



United Kingdom Onshore Pipeline Operators' Association

## **UKOPA Report**

2017 Infringement database report

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This report has been prepared by the UKOPA Infringement Working Group and approved for publication by the UKOPA Board

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## CONTENTS

<b>1.</b>	<b>Executive Summary</b>	<b>1</b>
<b>2.</b>	<b>Introduction</b>	<b>2</b>
<b>3.</b>	<b>Current Status and Management of Database</b>	<b>3</b>
<b>4.</b>	<b>IWG Objectives and Targets</b>	<b>4</b>
4.1	Data Collection	4
<b>5.</b>	<b>Main Findings</b>	<b>6</b>
5.1	Infringements by Category	6
5.2	Infringements by Activity Type	7
5.3	Infringements by Location	8
5.4	Infringements by Third Party Type	10
5.5	Third Party Infringement Performance	11
<b>6.</b>	<b>Conclusions and Recommendations</b>	<b>13</b>
<b>7.</b>	<b>Acknowledgements</b>	<b>14</b>
	<b>Appendix A. IWG membership 2017</b>	<b>15</b>
	<b>Appendix B. Guidance on Infringement Categories</b>	<b>16</b>

## 1. EXECUTIVE SUMMARY

In 2017, there was a decrease in the overall number of infringements reported; 597 in 2017 compared with 870 in 2016. Despite this decrease, which can be partly accounted for by the standardisation of recording of data by the natural gas pipeline operators, there has been a significant (71.5%) increase in category 'B' infringements, i.e. those infringements that have serious potential to cause damage. B1 reports have increased by 32% (104 in 2016 to 138 in 2017) and there has been a 228% increase in B2 reports (26 in 2016 to 85 in 2017). The UKOPA Infringement Working Group (IWG), now has a standard item on its agenda, to share learnings from such infringements.

2 of the 597 reports were recorded as A1 Malicious Damage (compared with 9 in 2017, 32 in 2015 and 23 reports during 2014), all relating to national theft issues. These reports have not been included in any further analysis throughout this report, thus the number of infringement reports being considered is 595.

There was one A1 category (actual damage) infringement in 2017, out of 595 recorded events.

- A landowner caused damage to a 250mm nitrogen filled steel pipeline during ditching works. An inspection of the pipeline revealed damage to the pipeline wrapping but no damage to the pipeline. As a result of this, the wrapping has been repaired and new pipeline markers have been installed at the ditch crossing. No contact / plant enquiries had been made with the operator prior to the damage occurring.

The greatest number of infringements recorded continues to occur in farmland and this will remain the biggest focus area for the IWG. During 2017 a UKOPA Good Practice Guide for Working Safely Near High Pressure Pipelines has been drafted and this will be published before the end of 2018.

There are no companies, utilities or local authorities that have multiple infringements (more than 10) recorded against them in the database. It is however noted that contractor infringer type has increase to 27.6% (from 9.3% in 2014), and as such the IWG has been charged with contacting those contractors that appear on the significant infringers list, making them aware of this increase, providing them with a copy of this report and the need for their staff to contact pipeline operators prior to any work taking place.

## 2. INTRODUCTION

Since 2002 UKOPA members have shared information following investigation of 'near miss' and damage incidents ('infringements') on their buried 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](http://www.ukopa.co.uk/excavation-safety/Introduction-to-the-UKOPA-Infringement-Database.pdf)

### 3. CURRENT STATUS AND MANAGEMENT OF DATABASE

At the end of 2017, the following Operating companies provided a submission (including nil reports) for the UKOPA infringement database:

- |                                  |                           |
|----------------------------------|---------------------------|
| • BP FPS (Ineos FPS)             | • Northern Gas Networks   |
| • BPA (inc part Shell)           | • Perenco                 |
| • Cadent                         | • Petrolneos*             |
| • CATS                           | • SABIC UK Petrochemicals |
| • CHL-PS                         | • SGN                     |
| • Eon*                           | • Shell Expro             |
| • Esso                           | • Total                   |
| • Humbly Grove Energy            | • Uniper*                 |
| • Ineos*                         | • Wales & West Utilities  |
| • Mainline Pipelines Ltd         | • Wingas*                 |
| • National Grid Gas Transmission |                           |

Those Operating companies submitting “Nil Reports” are marked \*.

