

Title:
**2013 Report for the UKOPA
Infringement Database**

Date of Issue: December 2014

Author:
Infringement Working Group

Ref: UKOPA/14/0033

UKOPA

UKOPA Disclaimer

This document is protected by copyright and may not be reproduced in whole or in part by any means without the prior approval in writing of UKOPA. The information contained in this document is provided as guidance only and while every reasonable care has been taken to ensure the accuracy of its contents, UKOPA cannot accept any responsibility for any action taken, or not taken, on the basis of this information. UKOPA shall not be liable to any person for any loss or damage which may arise from the use of any of the information contained in any of its publications. The document must be read in its entirety and is subject to any assumptions and qualifications expressed therein. UKOPA documents may contain detailed technical data which is intended for analysis only by persons possessing requisite expertise in its subject matter.

1. 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. With a range of pipeline systems and operators, this latter point has been the key to enable 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

2. Current Status and Management of Database

At the end of 2013, the following companies provided records for the UKOPA infringement database:

BP	National Grid (UKT & UKD)
BPA (inc. part Shell)	Northern Gas Networks
Essar (inc. part Shell)	OPA
Esso	SABIC UK Petrochemicals
Ineos	Scotia Gas Networks
Mainline Pipelines Ltd	Shell Expro
	Wales & West Utilities

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

The following companies contributed nil reports:

ConocoPhillips	Centrica
E.On	Humbly Grove Energy
IGas	Manchester Jetline
Marchwood Power	WinGas

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 using the Linewatch on-line reporting database, members contributions are provided in a uniform format to allow efficient import of new records.

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 2013 was constituted as follows:

Nikki Barker	PIE (secretary)
Helen Berry	HSE
Tony Gillard	Essar
Geoff Glover	SABIC
Neil Hampshire	Northern Gas Networks
Phil Hirst	Fisher German
Barry MacKay	Scotia Gas Networks
Paul Masson	Esso Petroleum
Grant Rogers	Wales & West Utilities (IWG Chair)
Ken W Smith	BP Midstream Pipelines
Robert Stockley	National Grid Gas
Philip Taylor	British Pipeline Agency
Niki Wileman	National Grid Gas

3. IWG Plans for 2014

The IWG set out a number of objectives for 2014 and these were to:

- Engage with companies identified as the “most frequent infringers” from the 2013 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.

4. Main Findings

4.1. Infringements by Category

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

The 2013 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.

