

Title:
**2014 Report for the UKOPA
Infringement Database**

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UKOPA

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1. Executive Summary

In 2014, there was a small decrease in the overall number of infringements reported; 745 in 2014, compared with 764 in 2013. Whilst the fall in reports is focussed on the lower category events and those outside the easements this is largely due to the gas industry returns, where largely only aerial surveys are recorded. The inclusion of road and ground walking survey reports still indicates a year on year increase of infringements including those events out of the easement but within the zone of interest.

There were four A1 category (actual damage) infringements in 2014, out of the 745 recorded events, summary details as below:

- i. Damage to fuel pipeline by contractor whilst working for a gas utility; found by aerial patrol.
- ii. Damage to gas above ground pipeline crossing by contractor whilst earthmoving; found by ground patrol.
- iii. Damage to gas above ground pipeline crossing by contractor whilst earthmoving for waterways authority; found by routine inspection of known works visit.
- iv. Damage to gas pipeline by contractor whilst earthmoving for gas company; found by vantage survey.

In addition there were 23 records of Malicious Damage (criminal activity) to oil/fuel pipelines recorded. These have been excluded from the accidental damage database as they relate to deliberate damage for criminal gain, however, the number is reported as a matter of record.

In most cases the operator had not been previously notified of works planned to be carried out.

2. Introduction

Since 2002 UKOPA members have shared information following investigation of 'near miss' and damage incidents ('infringements') on their cross country pipeline assets to ensure that:

- any information, analysis and learning from near miss incidents benefits all member companies
- the Association exploits its collective experience to establish a national data set and trends
- the pipelines industry is co-ordinated and has national coherence

The UKOPA infringement database provides a framework for recording infringements without requiring companies to adopt technically identical definitions. Whilst creating some difficulty in interpretation and analysis this has enabled the collection of data on a national pipeline industry basis. This approach has allowed the Association to develop effective improvement plans as well as ensuring its experience is fully exploited to influence and support regulatory processes.

The structure and content of the infringement database is described in the 'Guidance for Members preparing records for the UKOPA Database' which is available via the Members Centre of the UKOPA Website. A more general introduction to the database is available via www.ukopa.co.uk/excavation-safety/Introduction-to-the-UKOPA-Infringement-Database.pdf

3. Current Status and Management of Database

At the end of 2014, the following Operating companies provided a submission (including nil reports) for the UKOPA infringement database:

BP	Mainline Pipelines Ltd
BPA (inc. part Shell)	Manchester Jetline
ConocoPhillips *	National Grid (UKT & UKD)
E.On *	Northern Gas Networks
Essar (inc. part Shell)	OPA
Esso	SABIC UK Petrochemicals
Humbly Grove Energy *	Scotia Gas Networks
IGas	Shell Expro
Ineos	Wales & West Utilities

Those Operating companies submitting "Nil Reports" are marked *.

A number of these members provided their data via a single route, by means of their participation in Linewatch.

The following Operating companies, registered via Linewatch, provided no return for 2014:

Centrica
Marchwood Power
WinGas

4. Future Plans

IWG is committed to the continued improvements of data and working to reduce the number of infringements that take place on an annual basis. To this aim, the following areas are going to be concentrated on

- Work to further improve the quality of the reported data

In order to consolidate the current success of the database, and develop it further, the IWG will continue to encourage contributing members to improve the quality of their records. Whilst the overall statistical significance of the database has improved and will continue to improve greatly with the participation of the natural gas operators, true statistical significance of the component fields relies heavily on comprehensive completion of all fields for each data record and analysis over the longer term. Significant progress has been made in recent years to address this issue, although it is recognised that further work is required to ensure all infringements are reported particularly those identified from other than aerial patrol data.

As with any mass collation of data there remains a wide variety in how 3rd Parties or, in the case of contractors, “who they are working for” are named. This is also true of the “unknown” records which account for 17% of the overall total recorded infringements. The IWG continues to engage with members to ensure that fields are completed as fully as possible.

- Review the database content to ensure that only relevant data is collected

The IWG will continue to consult with UKOPA members to ensure that the data fields within the database appropriately represent the findings from operator’s investigations of infringements. In doing so the challenge for the IWG is to ensure that there is due regard for the evolutionary nature of development of data collection by the large volume of gas pipeline contributors. These operators use large scale integrated databases which exist for purposes much wider than support of the infringement database, and so addition of new fields will be subjected to critical value and timing assessments.

