tr>
<td>Service mark not maintained</td>
<td>Marks identifying utility location taken out during excavation and not re-marked</td>
</tr>
<tr>
<td>Inadequate trench support</td>
<td>Trench not properly supported or trench support causing damage to utility</td>
</tr>
<tr>
<td>Backfilling</td>
<td>Backfilling of excavation/trench causing damage to utility</td>
</tr>
<tr>
<td>Excavation practices not sufficient</td>
<td>No or inadequate development/implementation/enforcement of Safe System of Work</td>
</tr>
<tr>
<td>No Protective Systems</td>
<td>No or inadequate guards or protective systems</td>
</tr>
<tr>
<td>Lack of supervision</td>
<td>For non-use of a banksman or similar</td>
</tr>
</tbody>
</table>

### Equipment Type

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breaker/Jackhammer</td>
<td>A hand held pneumatic or electro mechanical tool used to break up hard surfaces e.g. concrete, pavements, road surfaces</td>
</tr>
<tr>
<td>Drilling/Milling/Rilling</td>
<td>Method of construction being used</td>
</tr>
<tr>
<td>Excavator</td>
<td>Tracked or wheeled mechanical plant above 5t using a bucket or similar attachment fixed to a boom to carry out excavation activity</td>
</tr>
<tr>
<td>Hand Tool</td>
<td>A hand held tool used to excavate e.g. groft, spade, shovel</td>
</tr>
<tr>
<td>Mini-digger (up to 5t)</td>
<td>A small excavator less than 5t</td>
</tr>
<tr>
<td>No Equipment Involved</td>
<td>Reported incident caused by no equipment e.g. falling spoil/material</td>
</tr>
<tr>
<td>Roller</td>
<td>Plant used to compact backfill material</td>
</tr>
<tr>
<td>Saw</td>
<td>Plant used to cut through footpath/ carriageway surface e.g. sth saw, road saw</td>
</tr>
<tr>
<td>Vacuum Excavator</td>
<td>Plant used to remove granular material from trenches and around pipes and cables by use of powerful suction</td>
</tr>
<tr>
<td>Other/Not Recorded</td>
<td>Incident with either bespoke/non-standard equipment or no equipment reported</td>
</tr>
</tbody>
</table>

### Nature of works

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planned</td>
<td>Works that have been planned/scheduled in advance</td>
</tr>
<tr>
<td>Unplanned/reactive</td>
<td>Works of an urgent nature: pinholes, leaks etc. to restore services to meet customer service targets etc.</td>
</tr>
<tr>
<td>Emergency</td>
<td>Work that needs to be done immediately to repair damaged services in order to prevent continuing risk to health and safety either directly, such as stopping gas leak, or indirectly where restoring power to traffic signals at a major junction. It does not mean restoration of service to meet customer service targets. (Definition as per HSG47)</td>
</tr>
</tbody>
</table>

### Excavator Group

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor</td>
<td>N/A</td>
</tr>
<tr>
<td>Sub Contractor</td>
<td>N/A</td>
</tr>
</tbody>
</table>
### Data Categories

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type D</td>
<td>Desktop records utility search (in accordance with PAS128)</td>
</tr>
<tr>
<td>Type C</td>
<td>Site reconnaissance to identify physical features that support the existence of utilities within the survey area (in accordance with PAS128)</td>
</tr>
<tr>
<td>Type B</td>
<td>Geophysical techniques to detect and identify utilities within the survey area with a minimum of two techniques being GPR and electromagnetic locating (in accordance with PAS128)</td>
</tr>
<tr>
<td>Type A</td>
<td>Verification comprising exposing the utility within the survey area to confirm and record the location and other attribute data (trial holes etc.) (in accordance with PAS128)</td>
</tr>
<tr>
<td>Non PAS128</td>
<td>A type of search not in accordance with PAS128.</td>
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