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

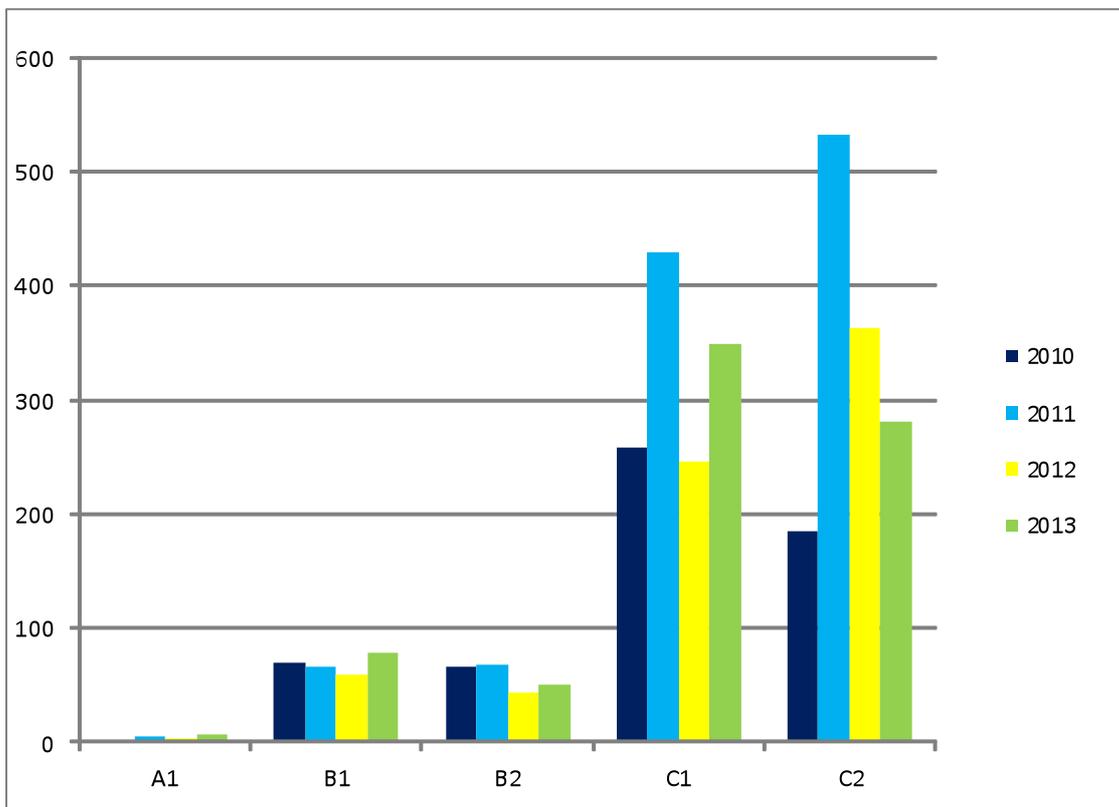


Figure 1. Infringements by Category

There were seven A1 category (actual damage) infringements in 2013, out of 764 recorded events, summary details as below:

- i. to gas pipeline by contractor whilst ditching for farmer; found by aerial patrol
- ii. to oil pipeline by landowner whilst installing drainage; notified by other
- iii. to gas pipeline by contractor whilst earthmoving for developer; notified by other
- iv. to gas pipeline by landowner whilst ditching; found by aerial patrol (operator previously aware)
- v. to oil pipeline by landowner whilst ditching; found by road patrol
- vi. to oil pipeline by unknown party; notified by other
- vii. to oil pipeline by a Local Authority during installation of a travellers camp; notified by other

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

The relatively high potential B1 infringements (within the easement) numbered 78, the highest recorded since 2010, or 10% of the total number of infringements and are probably the most significant. This category has shown a small rise in percentage of the total records over the last three years, but is still less than the 12% high in 2010.

Infringements outside of the easement (B2 and C2) numbered 330 (43%), of which 50 (7%) represented a serious potential B2 threat to the pipeline. Overall, this is a reduction from the 2012 records although there is a shift of the records set, on a percentage basis, to an increase of those events recorded within the easement.

The C1 category infringements numbered 349 in 2013 which is a 42% increase 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 (aware) and those that are effectively surprise events.

The C2 category, those with limited potential to cause damage and outside the easement (effectively near miss) numbered 280. The total for C2 in 2013 which is around 75% of that reported in 2012 shows a three year reduction. This is largely due to a reduction in the gas related data, however it is difficult to draw any conclusions from this difference from one year to the next.

4.1.1. 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.