- Ensure data is collected in a timely and efficient manner

Pipeline operators are requested to provide data on a quarterly basis, with gas operator data being subject to a review in the first quarter of each year prior to submission for inclusion in the IWG infringement report. All data is then critically reviewed for apparent errors and to ensure that appropriate data field entries are consistent with agreed standards. The Linewatch members and other authorised operators utilise the Linewatch Infringement database (LIDB) for recording all events records on a daily basis.

- Greater use of statistical techniques to reveal trends

As the infringement database continues to increase, so its statistical significance as a source of data for UK excavation safety will follow. The size of the dataset will enable the use of statistical analysis techniques to reveal trends and outputs. Critical to this will be to improve the quality of the report dataset to encourage greater consistency in terminology and reporting against all the UKOPA data fields.

5. IWG Plans

The UKOPA IWG set out a number of general objectives :

- Engage with companies identified as the “most frequent infringers” on an annual basis focussing of the output of the Infringement report to improve pipeline safety awareness
- Continue to collect 3rd party pipeline infringement data and publish an annual report
- Raise the profile of the IWG in the general contractor community
- Raise awareness of working safely within cross-country pipeline easements in the general contractor community
- Improve awareness of working safely within cross-country pipeline easements with landowners and tenants.
- Produce a UKOPA Good Practice Guide for Managing Infringements.

6. Main Findings

6.1. Infringements by Category

Figure 1 below presents the overall combined UKOPA data by infringement category. Analysis of the 2014 infringements by category shows the distribution of infringements is generally consistent with a proportional relationship between learning events, near-misses and more serious incidents (the so-called 'Heinrich's triangle').

