United Kingdom Onshore Pipeline Operators' Association

UKOPA Infringement Working Group

2006 Report for the UKOPA Infringement Database

1. Introduction

Until 2002, UKOPA members investigated 'near miss' and damage incidents ('infringements') on their buried pipeline assets on an individual basis. Although points of learning from the most significant incidents were shared amongst UKOPA members via established communication processes, the membership recognised that

- any information, analysis and learning from near miss incidents was limited to individual company efforts and their data-set
- the Association was not exploiting its collective experience to key national data and trends
- as a consequence industry response lacked co-ordination and 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.

Since its launch, the database has allowed members to share infringement details and trends, allowing the Association to develop effective improvement plans and ensure its experience can be 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 2006, the following companies provided records for the UKOPA infringement database

- National Grid
- BP
- Innovene
- Esso Petroleum
- E.On
- Unipen (MJL)
- Wales & West Utilities
- Shell
- SABIC UK Petrochemicals
- Total (UK)
- BPA
- OPA
- Scotia Gas Networks
- Northern Gas Networks

A number of these members (Total UK, Esso, BPA, Unipen and OPA) provided their data via single route by means of their participation in Linewatch

From 2002 – 2004 contributions to the database were derived from chemical and oil sector pipelines. With the addition of records from the UK natural gas distribution system from 2005, database content has increased significantly, as shown in Figure 1.

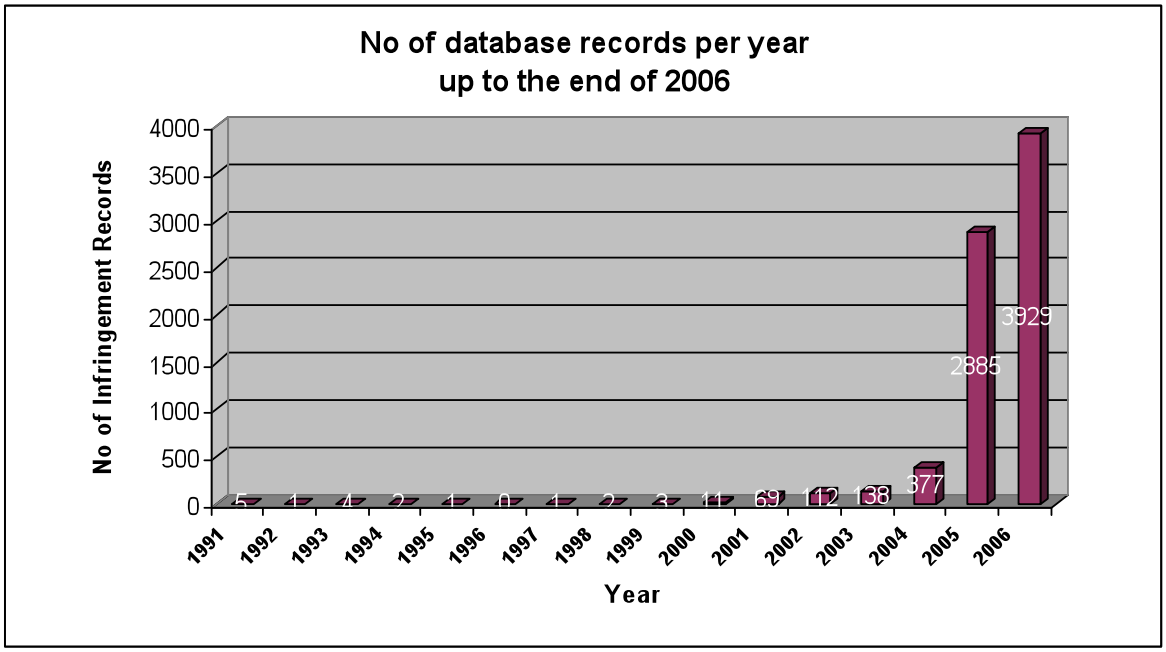


Figure 1 – Growth of total database records

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

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 2006 was constituted as follows :-

Mark A Harrison	Huntsman Petrochemicals (UK)	(IWG Chair)
Mike Thomson	Ineos Manufacturing Scotland	
Ken W Smith	BP FPS	
Tony Gillard	Shell UK	
Guy M Hemsley	BPA	
Jim Stancliffe	HSE	
Neil W Jackson	National Grid Gas	
Chris Clarke	Wales & West Utilities	

The database is managed in a MS Excel format and members contributions are provided in a matching format to allow efficient import of new records.

