

# Preventing Third Party Damage to UK Hazardous Pipelines

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‘Prevention & Management of Pipeline Damage’

# Presentation Outline

- Regulatory environment and lessons
- The role of the Pipeline Operator and UKOPA (UK Onshore Pipeline Operator's Association)
- Creation of a national infringement database
- Results, achievements and the future

# Regulatory Background



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- Highest risk of loss of containment from pipelines
  - Pipeline Safety Regulations (15) “Damage to Pipelines” - applies to operators and 3<sup>rd</sup> parties (if danger results)
  - PSR Regulation 16 “Prevention of Damage to Pipelines” - applies to operators
  - Major Incident - Ghislenghien 2004
  - Prevention of 3<sup>rd</sup> party damage to pipelines is a major hazard issue

# HSE Third Party Damage – Prevention Strategy



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- Active involvement with UKOPA Infringement Working Group
  - Targeted investigation of damage and infringement incidents
  - Use UKOPA IWG database to identify and influence key utility operators and contractors
  - Support for the continued growth of Linesearch
  - Use of infringement data for Gas & Pipelines Unit annual Safety Performance Indicator report
  - Involvement with NUAG and DfT initiatives

# Lessons from Ghislenghien



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- Training and supervision of site operatives
  - Working/liasing with the pipeline operator
  - Information management between principal contractor and sub-contractors
  - Reporting of near-misses and infringement damage
  - Emergency planning
  - Human and organisational factors

# Good Practice



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- Access to the right plans at an early stage is vital to good design
  - Drawings/plans need to be verified on the site
    - Surveys and Trial holes
  - Information must be managed down the contracting chain
    - Drawing quality, consistency and usability
    - Appreciation of hazards
    - Maintaining site markers
  - Method statements for work around MAHPs need to be agreed with pipeline operators and on-site monitoring arranged
  - Emergency planning – who to contact and what to do

# A Closer look at Human and Organisational Factors

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- Corporate lip-service vs. culture
- Role of the supervisor is critical to safety
  - Competent
  - Authoritative (both up and down)
  - NOT behind a desk or filling in forms
- Usability of plans
- Unsafe assumptions - “If we can’t find the pipeline it must be safe to dig”
- Fatigue, weather, lighting
- Work overload (more serial than parallel)
- Not recognising hazards or understanding risks



# Pipeline Markers – the last line of defence?



# Is this not an excavation?



# Safe Excavation Guidance



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- UKOPA DVD – People and Pipelines Working Together
  - National Grid Gas – (SSW22) Safe Working Near to High Pressure Gas Pipelines
  - Linewatch – Safe Working in the Vicinity of High Pressure Pipelines
  - National Grid Gas (Distribution) – Excavating Safely – Avoiding injury while working near gas pipes
  - HSE - Guidance -HS(G)47 Avoiding Danger from Underground Services
  - HSE – (L82) A Guide to the Pipeline Safety Regulations 1996

# The role of the Operator & UKOPA (1)

- From its formation in 1997, UKOPA members recognised the challenge faced by operator in the delivery of their PSR obligations to protect and communicate when delivered by individual companies
- The key was to find an effective way to learn from incidents, encourage awareness and responsibility on the part of excavators, and find an effective means to engage with the HSE to regulate the issue
- Often, third parties don't have any concept of the risks they create and experience!

# The role of the Operator & UKOPA (2)

- Before 2002, UKOPA members investigated pipeline near miss/damage incidents on an individual basis
- Investigations and any improvement processes lacked co-ordination and national coherence
- Follow-up with corporate 'infringers' unlikely to register with those in control of policy and resources
- Significant amounts of individual operator effort expended to little risk reduction benefit
- Diffuse nature of the threat gave HSE similar challenges
- Concern without some form of action, it would take a major incident to drive improvement

# Creating a National Infringement Database (1)

- UKOPA recognition of potential value of individual third party threat data, if used on a collective basis
- UKOPA infringement database launched in 2002
- Database designed to enable members to share infringement details and trends, allowing UKOPA begin to characterise the third party damage threat
- The first step in an improvement cycle