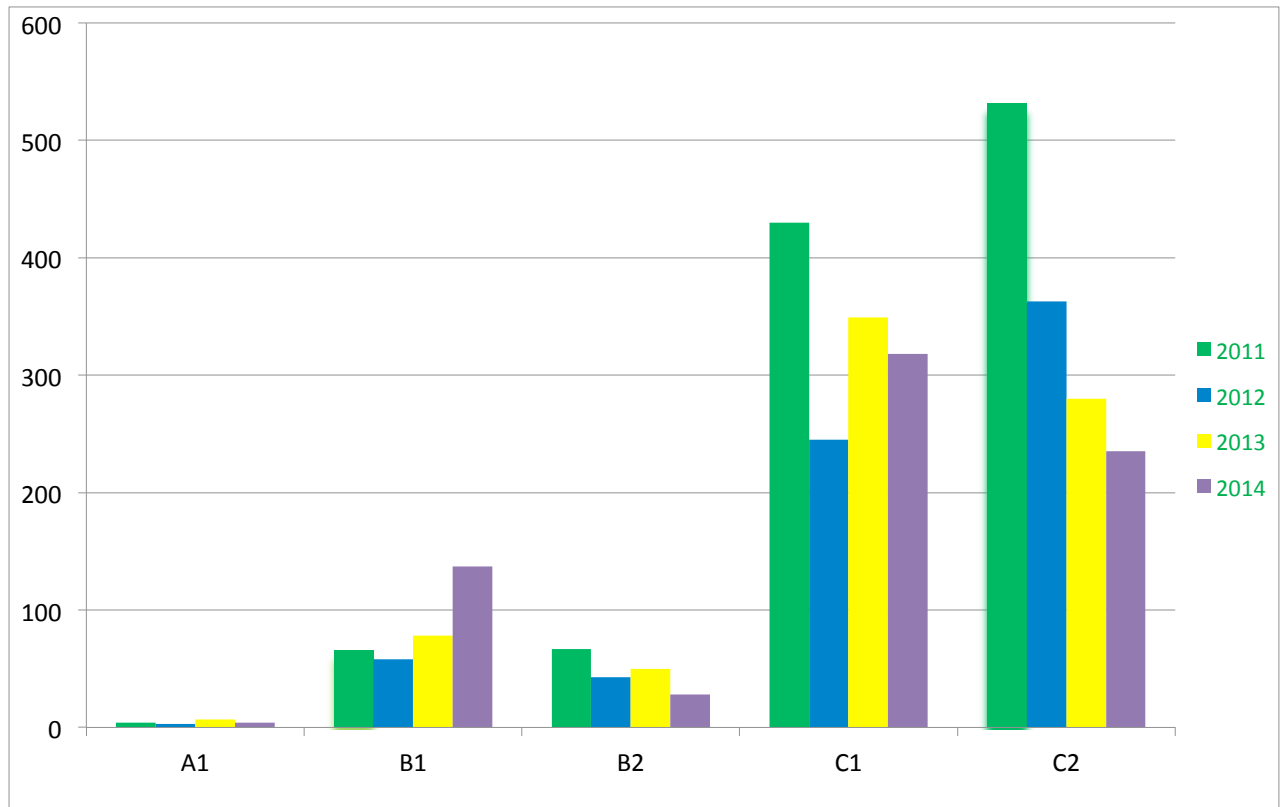


Figure 1. Infringements by Category

	2010	2011	2012	2013	2014	Average
A1	1	4	3	7	4	4
B1	69	66	58	78	137	82
B2	66	67	43	50	28	51
C1	258	430	245	349	318	320
C2	184	532	363	280	235	319

Table 1: Rolling average by Category.

In 2014, there was a small decrease in the overall number of infringements reported; 745 in 2014, compared with 764 in 2013. Whilst the fall in reports is focussed on the lower category events and those outside the easements this is largely due to the gas industry returns, where largely only aerial surveys are recorded. The inclusion of road and ground walking survey reports still indicates a year on year increase of infringements including those events out of the easement but within the zone of interest.

There were four A1 category (actual damage) infringements in 2014, out of the 745 recorded events, summary details as below:

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In addition there were 23 records of Malicious Damage (criminal activity) to oil/fuel pipelines recorded. These have been excluded from the accidental damage database as they relate to deliberate damage for criminal gain, however, the number is reported as a matter of record.

Only one of these damage events occurred after the operator had been previously notified of works planned to be carried out.

The relatively high potential B1 infringements (within the easement) numbered 137, the highest recorded since 2010, or 20% of the total number of infringements and are probably the most significant. This category has previously shown only a small rise in percentage of the total records over the preceding years.

Infringements outside of the easement (B2 and C2) numbered 263 (35%), of which 28 (4%) represented a serious potential B2 threat to the pipeline. Overall, this is a reduction from the previous records although there is a shift of the records set, on a percentage basis, to an increase of those events recorded within the easement.

Taking the B category infringements as a composite we see an increase of 37 events or 29% on the 2013 records.

The C1 category infringements numbered 318 in 2014 which is a decrease on the previous year. These are of limited potential to cause damage but are still considered worthy of investigation to determine the root cause. Further analysis will investigate the weighting of events that had been notified prior to the works (21 aware) and those that are effectively non-notified events.

The C2 category, those with limited potential to cause damage and outside the easement (effectively near miss) numbered 235. The total C2s in 2014 is less than 50% of that reported in 2011 and shows a three year year on year reduction. This is largely due to a reduction in the gas related records related to data quality improvement, the Linewatch group reports have increased progressively during the four year term.

6.1.1. Infringements by Activity Type

Understanding the types of activity contributing to infringement statistics provides important information for:

- Targeting awareness training and communication
- Relating to infringement location and vulnerable areas

Figure 2 shows the distribution of infringements across reported activity types.