A number of these organisations 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 2017:

- EP Langage (previously Centrica)
- Phillips66 (previously ConocoPhillips)
- IGas
- Manchester Jetline
- Marchwood Power

## 4. IWG OBJECTIVES AND TARGETS

The IWG strategy sets out a number of objectives and these are reviewed regularly to ensure that they are still relevant.

Currently, these are to:

- Engage with companies identified as the “most frequent infringers” from annual 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 Infringement Working Group 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.
- Work with all operators, particularly gas operators, to ensure standardisation of data submitted, utilising the selection criteria already developed.
- Identify ways of engaging with the landowner / farming community to reduce the number of infringements that occur on farming land.
- Good progress continues to be made against many of the objectives and the IWG will continue to develop on the work done to date.

The IWG will be completing and publishing the following documents during 2018:

- Good Practice Guide for Local Authority Planners.
- Landowner Guidance for Working Near High Pressure Pipelines.

### 4.1 Data Collection

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 continue to be the focus for the group.

- Work to further improve the quality of the reported data.

Members who do not report infringements via Linewatch will continue to work to improve the quality of the data submissions, with all members provided with a template of the information required for the UKOPA report.

As with any mass collation of data there remains a wide variety in how third parties or, in the case of contractors, “who they are working for” are named, this is also true of the “unknown” records. 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 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 annually. Gas operator data is 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 are submitted via this system 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. MAIN FINDINGS

### 5.1 Infringements by Category

Figure 5-1 below presents the overall combined UKOPA data by infringement category. Analysis of the 2017 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').

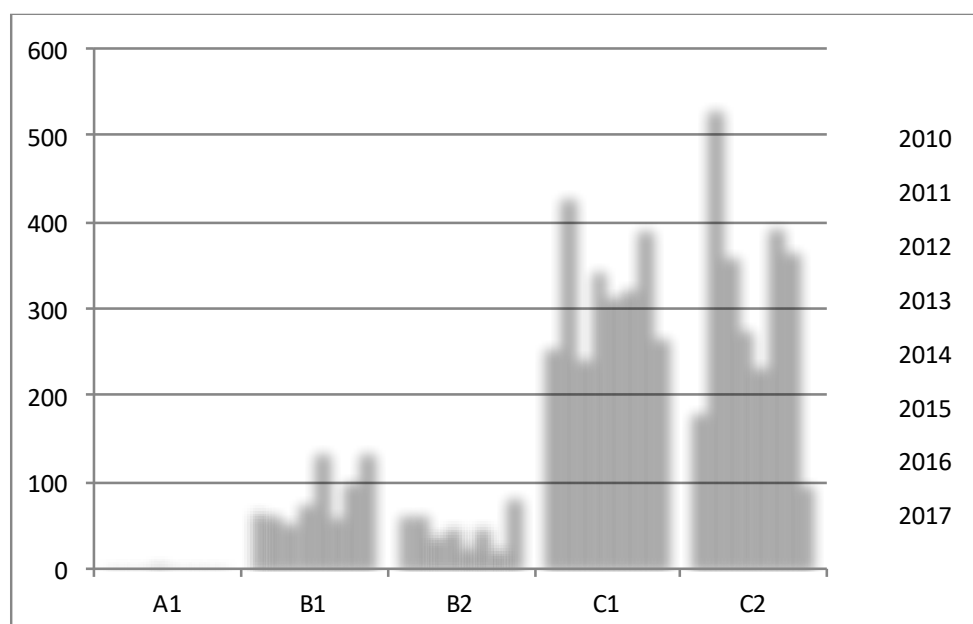


Figure 5-1 Infringements by category,

	2010	2011	2012	2013	2014	2015	2016	2017	Average
<b>A1</b>	1	4	3	7	4	1	5	1	<b>3.3</b>
<b>B1</b>	69	66	58	78	137	62	104	138	<b>89</b>
<b>B2</b>	66	67	43	50	28	50	26	85	<b>52</b>
<b>C1</b>	258	430	245	349	318	327	395	271	<b>324</b>
<b>C2</b>	184	532	363	280	235	398	368	100	<b>307</b>
<b>Total</b>	578	1099	712	764	722	838	898	595	

Table 5-1 Rolling average by category,

There was one A1 category (actual damage) infringement in 2017, out of 595 recorded events.