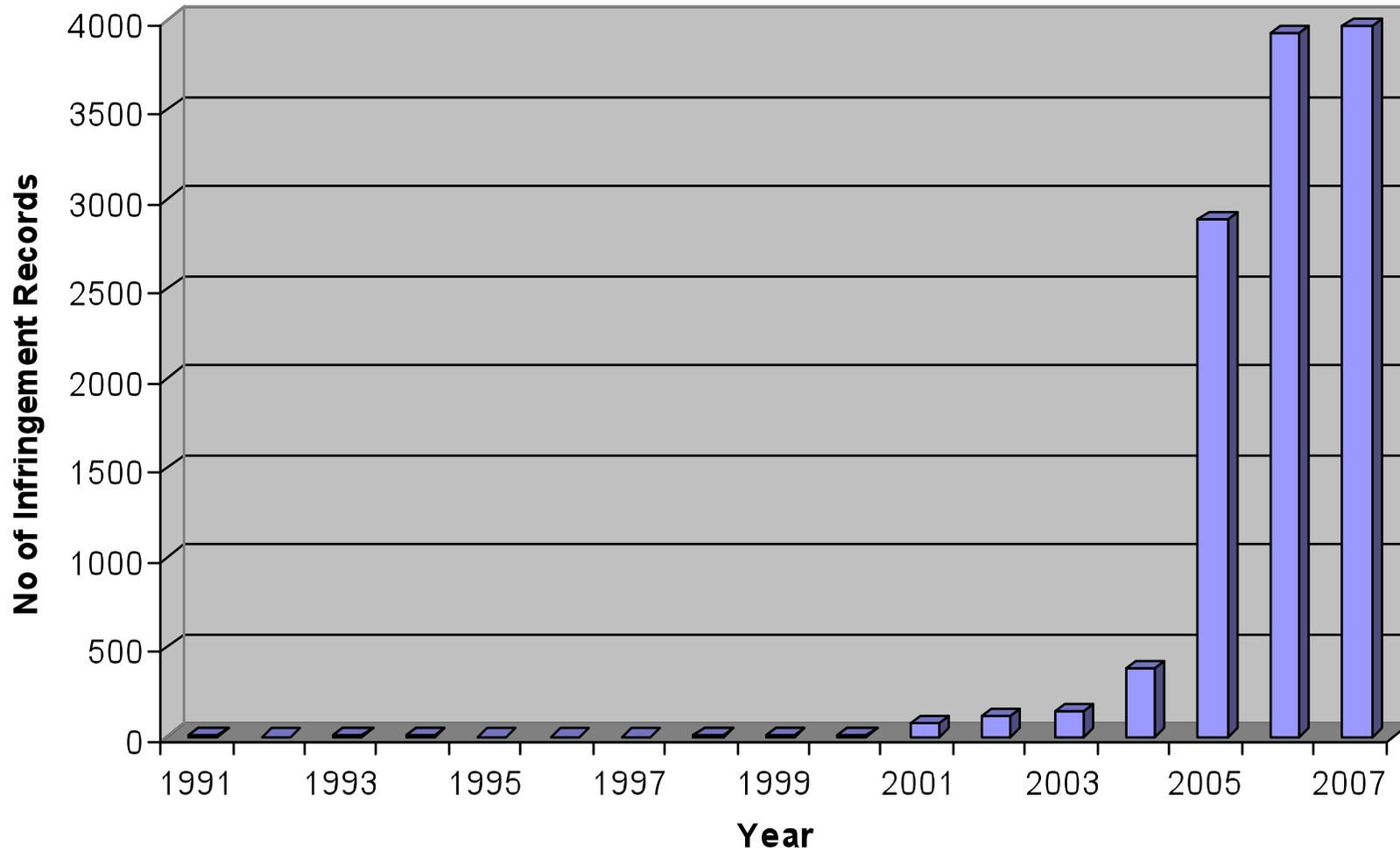
# Contributing Members

- Current UKOPA members who contribute to the database include:
  - National Grid
  - BP
  - Ineos
  - Esso Petroleum
  - E.On
  - Unipen (MJL)
  - Wales & West Utilities
  - Shell
  - SABIC UK Petrochemicals
  - Total (UK)
  - BPA
  - OPA
  - Scotia Gas Networks
  - Northern Gas Networks

# Database Content

- 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
- Technical challenges in handling data submissions and volumes from a range of operators

No of database records per year up to the end of 2007



# Database Structure

- The record for each infringement includes:
  - Date
  - Location
  - Category
  - Third Party Type
  - Third Party Name
  - Activity Type

And for more recent records (from 2007):