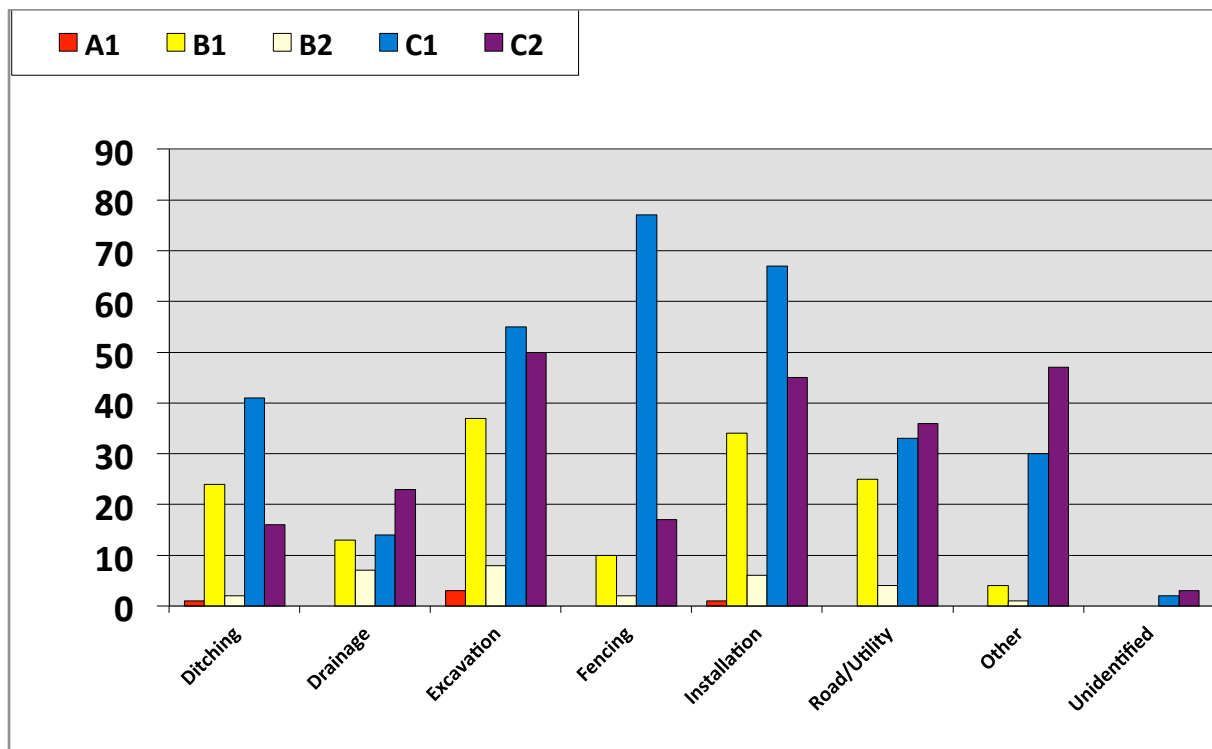


Figure 2: Infringements by Activity Type 2014

The category “unidentified” has shown a year on year reduction as the data quality checking and investigations improve.

Those activities grouped together as “other” include landscaping, crossing by heavy machinery, waste burning etc. which individually are low in the number of events or of limited danger.

6.1.2. Infringements by Location

Locations where infringements take place may provide key information for:

- the main areas of pipeline vulnerability
- areas where marking is critical
- areas where excavator vigilance is particularly important