- A landowner caused damage to a 250mm nitrogen filled steel pipeline during ditching works. An inspection of the pipeline revealed damage to the pipeline wrapping but no damage to the pipeline. As a result of this, the wrapping has been repaired and new pipeline markers have been installed at the ditch crossing. No contact / plant enquiries had been made with the operator prior to the damage occurring.

There were also 2 records of A1 Malicious Damage reports on refined oil pipelines recorded in 2017. This is a reduction from 9 in 2016, 32 in 2015 and 23 reports during 2014, all relating to national theft issues. These are not included in the above figures or in further analysis by request of the affected operators.

There continues to be an increase in B1 infringements from 104 in 2016 to 138 in 2017 which is a 32% rise. B1 infringements account for some 23% of all recorded infringements.

B2 infringements increased by 228% from 26 in 2016 to 85 in 2017. B1 and B2 infringements account for 37% of the total number of reports recorded in 2017. The IWG continues to encourage member companies to carrying out investigations into these infringements and share the learnings throughout UKOPA.

There was a total of 185 infringements outside of the easement, but within the operators' zone of interest (B2 and C2). This is a significant drop of 53% from the 394 infringements recorded in 2016. This represents 31% of all the infringements recorded and is a reduction of 13% from 2016.

There was a decrease of 124 reports for C1 category infringements (395 in 2016 to 271 in 2017) and a decrease of 268 reports for C2 category infringements (368 in 2016 to 100 in 2017). Category C infringements account for 62.5% of all the recorded infringements in 2017, down from 85% in 2016.

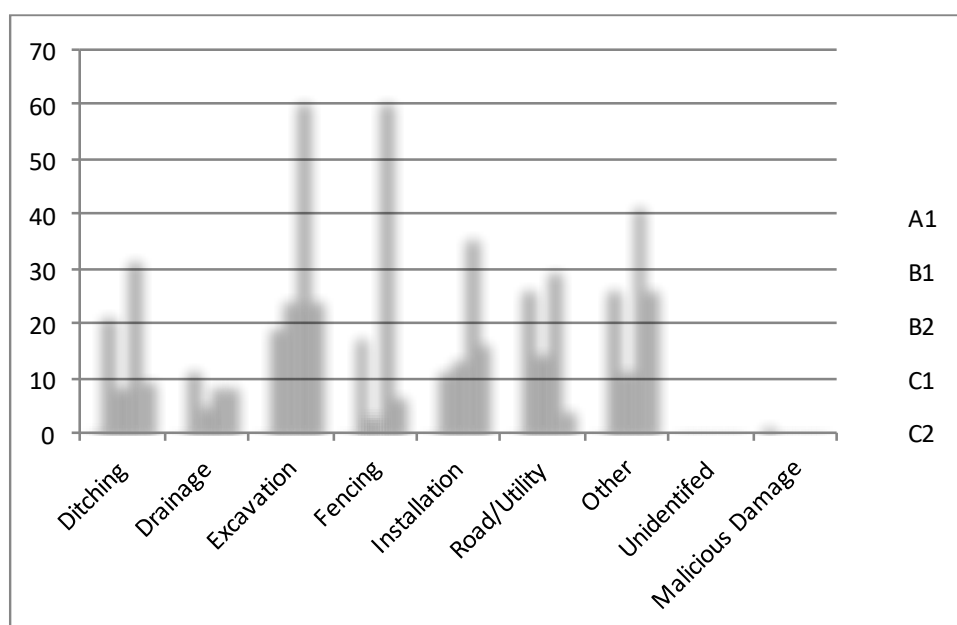
Of the 595 infringements, only 48 were recorded as the pipeline operator being aware of the activity taking place or 8%. This is a significant reduction from 2016 when 39% of the reports were recorded as the pipeline operator being aware of the activity taking place.