3. Key events during the year

In addition to the ongoing development of the database and utilisation of resulting data, the IWG have initiated a number of other related activities, including :

- development of an 'industry standard' excavation safety DVD for eventual use by all UKOPA members
- development of a UKOPA 'excavation safety' webpage within www.ukopa.co.uk to publicise the work of the IWG and general excavation safety themes

- agreement for a statistical analysis of database content by The Health & Safety Laboratory, sponsored by the HSE
- raising of the profile of excavation safety within the farming and rural communities, thanks to the efforts of Guy Hemsley, who secured articles in several important publications ('Farmers Weekly' 11th August 2006 and 'Country Landowner & Rural Business' June 2006)

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

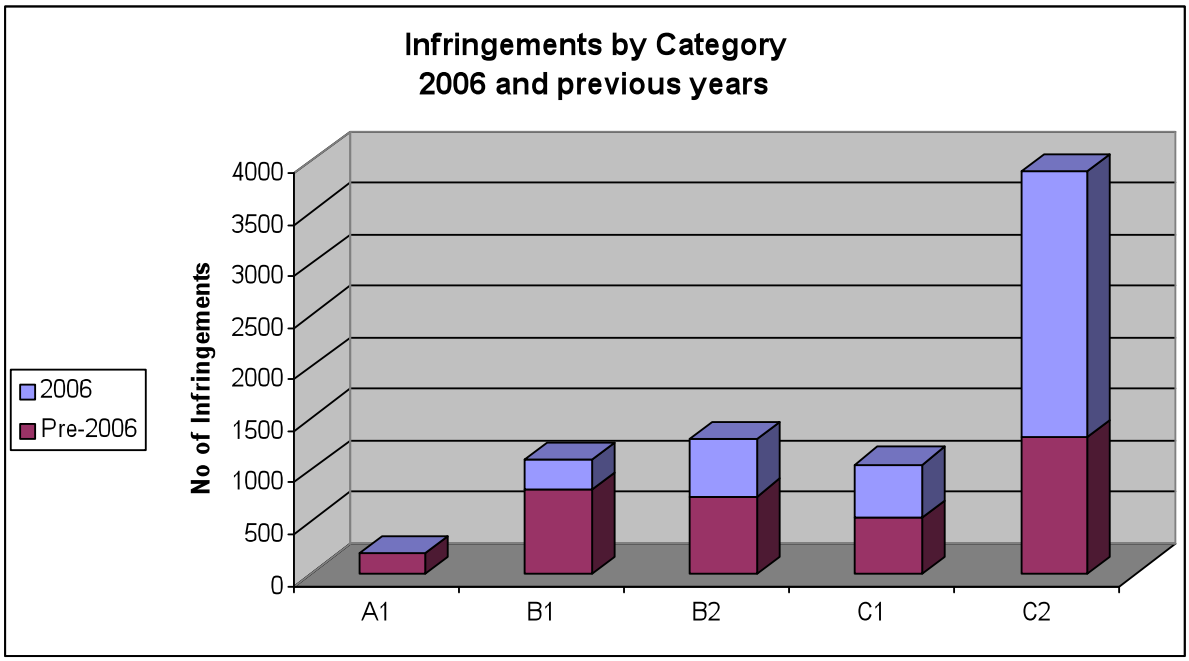
Location index can be in two forms

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.

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

The resulting analysis of infringements by category shown in Figure 2 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').