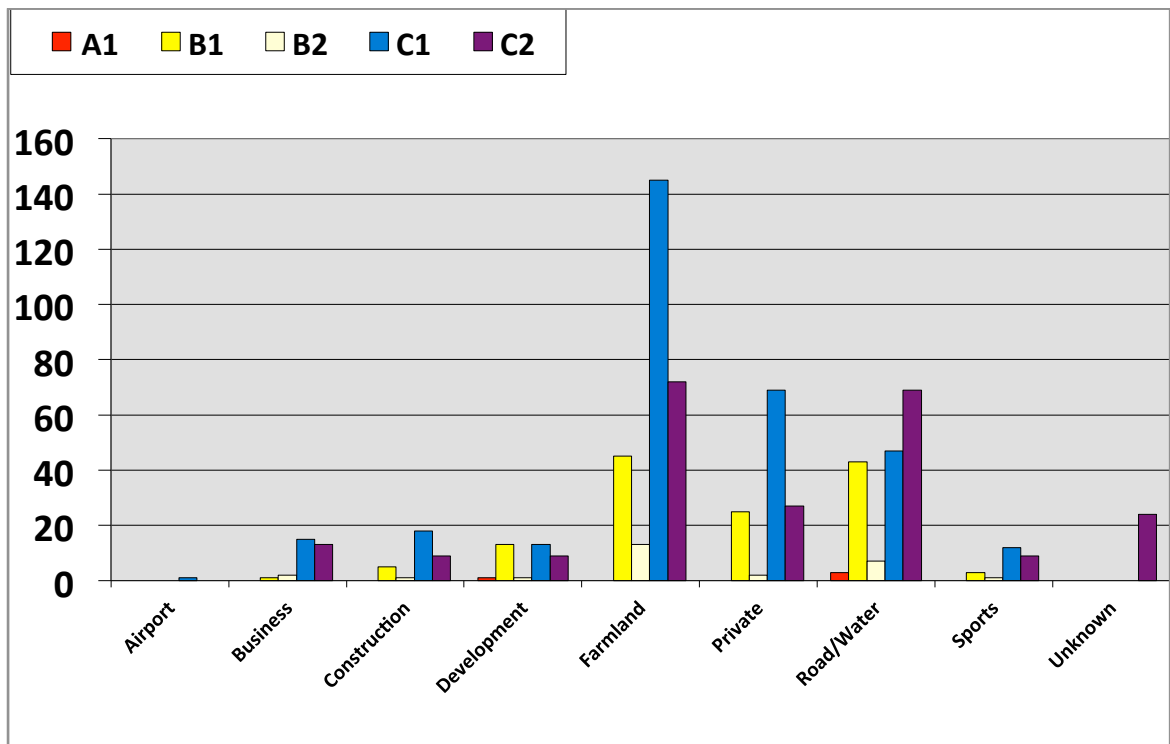


Figure 3: Infringements by Location Type 2014

2014 has shown another annual decrease in the records associated with “farmland”. It is clear though that the combination of farmland and private should be targeted for improvement in the same way as roads/utilities and contractors have been over the previous three years.

The A1 category events all relate to Earth Moving works either in the road verge or adjacent to a waterway. These have not been associated with highways or utility works within the road pavement itself. This is generally in line with the rolling average for reports of actual damage, Table 1.

6.1.3. Infringements by Third Party Type

UKOPA is interested in which types of third parties are infringing:

- Are there any patterns?
- What does it tell us about potential weaknesses in the sub-contracting 'chain'?
- Who is responsible for checks and searches in each case?
- What does it tell us about the 'pipeline awareness' of those actually doing the digging?

Figure 4 describes the current position, the presence of Landowners as the largest single infringing group is consistent when the figure for Contractor is acknowledged to include both rural (landowner) and urban activities. It should be noted, however, that the distinction between 'Contractor' and 'Utility' can be seen as a very fine one and is masked by the significant level of contractor-delivered utility services in the UK.

The totals recorded against Unknown (17% of the total number of infringements) may suggest a lack of ability to follow-up on the original report but will inherently include parties who left the site between the sighting report and a site visit.

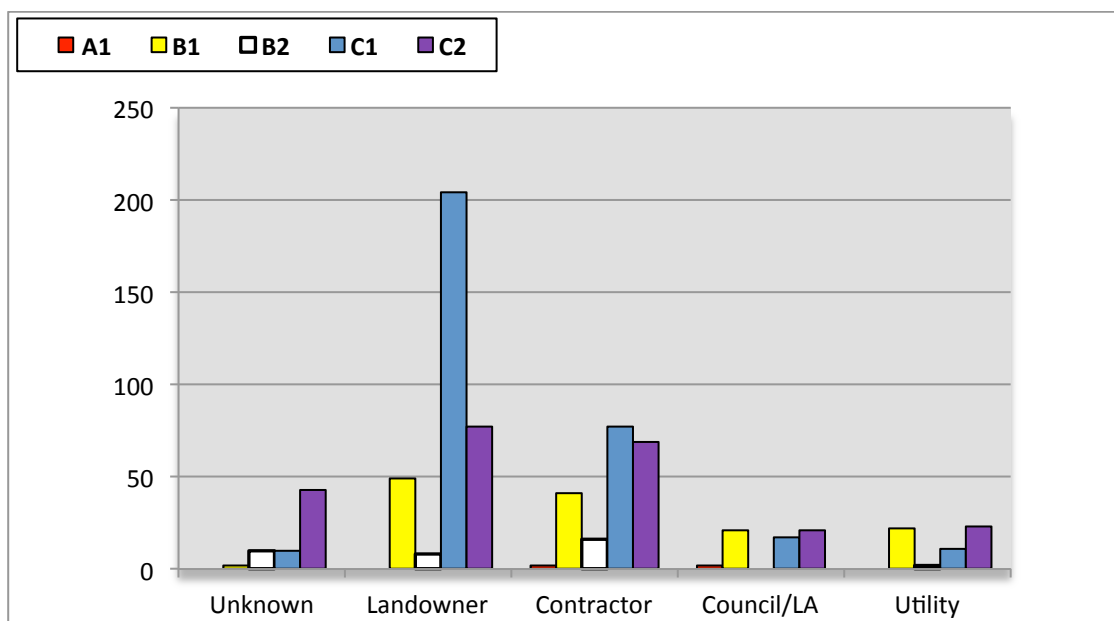


Figure 4: Infringements by Infringer Type 2014

The consistent reduction over previous years is against Contractors where the overall records show a 50% drop. One explanation maybe the emphasis placed on targeting this Infringer type for Safety Awareness presentations as well as an increase in industry compliance.