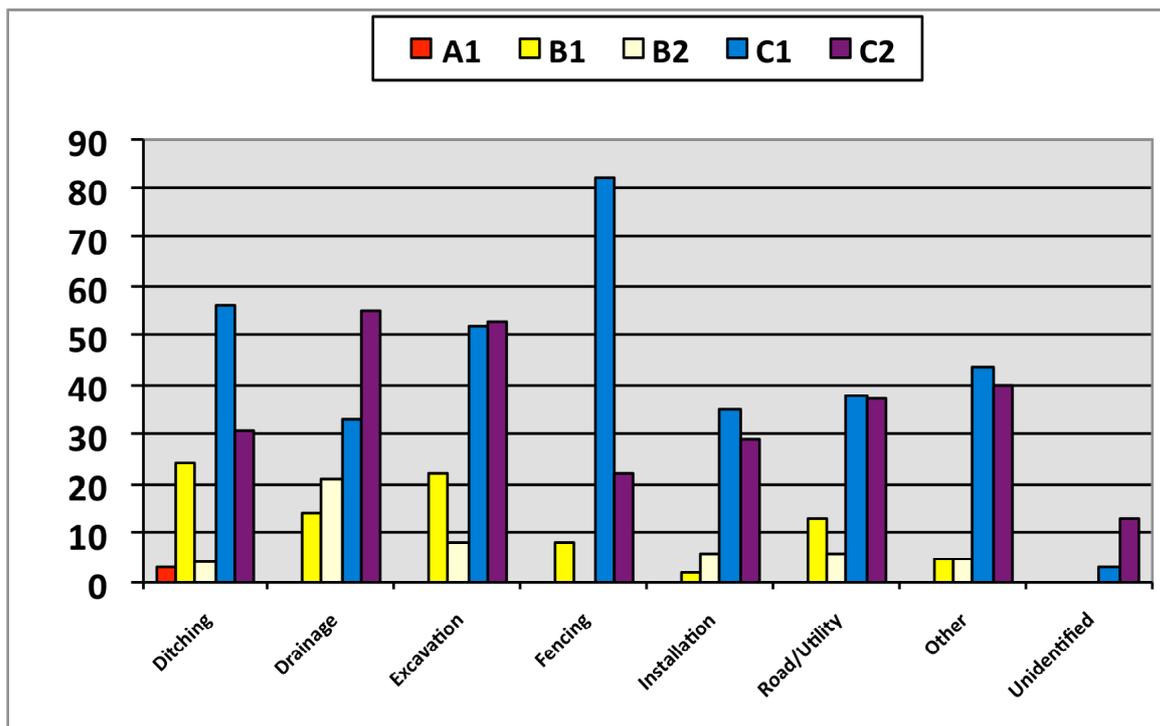


Figure 2: Infringements by Activity Type 2013

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.

4.1.2. 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

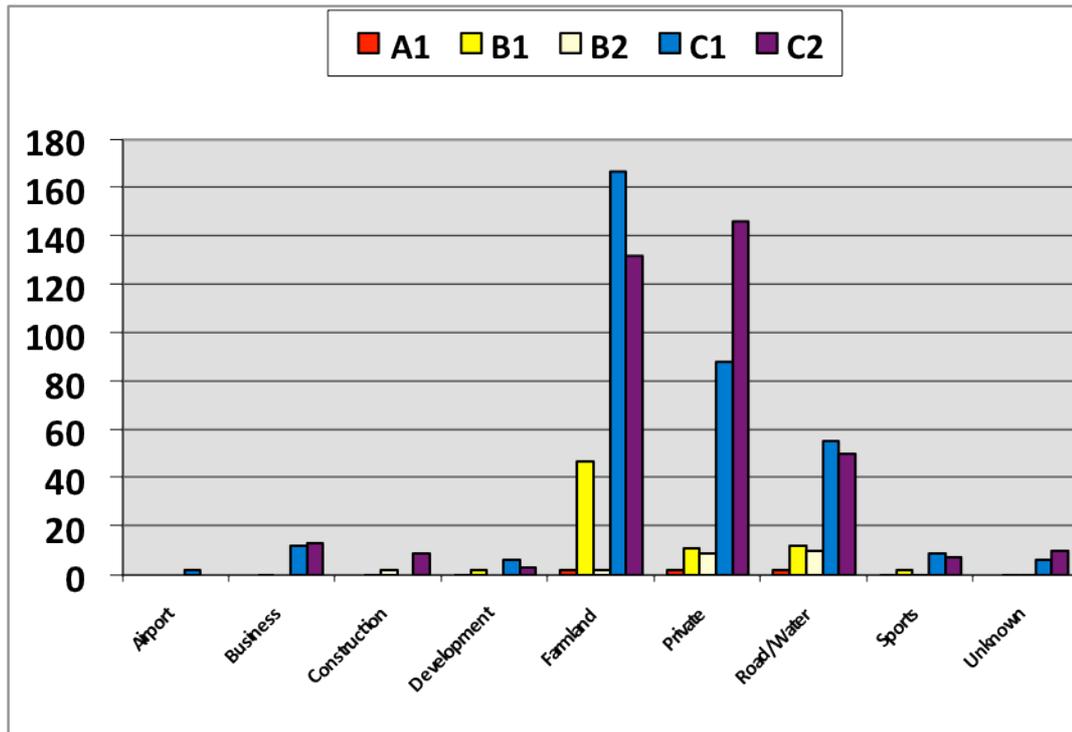


Figure 3: Infringements by Location Type 2012

2013 has shown a marked decrease in the overall records associated with “farmland” such that the category can be displayed in the composite graph for the first time. It is clear though that the combination of farmland and private should be targeted for improvement in the same way that roads/utilities and contractors have been over the previous three years.

4.1.3. 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 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.