- If activity was pre-notified to pipeline operator
- If activity occurred in urban, suburban, industrial or rural zone
- means by which the infringement was discovered (e.g. road or aerial patrol, notification by infringer)

# Analysis by Infringement Category

- The UKOPA database categorises infringements on the basis of two factors
  - Actual damage or potential risk of damage to pipelines
  - Location of excavation in relation to pipelines

# Analysis by Infringement Category

- Actual damage or potential risk of damage to pipeline

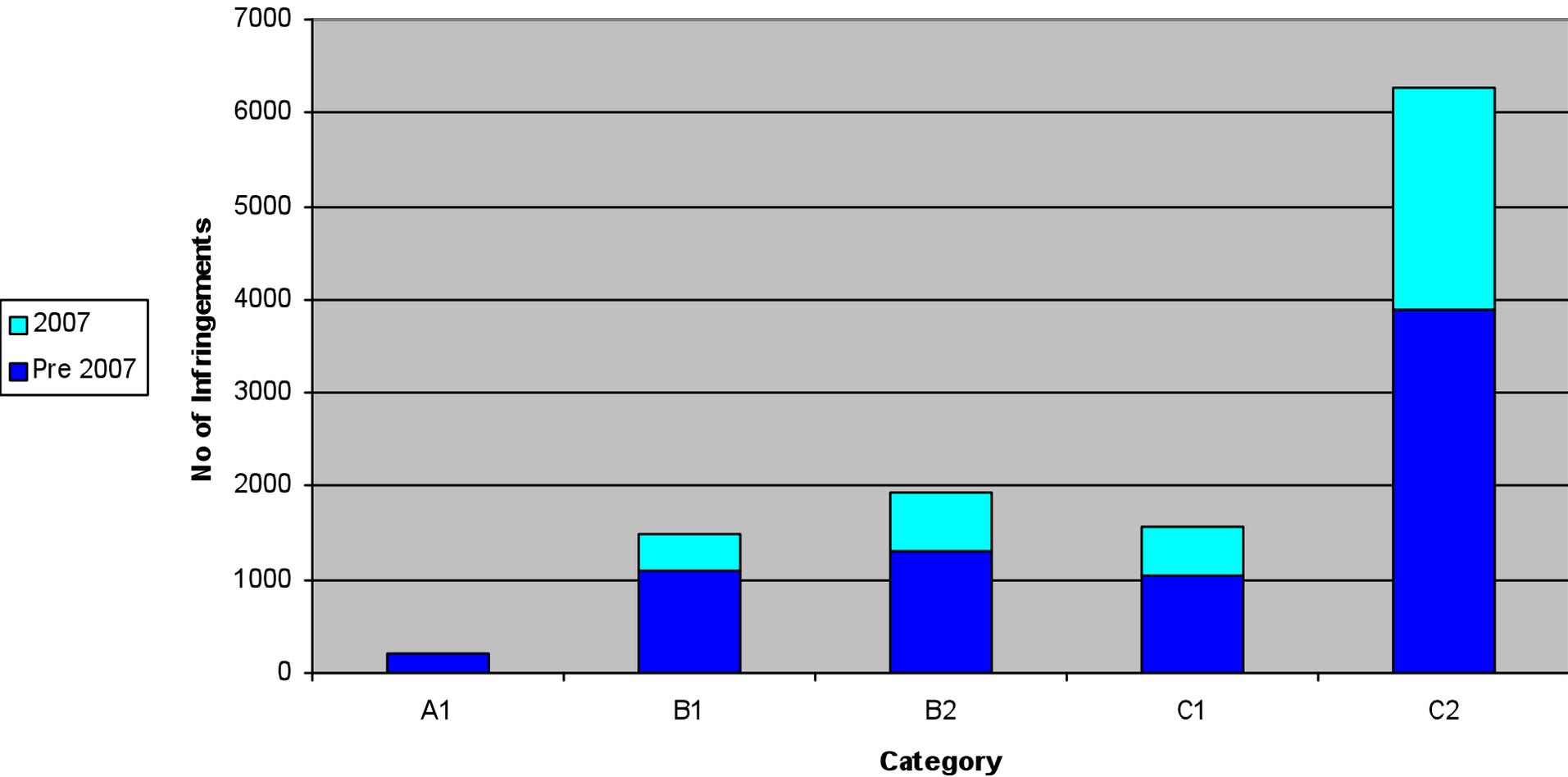
Infringement Category	Infringement Type	Infringement Description
A	Pipeline Damage or Leak	Includes damage to wrap or protective sleeve
B	Serious Potential for Damage	Methods or equipment used could have resulted in significant damage had excavation taken place at pipeline
C	Limited Potential for Damage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

# Analysis by Infringement Category

- Location of excavation in relation to pipeline

Location Category	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.