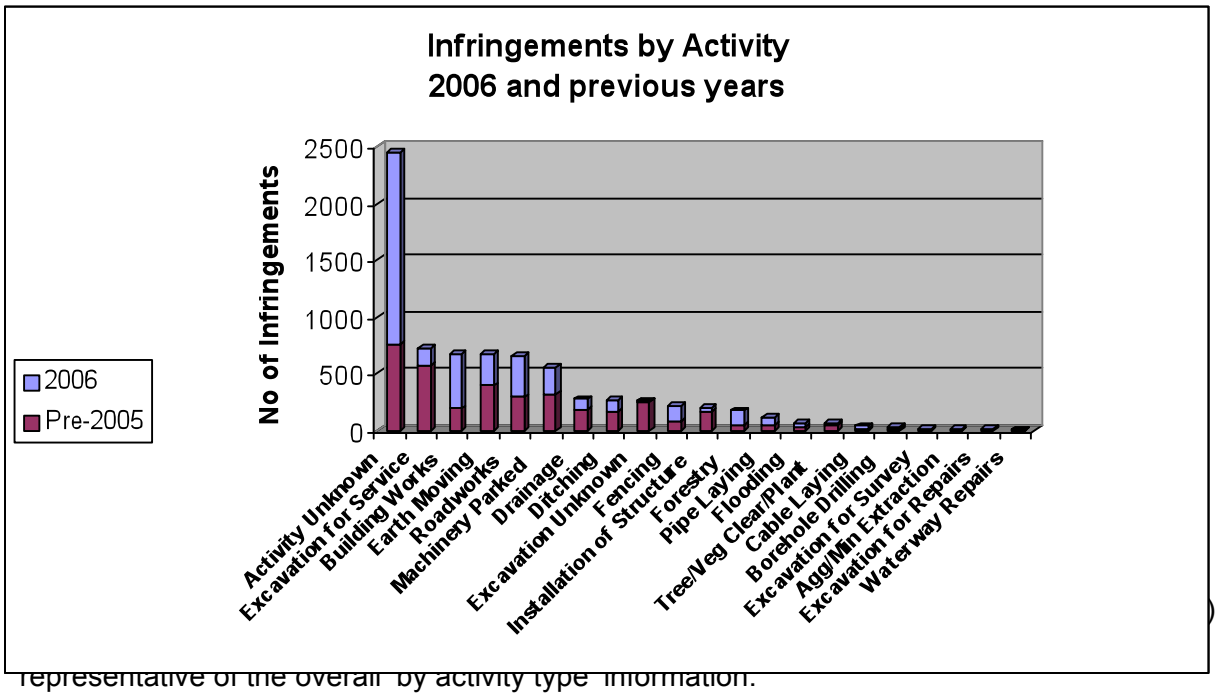


4.2.

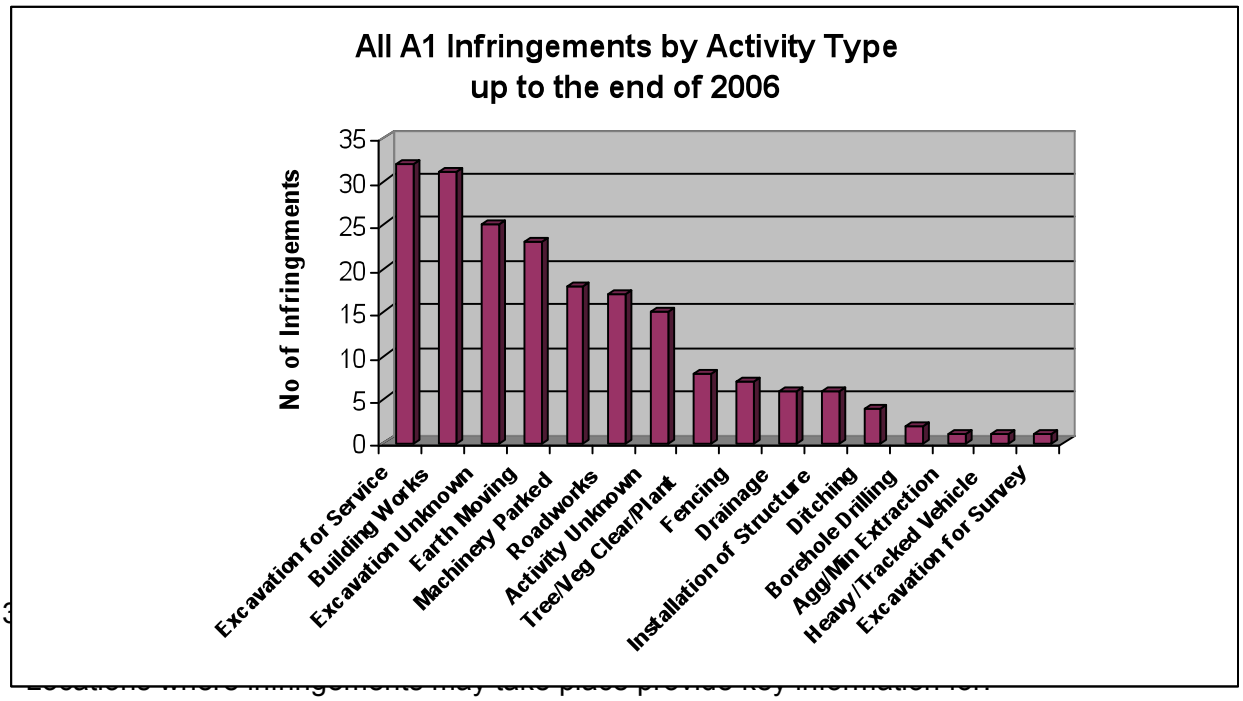
Understanding the types of activity contributing to infringement statistics provides important information for:

- targeting awareness training and communication
- relating to infringement location and vulnerable areas

Figure 3 shows the distribution of infringements across reported activity types. Although 'activity unknown' is the largest single contributor, at this point in the life of the database it is not yet possible to establish whether this is indicative of infringements for which an activity could not be assigned, or whether it simply represents issues with data collection and entry into the database.



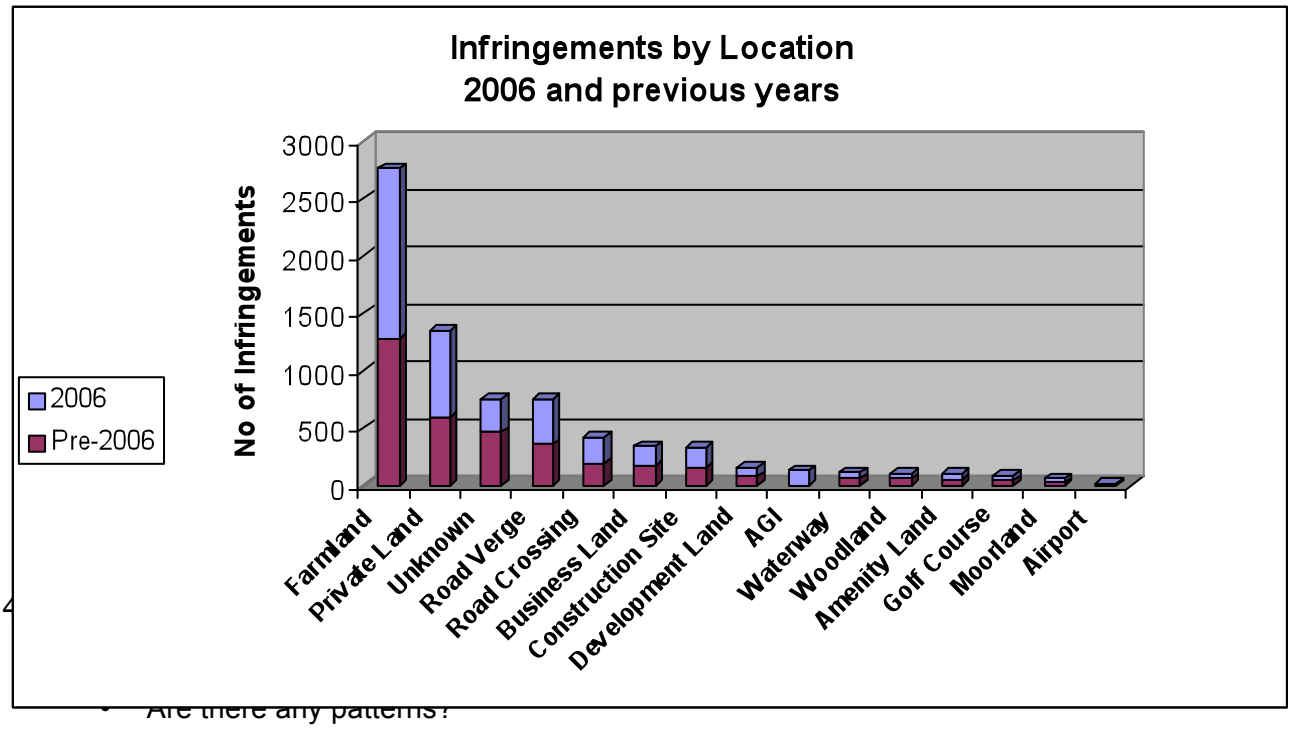
representative of the overall 'by activity type' information.