## 5.2 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 5-2 shows the distribution of infringements across reported activity types.



**Figure 5-2 Infringements by activity type 2017.**

Much work was done during 2017 in order encourage members to identify the types of activity that had resulted in an infringement. For the first time in reporting history, there were no infringements recorded that had 'unidentified' as the activity category.

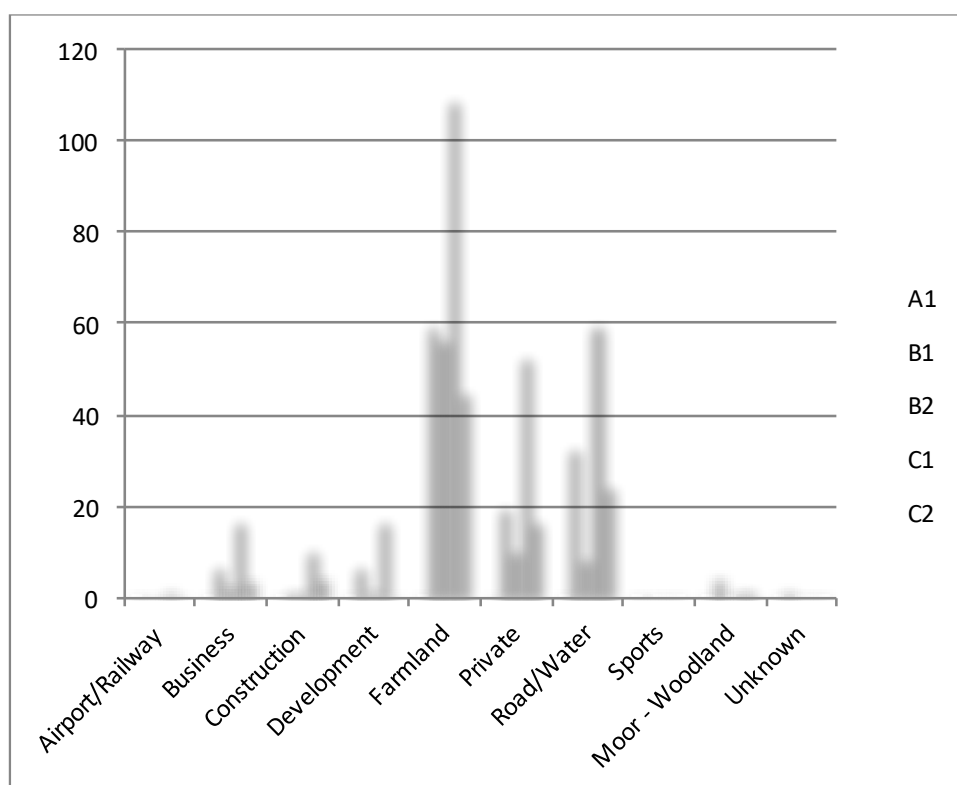
Those activities grouped together as "other" are made up of 13 activity types – Archaeology, Crossing by Heaving Vehicles, Flooding, Forestry, Site Compound, Landscaping, Machinery Parked, Machines in Easement, Quarry, Riverbank, Tree / Vegetation Clearing, Waste Burning and Waste Dumping - which individually are low in the number of events or of limited danger.

However, there is also a specific activity type in the infringement database entitled 'other' which is what is recorded if an infringement is anything other than the categories in the drop-down menu of the database. Again, this year, this figure has significantly reduced and therefore only accounts for 6 of the 597 (when the malicious damage records are included). In 2017, 18% of all the recorded infringements are classed as 'other'.