6.2. Third Party Infringement Performance

UKOPA are interested in identifying and working with anyone who has, or has the potential, to infringe. Those third parties who, via the database, are identified as having made multiple infringements are a particular concern. A summary of the three main activity groups are presented at the top of the Table 3 to give a flavour of the overall numbers of infringers and as an indicator of how much improvement there has been in reducing potential risk or consequence.

As an invited member of UKOPA, the Health & Safety Executive (HSE) has access to the list of 'repeat infringers'. The database output in the form shown in Table 5 has been used by HSE to form their operational strategy. There is no doubt that to date, this is the area where the database has had its greatest impact. For companies that operate on a region-by-region basis, there is some evidence to suggest that through UKOPA's activities, they have become aware of their overall infringement behaviour. HSE's feedback is that this data has received serious attention at senior levels within each company where brought to their attention.

It should be noted that a large number of utility contractors enter into joint ventures with other companies; hence companies can carry out works in their own right or as a joint venture.

In an effort to rank repeat infringers, more "weight" is given to the raw count of infringements based on the seriousness of the infringement by applying a multiplier to each risk category, included in table 3 as an adjacent column. The multiplier "risk" values are based upon the model developed in consultation with the pipeline Operators, as below in Table 2.

A1	10
B1	5
B2	2
C1	2
C2	1

Table 2: Risk Multiplier Matrix

UKOPA remains very aware that the infringement performance of particular companies or agencies is a very sensitive issue. Data is provided by individual operators for use in the database on the understanding that individual records are, in the first instance, confidential. Hence names of the work promoters (identified as company A, company B, etc.) in Table 3 are not published, is confidential to UKOPA members and should not be shared with third parties.

Identifier/Category	Total	A1	Weight X10	B1	Weight X5	B2	Weight X2	C1	Weight X2	C2	Total weighted score
<i>Unknown</i>	0	-	22	110	0	-	44	88	23	221	
<i>Land/Farm</i>	0	-	50	250	8	16	209	418	60	744	
<i>Contractor total</i>	2	20	63	315	18	36	86	172	87	630	
<i>Utility/Infrastructure</i>	2	20	42	210	2	4	29	58	41	333	
Company A	4	1	10	2	10	0	-	1	2	-	22
Company B	10	0	-	2	10	0	-	2	4	6	20
Company C	8	0	-	2	10	1	2	2	4	3	19
Company D	7	0	-	3	15	0	-	0		4	19
Company E	5	0	-	3	15	0	-	1	2	1	18
Utility A	6	0	-	2	10	0	-	3	6	1	17
Utility B	5	0	-	2	10	0	-	2	4	1	15
Utility C	6	0	-	2	10	0	-	1	2	3	15

Table 3: Significant Infringers 2014

A further point to note regarding this data is that it currently makes no attempt to analyse numbers of infringements per third party with their national excavation activity rate. Such a measure, if it were to be developed in future, may provide an alternative expression of each third party's effectiveness in managing activities adjacent to hazardous pipelines.

As with the 2013, the records for 2014 show a lack of infringers with multiple events recorded against them. The contractor companies were sponsored by a variety of Utilities and Infrastructure agencies and generally indicate those operating at a national level and across a number of work sectors.

No individual contractor, Council or utility is identified in 2014 as having a gross failure of systems that creates a repeating series of infringements.

As in previous years the identities of the individual infringers is held by the UKOPA Secretariat in order to provide some anonymity.

7. Conclusions and Recommendations

In 2014, there was a 2.5% decrease in the overall number of infringements reported; 745 in 2014, compared with 764 in 2013. Whilst the greatest fall in reports is focussed on the lower category events and those outside the easements this is largely due to the gas industry returns. The composite for the Linewatch reports still indicates a year on year increase of those events within the zone of interest. Operator companies do, however, investigate these infringements and those findings are encouraged to be shared across the UKOPA membership.