4.3

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

As shown in Figure 5, farmland continues to be the setting for the largest single amount of infringements. Road crossings and road verges together account for nearly 1200 infringements.



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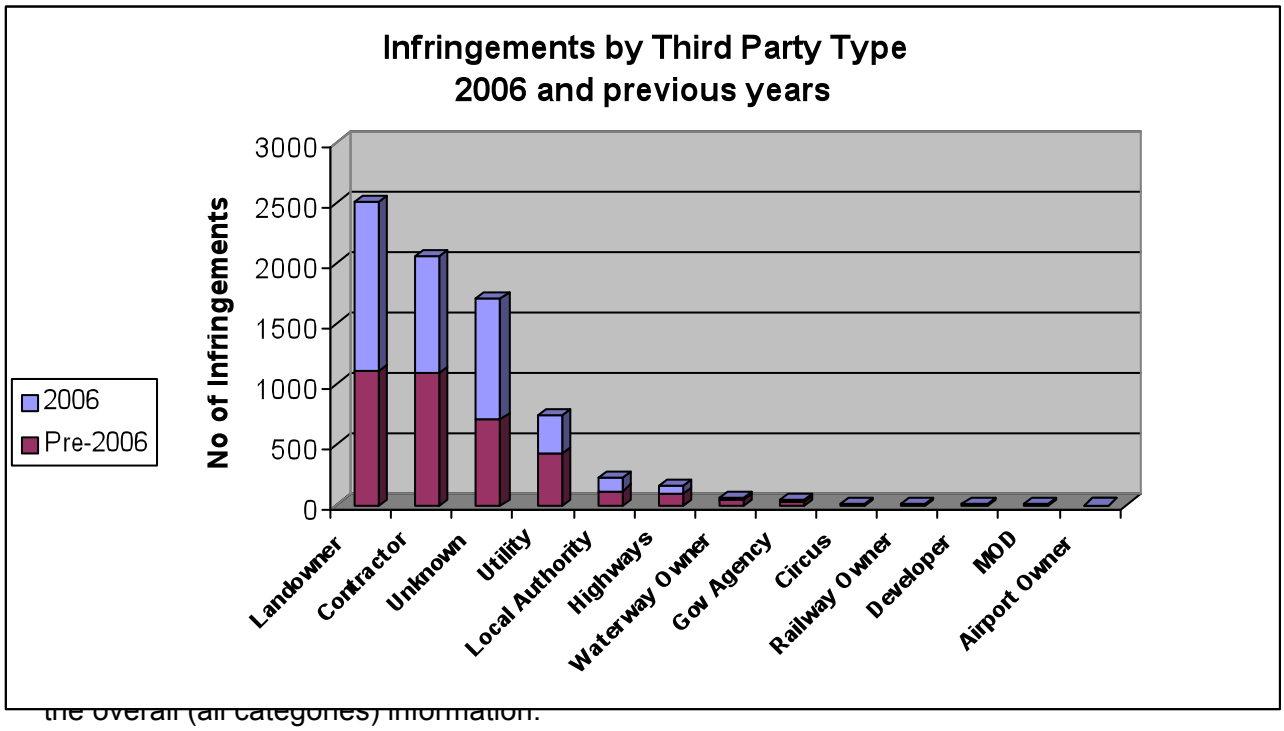
- Are there any patterns?
- What does it tell us about the weakness of the sub-contracting 'chain'?
- Who is responsible for checks and searches in each case?
- What does it tell us about the 'pipeline awareness' of those actually doing the digging?

Figure 6 describes the current position. The presence of landowners as the largest single infringing group is not inconsistent with the position of farmland as the setting for the largest single amount of infringements shown in Figure 5. It should be noted, however, that the distinction between 'contractor' and 'utility' can be seen as a very fine one when one considers the increasing levels of contractor-delivered utility services in the UK.



the overall (all categories) information.