### 5.3 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 5-3 Infringements by location type 2017.**

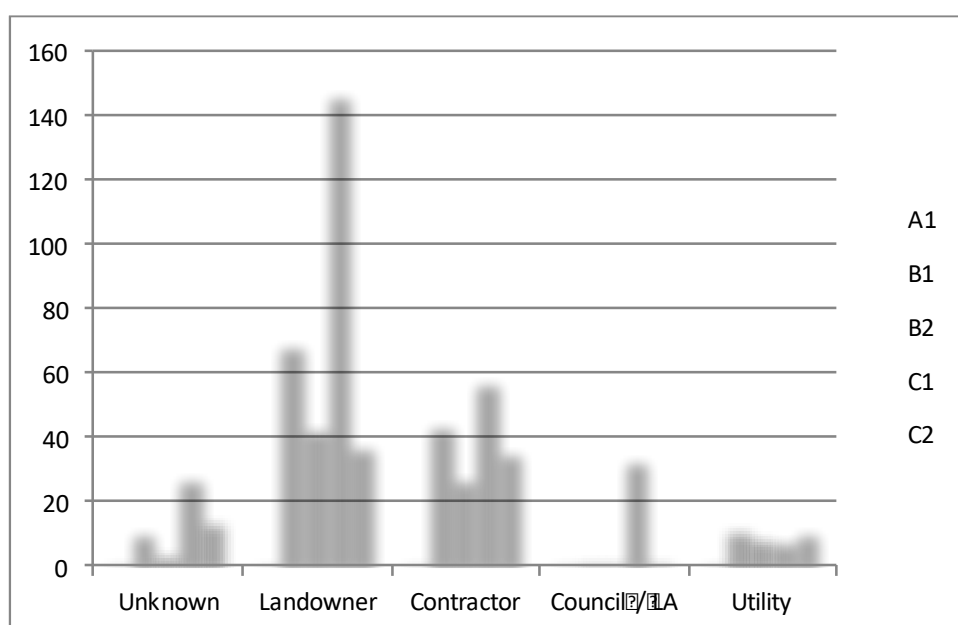
Incidents in 'farmland' continues to provide the largest number of records in the database. The IWG has continued to try to engage with organisations associated with farmers – such as the National Farmers Union (NFU) and HSEs agricultural sector – to further raise awareness of the dangers of working near pipelines and the precautions required. Work is almost complete on an industry awareness document – working near high pressure pipelines. It is hoped that both these initiatives will lead to the same type of improvement and reduction in incidents recorded, as those associated with work carried out in roads and by utilities and contractors, that occurred following targeted action by IWG in this area in previous years.

Work in farmland, private land and roads / waterways continue to provide the greatest number of incident reports recorded, accounting for almost 84%. This figure is almost the same as in 2016, with a figure of 83%. These areas therefore should remain the focus of awareness raising initiative by IWG and UKOPA member companies.

## 5.4 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 5-4 Infringements by infringer type 2017.**

Figure 5-4 describes the current position by infringer type. Landowners continue to be the largest single infringing group particularly when taking into account that Contractor figure 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.

In 2017, Contractor infringer type once again increased to 27.6% of all infringers. This increase follows an upward trend, 25.7% in 2016, 16.6% in 2015 and 9.3% in 2014. Last year's recommendation for the IWG to look to develop an awareness campaign for UKOPA and its members to share with the contractor community to again raise awareness of the risks of working near pipelines, has not yet been acted upon and based on the albeit small percentage increase, the IWG are now encouraged to follow this up.

The totals recorded against "unknown" are 56 (9.3% compared with 10.5% in 2016 and 17% in 2015); 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.

## 5.5 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, but also give a focus to where member awareness raising could be targeted.

A summary of the main activity groups is presented at the top of the Table 5-3 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 can be seen work still needs to be done on reducing the number of 'unknown' category reports, however, this weighted score has reduced again to 131; down from 174 in 2016, 208 in 2015 and 221 in 2014.

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 5-3 as an adjacent column. The multiplier "risk" values are based upon the model developed in consultation between the IWG, Linewatch and UKOPA, as below in Table 5-2.

A1	10
B1	5
B2	2
C1	2
C2	1

**Table 5-2 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 5-3 are not published and remain confidential to UKOPA.

However, 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 5-3 has been used by HSE to inform 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.