UKOPA members and in particular the IWG will continue to raise awareness of working safely within pipeline easements, particularly with contractors, utilities, landowners and tenants. An emphasis on Operator companies being made aware of all planned works by sponsors and/or contractors within their zone of interest should be encouraged.

Members of IWG will ensure that data is collected in a timely manner and engage with their companies to encourage completion of all fields within the infringement database. Those companies using the LIDB not only benefit from being able to submit daily events but also follow a structured approach by giving users “drop-down” menus providing automatic levels of reporting consistency.

The IWG will continue engage with the HSE to discuss ways of raising awareness of pipeline infringement with the farming and landowner community.

8. Acknowledgements

The development and current success of the infringement database would not have been possible without the support of UKOPA members. Their trust in providing the infringement records and the resources necessary to make the input to UKOPA should not be underestimated.

It is also important to recognise the important role played by HSE’s HID Energy Division - Gas & Pipelines. They have shown faith in UKOPA’s excavation safety activities, providing a valuable member of the IWG, who in turn has worked very effectively with UKOPA colleagues in pursuit of improved awareness of excavation safety in the vicinity of hazardous pipelines.

Appendix A. IWG membership 2014

From 2002 – 2004 contributions to the database were derived from chemical and oil sector pipeline operators only, but since 2005 it has also included records from the UK natural gas distribution system.

Although it has proved difficult to formally confirm the total number of oil, petrochemical and gas pipeline operators in the UK, UKOPA membership (and hence database representation) is considered to exceed 95% of operators by underground pipeline length. As a result, it provides an authoritative view on the third party threat to hazardous pipelines in the UK.

The database is managed on behalf of UKOPA incorporating input from the Linewatch Infringement reporting database where authorised member contributions are provided in a uniform format.

Activities relating to the operation of the database and development of excavation safety strategy are managed by UKOPA's Infringement Working Group (IWG), whose membership during 2014 was constituted as follows:

Nikki Barker	UKOPA Secretariat (secretary)
Helen Berry	HSE
Tony Gillard	Essar (replaced by David Brown)
Geoff Glover	SABIC
Neil Hampshire	Northern Gas Networks
Walter Gaffney	Scotia Gas Networks
Paul Masson	Esso Petroleum (replaced by Phil Rowlands)
Grant Rogers	Wales & West Utilities (IWG Chair)
Ken W Smith	BP Midstream Pipelines
Richard Howard	National Grid Gas
Philip Taylor	British Pipeline Agency
David Ingham	National Grid Gas Distribution
Colin Ballantine	Shell

The 2014 report includes data imported from several sources of aerial surveillance databases. The gas network data has been subject to an extensive filtering exercise to retain only those events which are relevant for the infringement report. Details of the filtering process are published in the guidance to UKOPA members on the population of the infringement data by IWG. Linewatch member data is imported directly from the Linewatch database.

Appendix B. Guidance on Infringement Categories

The UKOPA database categorises infringements on the basis of risk and location indices as follows:

Risk index can be one of three levels:

Risk Index	Infringement Type	Infringement Description
A	Pipeline Damage or Leak	Includes damage to wrap or protective sleeve
B	Serious Potential for Damage	Methods or equipment used could have resulted in significant damage had excavation taken place at pipeline
C	Limited Potential for Damage	Methods or equipment would not have resulted in serious damage

Table 1 Risk Index

Location index can be in two forms:

Location Index	Location Description
1	Within the pipeline wayleave or easement. Typically, this is the zone within which the pipeline operator has legal rights, including a requirement by the landowner to notify planned work (although may be different for non-Pipelines Act lines laid by Statutory Undertakers).
2	Within the pipeline operators zone of interest, but outside the pipeline wayleave or easement. It is the area within which the operator would have reasonably expected a competent third party to have given notification in the prevailing circumstances.

Table 2 Location Index

So that infringement categories can be summarised as follows:

	Actual Damage	Serious Potential for Damage	Limited Potential for Damage
Within Wayleave or Easement	A1	B1	C1
Within Operators Notification Zone	-	B2	C2

Table 3 Infringement Categories