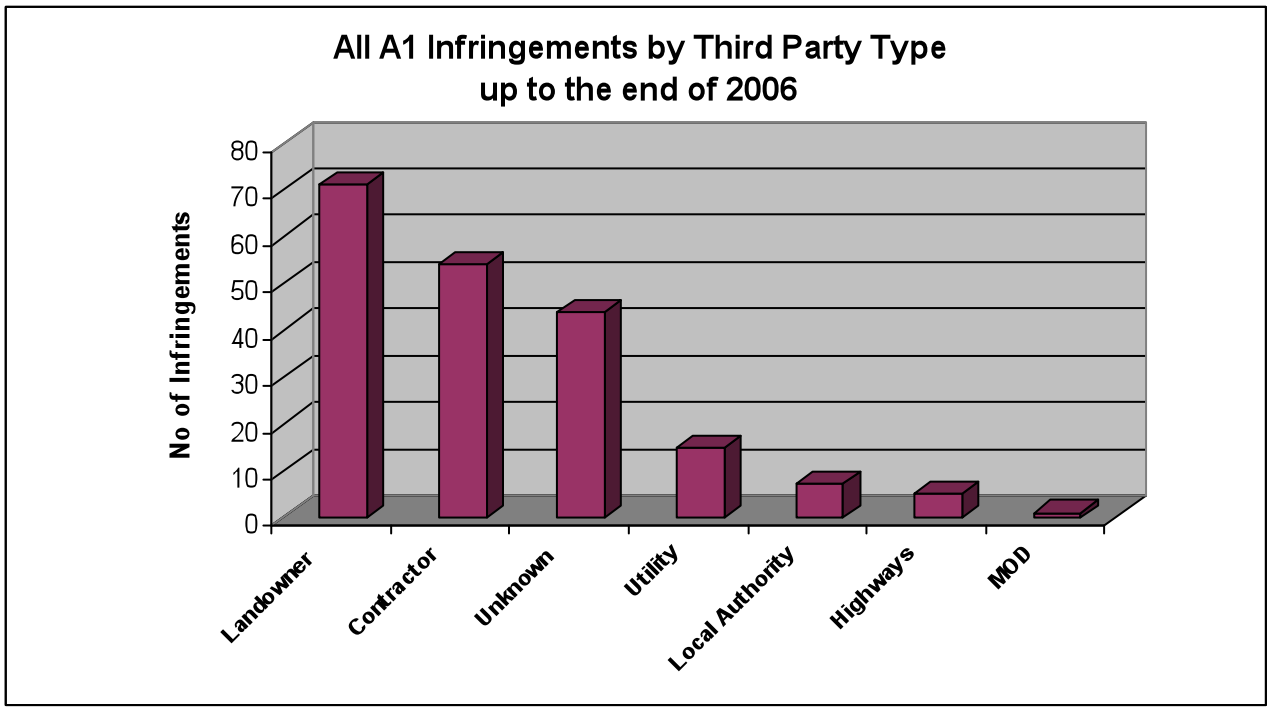


Figure 7 A1 Infringements by Third Party Type

4.5. Infringements by Third Party Name

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.

As invited members of UKOPA, the Health & Safety Executive have access to the list of 'repeat infringers'. The database output in the form shown in Figure 8 has been used by HSE to inform their annual inspection programme. 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 database activities, they have become aware of their overall infringement behaviour for the first time. HSE's feedback is that this data has received serious attention at senior levels within each company.

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. Therefore data in the form shown in Figure 8 is confidential to UKOPA members and should not be shared with third parties.

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, would provide a much more meaningful expression of each third party's effectiveness in managing activities adjacent to hazardous pipelines.