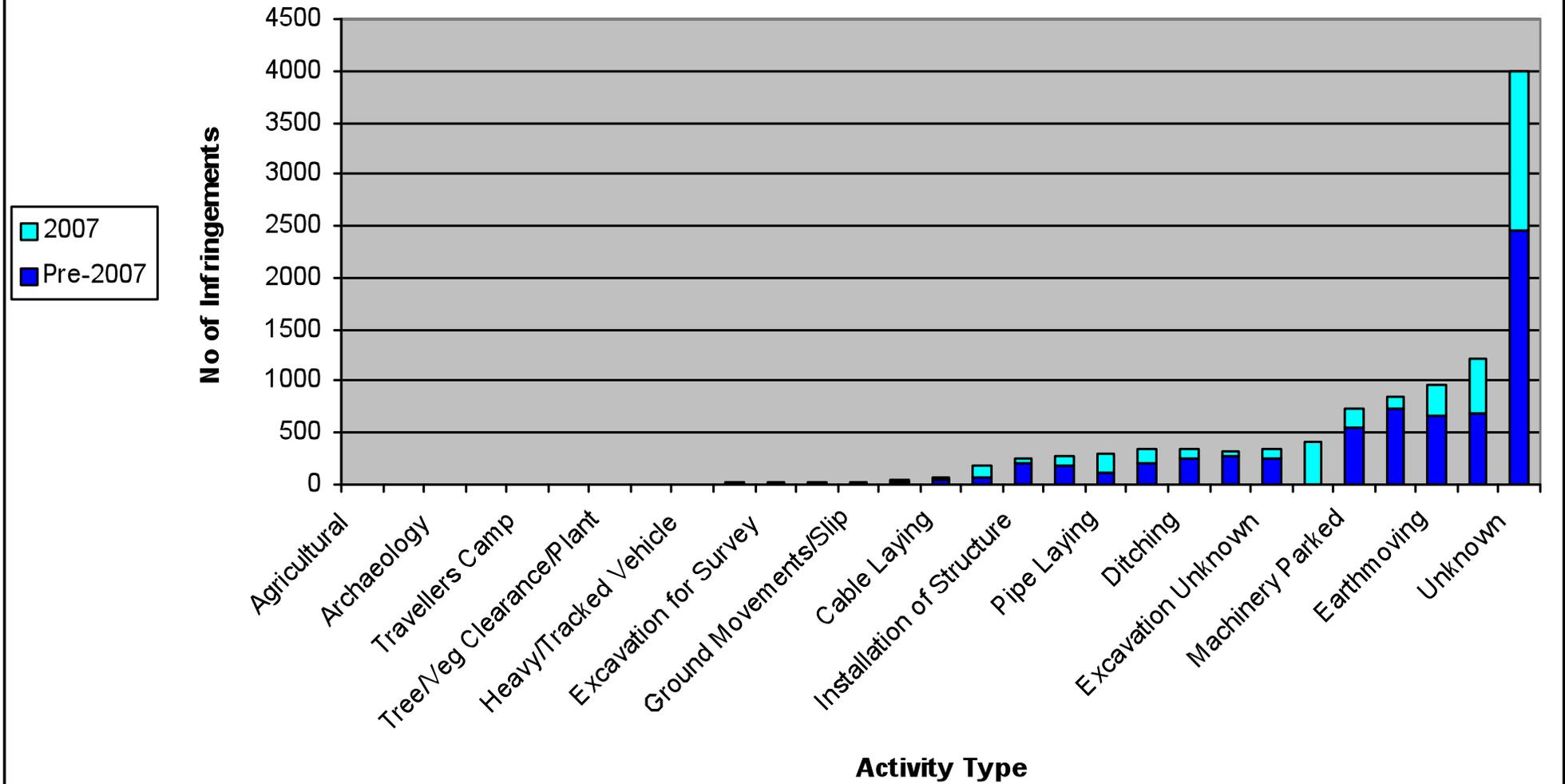
### Infringements by Category 2007 & Previous Years