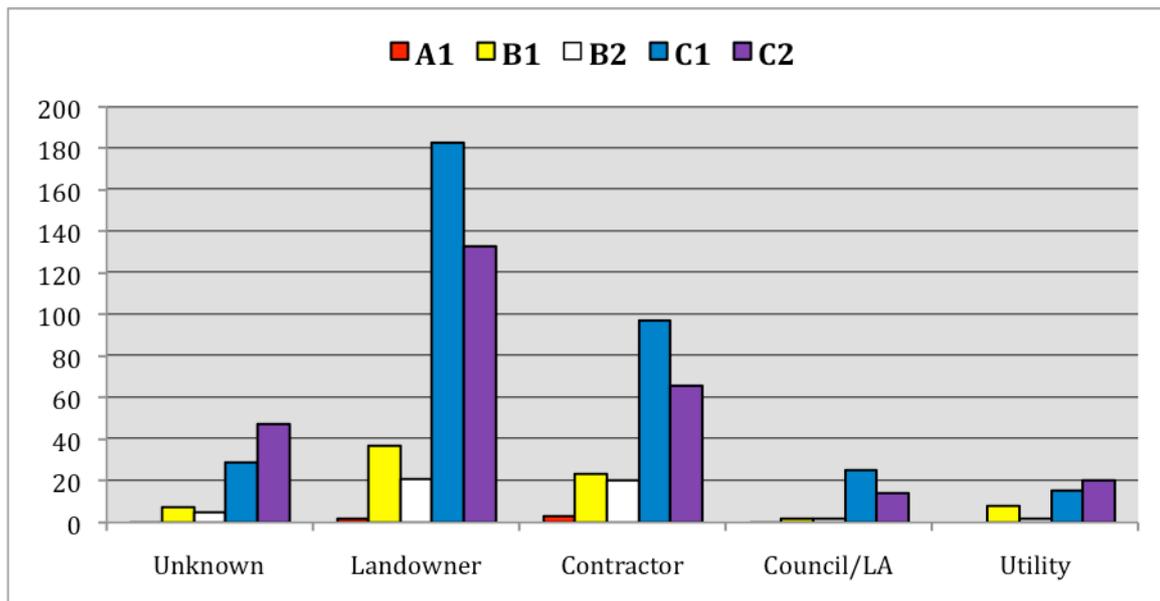


Figure 4 Infringements by Infringer Type 2012

The largest 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.

4.2. 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 5 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 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.

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 as an adjacent column. The multiplier "risk" values are based upon the model developed in consultation with the IWG, Fisher German and Pipeline Integrity Engineers (PIE), as below in Table 4.

A1	10
B1	5
B2	2
C1	2
C2	1

Table 4 - 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 companies (identified as company A, company B, etc) in Table 5 are not published, is confidential to UKOPA members and should not be shared with third parties.

Identifier/Category	A1	Weight X10	B1	Weight X5	B2	Weight X2	C1	Weight X2	C2	Total weighted score
<i>Unknown</i>	1	10	7	35	5	10	29	58	47	160
<i>Land/Farm</i>	2	20	37	185	21	42	183	366	133	746
<i>Contractor total</i>	3	30	23	115	20	40	97	194	66	445
Company A	0	0	3	15	1	2	0	0	5	22
Company B	0	0	3	15	0	0	2	4	3	22
Company C	0	0	1	5	1	2	2	4	6	17
Landowner A	0	0	4	20	0	0	0	0	1	21

Table 5: Significant Infringers 2013

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 rage. 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.

The greatest change for 2013 is lack of infringers with multiple events recorded against them. In all three examples of those infringers with a composite score in excess of 15 there is a direct link to work by or for a major national utility.

The balance check of the landowner who has four serious infringements indicates a known but serious communications breakdown regarding leases and responsibility. From the comments recorded in the infringement database it is can be indentified that work is underway to clarify the situation and negotiations are continuing.

No other contractor, Council or utility is identified in 2013 as having a failure of systems that creates a repeating series of infringements.

As in previous years the identities of the individual infringers is held by the Chairman of the Infringement Working Group in order to provide some anonymity.

5. 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 “who working for” are named. This is also true of the “unknown” records which account for 23% of the overall total. 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 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.

- 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.

6. Conclusions and Recommendations

In 2013, there was a 7% increase in the overall number of infringements reported; 764 in 2013, compared with 712 in 2012. There was however a large increase in category A infringements, with numbers increasing from 2 in 2012 to 7 in 2013. Companies do however investigate fully these infringements and findings are 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.

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.

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.