Identifier/Category	Total	A1	Weight x10	B1	Weight x5	B2	Weight x2	C1	Weight x2	C2	Total weighted score
Unknown	0	0	0	11	55	4	8	27	54	14	131
Land/Farm	1	10	69	345	43	86	146	292	37	770	
Contractor total	0	0	44	220	27	54	57	104	36	424	
Council / LA	0	0	2	10	2	4	33	66	2	82	
Utility/Infrastructure	0	0	12	60	9	18	8	16	11	105	
Utility A	4	0	-	3	15	0	-	1	2	0	17
Utility B	6	0	-	1	5	3	6	1	2	1	14
Company A	3	0	-	2	10	0	-	1	2	0	12
Company B	4	0	-	1	5	0	-	2	4	1	10
Company C	5	0	-	0	-	0	-	3	6	1	9
Company D	3	0	-	1	5	0	-	0	-	2	7
Local Authority	3	0	-	0	-	0	-	3	6	0	6
Company E	3	0	-	0	-	0	-	3	6	0	6
Utility C	3	0	-	0	-	2	4	0	-	1	5
Utility D	4	0	-	0	-	0	-	1	2	3	5

**Table 5-3 Significant Infringers 2017**

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 in the previous two years, the records for 2017 show a lack of infringers with multiple events (more than 10) recorded against them. Many of the contractor companies in Table 5-2 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.

There are a number of utility companies who appear in the repeat offenders list, who work across the UK. It is recommended that the IWG target the senior managers in these organisations to raise awareness of issues being experienced as at a local level, it may seem that there is not an issue, but company wide, there is a different story to tell.

The identities of the individual infringer companies / organisations is held by the UKOPA Secretariat.

## 6. CONCLUSIONS AND RECOMMENDATIONS

In 2017, there was a 34% decrease in the overall number of infringements reported; 595 in 2017 compared with 898 in 2016. There was however a 71% increase in the B categories, those infringements that have potential to cause damage, from 130 in 2016 to 223 in 2017. The decrease occurred in the C categories, reducing by 59% from 663 in 2016 to 271 in 2017. The overall reduction in reports can be accounted for by the standardisation in the natural gas pipeline operators reporting, following changes to the recording systems in 2016.

In 2017, there was a 18% decrease in the number of B1 and C1 findings (within the pipeline easement) compared with 2016 whereas there was an 53% reduction in the number of B2 and C2 findings (inside the pipeline operators zone of interest); with an overall reduction in reported infringements of 34% (898 in 2016 compared with 595 in 2017). Operator companies do, however, investigate all types of infringements and are encouraged to share the findings 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 landowners and/or contractors within their zone of interest should continue to be encouraged. Particular emphasis during 2018 should be focused on the contractor community, with the IWG contacting those organisations that appear on the 'top 10' infringers list.

Members of IWG will continue to ensure that data is collected in a timely manner and engage with their members to encourage completion of all fields within the infringement database. Consistency of reporting terminology and structured approaches to reporting will continue to be developed. It should be noted that for the first time in many years this report is being published during the first half of the following calendar year.

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



## 7. 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 2017

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 2017 was constituted as follows:

- Nikki Barker                      IWG Secretary
- Robert Bood                      National Grid Transmission
- Alan Meyer                        HSE
- David Brown                      Essar
- Kenneth Burn                    CATS
- Martin Davey                    SGN
- Brian Downes                    Shell
- Walter Gaffney                   SGN
- Geoff Glover                    SABIC
- Ian Hageman                    CHLPS
- Daniel Ingham                   Cadent
- Jim Jarvie                        Ineos
- Chris Johnson                   BP Exploration / Ineos FSP
- Kam Liddar                      National Grid Transmission
- Mick Mills                        Esso Petroleum
- Grant Rogers                    Wales & West Utilities
- Philip Taylor                    BPA (IWG Chair)
- David Turner                    Northern Gas Networks

The 2017 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
<b>A</b>	Pipeline Damage or Leak	Includes damage to wrap or protective sleeve
<b>B</b>	Serious Potential for Damage	Methods or equipment used could have resulted in significant damage had excavation taken place at pipeline
<b>C</b>	Limited Potential for Damage	Methods or equipment would not have resulted in serious damage

**Table B-1 Risk index**

Location index can be in two forms:

Location Index	Location Description
<b>1</b>	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).
<b>2</b>	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 B-2 Location index**

So that infringement categories can be summarised as follows:

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

**Table B-3 Infringement categories**