# Analysis by Activity Type

- Understanding the types of activity contributing to infringement statistics provides important information for:
  - targeting awareness training and communication
  - how activity might for example relate to vulnerable areas

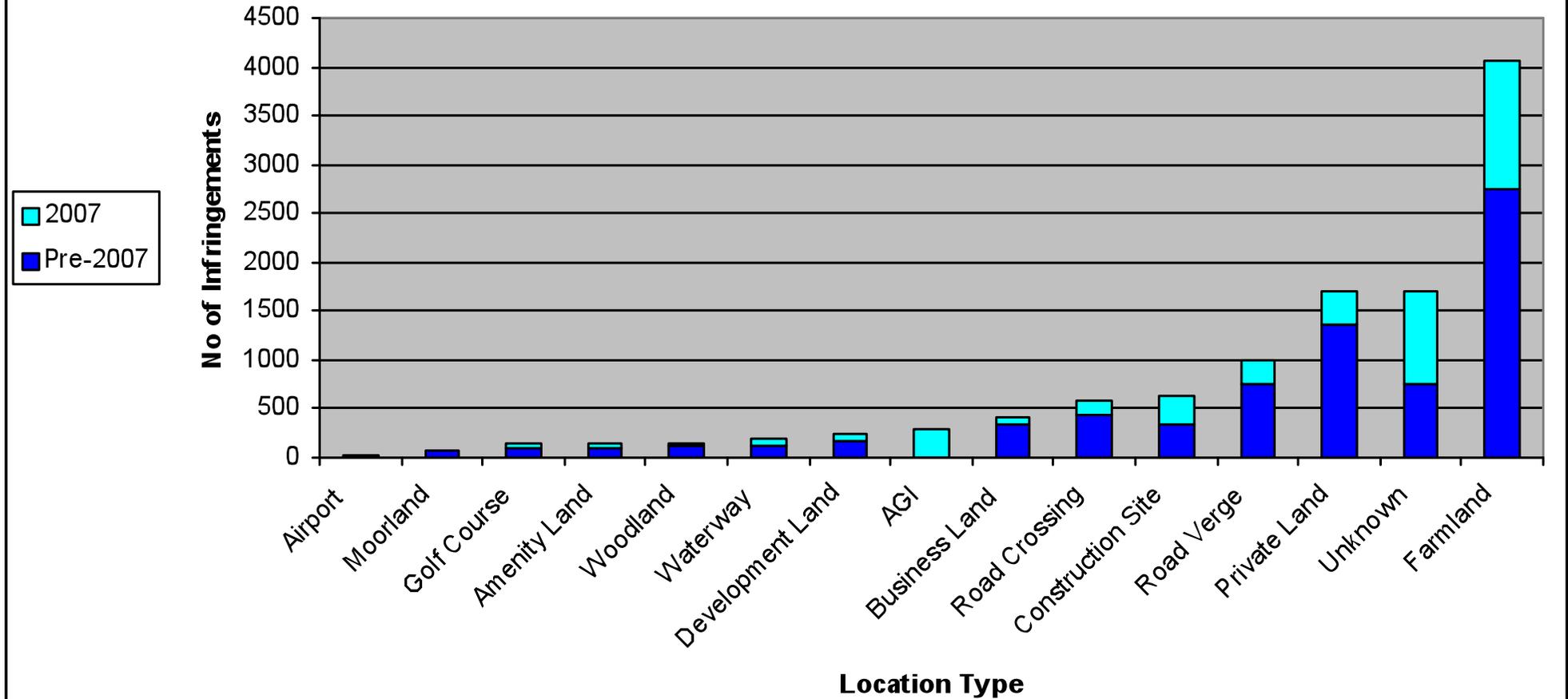
## Infringements by Activity 2007 and Previous Years



# Analysis by Infringement Location

- Locations where infringements may take place provides key information for:
  - main areas of pipeline vulnerability
  - areas where marking is critical
  - areas where excavator vigilance is particularly important