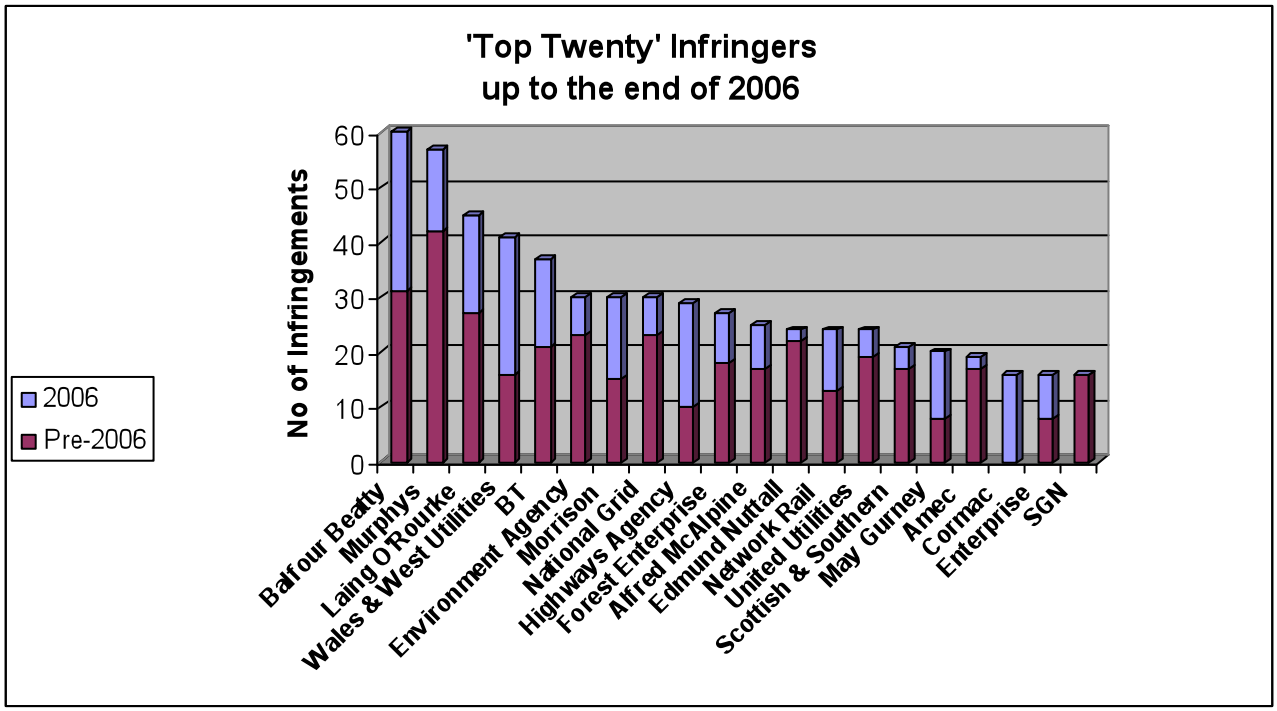


Figure 8 Infringer Identity versus No of Infringements

5. Plans and future

5.1. Data Quality

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 ('data resolution') 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.

5.2. Database Content

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.

The challenge for the IWG will remain, however, to ensure that as new fields are developed, this is done with due regard for the evolutionary nature of development of data collection by the large volume (i.e. natural 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.

5.3. Data Collection

Whilst the database was only populated with non-natural gas operator's records, data collection and analysis was a routine and low effort activity undertaken by the IWG chairman. With the advent of data contribution by National Grid and the IDNs, data volumes have increased significantly.

All contributors still provide their data, typically on a quarterly basis, via MS Excel spreadsheet, which makes data import relatively straightforward. All data needs to be critically reviewed, however, to ensure obvious errors are not added and to ensure that where appropriate data field entries are consistent with agreed standards. This latter activity is likely to add a significant workload burden to database management. For the future, therefore, the IWG should monitor ths workload and any opportunities to move to a more automated data submission and validation process.

5.4. Data Analysis

As the infringement database continues to grow, so its statistical significance as a source of data for UK excavation safety will follow. The size of the dataset will enable (and indeed demand!) the use of statistical analysis techniques to reveal trends and outputs.

The statistical analysis which is being developed by HSL, as described in Section 3 above, is a first step on this journey.

6. Acknowledgements

The development and current success of the infringement database would not have been possible without the belief and 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. This has been particularly important in the case of the natural gas operators, where changes to the national 'SRP' system have been necessary.

It is also important to recognise the important role played by the HSE's Gas & Pipelines Unit. 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 his UKOPA colleagues in pursuit of improved awareness of excavation safety in the vicinity of hazardous pipelines.