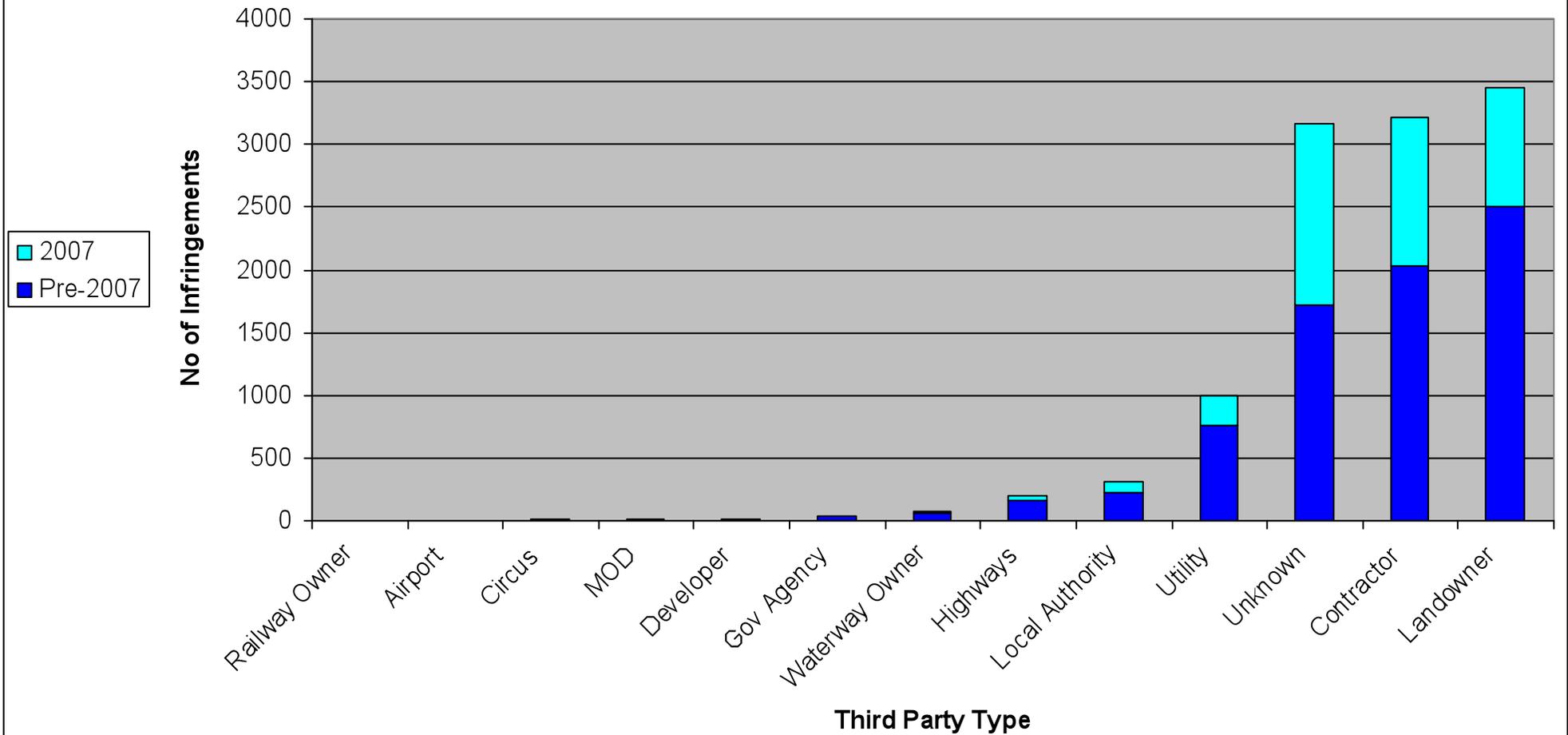
## Infringements by Location 2007 and Previous Years



# Analysis by Third Party Type

- UKOPA are interested in which types of third parties are infringing
- 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?

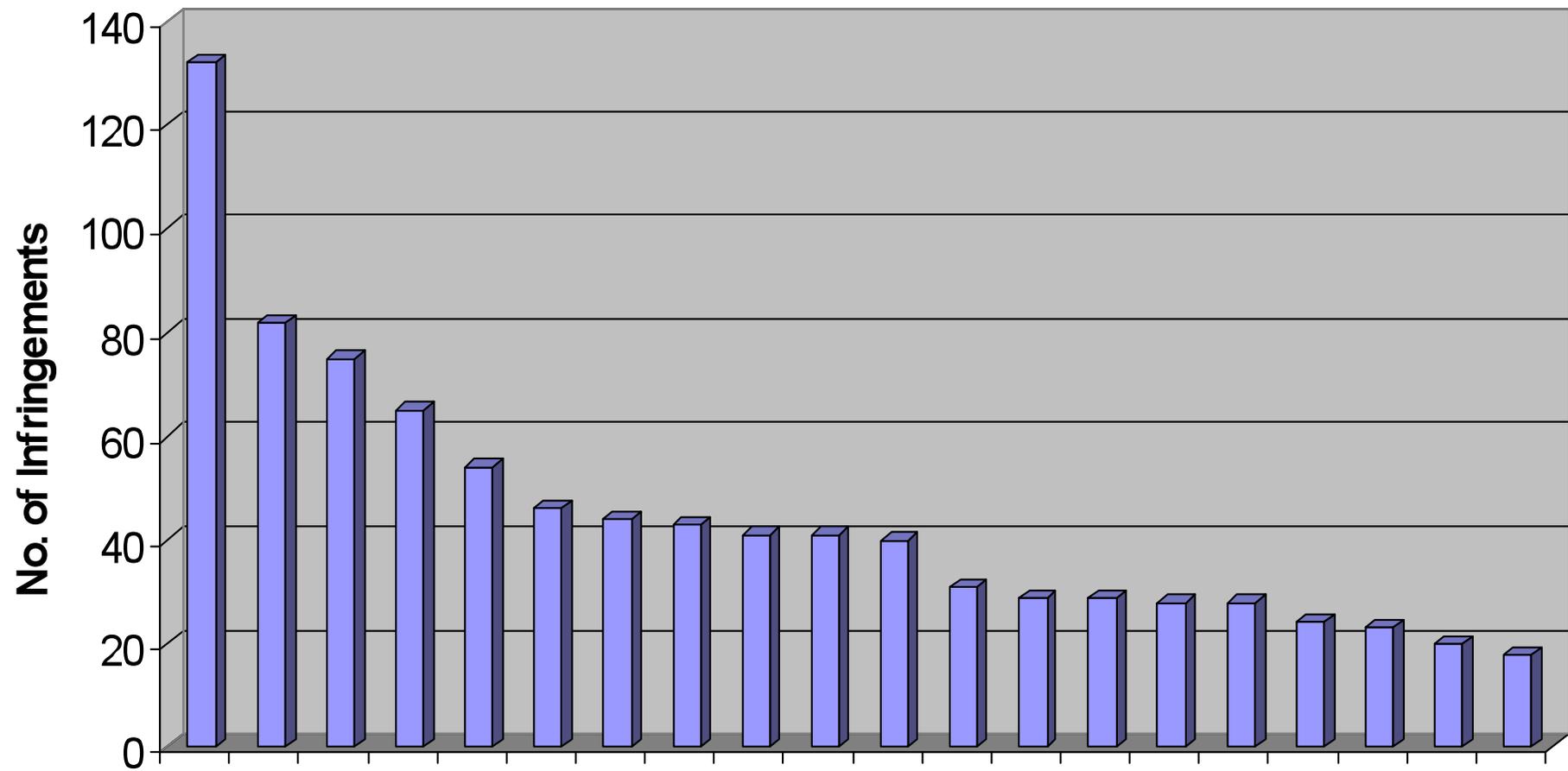
## Infringements by Third Party 2007 and Previous Years



# Analysis 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 have made multiple infringements are a particular concern
- As invitees, HSE have access to the list of 'repeat infringers' and have used the data to inform their inspection programmes
- This individually named company data is not, however, publicly available

# Top Twenty Infringers to End 2007



# Achievements

- First ever collation of UK risk and damage incident profile for hazardous pipelines
- The database effectively functions as a 'national register' of infringements and those who infringe
- HSE and UKOPA representatives on Infringement Working Group
- Sharing data and focus on a single agenda
- Industry input into HSE strategy and inspection programmes
- For large, corporate infringers, their first sight of their performance and impact – Stoneleigh Event 2005

# The Future

- Opportunity to understand infringements in the context of national excavation workload
  - input to risk assessment?
  - some frequent infringers may be delivering elements of best practice?
- Continuing challenges on data quality and effective categorisation
- Analysis, reporting and hence productive output needs routine and timely input of data
  - Fisher German contracted to manage a web-based version of the database
  - improvement in efficiency of data collection for all contributors

Thank you for listening – any questions?