

UKOPA Report

2021 Infringement database report

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EXECUTIVE SUMMARY

The Infringement Working Group (IWG) is one of five working groups of UKOPA and it is responsible for collecting and collating incidents (accidental or malicious) where cross country pipelines have been damaged and near misses where there was a potential for damage (Infringements) have occurred. The IWG produces an annual report that identifies the number of Infringements recorded by UKOPA members in the UKOPA infringement database and provides some statistical analysis regarding, the type of infringement, where it occurred and how it happened.

In 2021 there were 884 infringements recorded, none of which were categorised as malicious damage associated with pipeline theft.

There were two A1 category (actual damage) infringements in 2021, 0.2% of infringements recorded, down from five in 2020. An overview of those infringements is provided below:

- Contractors erecting marquees for a music festival had pneumatically driven 5 x 1.2-1.5 mtr tent pegs (metal anchor stakes) into the ground directly above a 14barg gas pipeline. A survey of the pipe section was conducted, 3 areas of concern were identified, excavated, and inspected. All damage was located beneath original positions of 3 of the metal anchor stakes. These were assessed, repaired, wrapped and backfilled. The pressure reduction was then removed allowing the pipeline to return to normal operating pressure.
- Ditch cleaning had been carried out at a semi remote location which involved excavations over pipeline. The infringement was reported by the landowner who noted that he had not done the work and was aware of the pipeline route. Investigations identified scores lines to the pipeline coating, but that it had remained intact. Discussions took place with landowners in the vicinity regarding the infringement, who caused the damaged has not been confirmed.

The number of B infringements recorded, (those that have serious potential for damage) is 138 (15.6% of the total reported) compared with 18% in 2020 and 16.5% in 2019. Category C infringements (those with limited potential for damage) accounted for 84.2% (744) of reports.

The greatest number of infringements recorded continues to occur on “farmland” and this will remain the major focus area for the IWG. Forestry infringements continue to increase and will be included on the 2022 work plan for the IWG.

IWG action plan for 2022/2023

The specific actions for 2022/23 for the IWG from this report are:

- Action 1: The IWG should agree the definition or ‘aware of work taking place’ and ensure that all operators recording systems collect the same data.
- Action 2: IWG will investigate the increase in fencing infringements, and if required put in place an action plan for reducing the number.
- Action 3: Awareness raising initiatives by IWG and UKOPA member companies will continue with the aim of reducing the number of infringements in Farmland, Private Land and in Road / Waterways.

- Action 4: IWG will find ways of engaging with the forestry industry body to raise awareness with the aim of reducing this figure.
- Action 5: IWG to consider if there is a need to reissue the 'contractor' working safely guidance document with the aim of helping to reduce the number of contractor / utility infringements.

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 industrywide statistics in order that the Association can develop effective improvement plans as well as ensuring its UK wide experience is fully exploited to reduce the potential for damage to high hazard pipeline assets in order to protect people and property and to influence regulatory processes.

The Infringement Working Group (IWG) members share experiences and manage the infringement database to allow this report to be produced. More information on the IWG members and tasks can be found in Appendix B and C.

2. UPDATE ON 2022 IWG ACTIONS

This section provides an update on the specific actions for 2021/22 for the IWG from the 2020 report:

- Action 1: The IWG should monitor this trend (infringements where pipeline operator was aware of the activity taking place) and if necessary, identify initiatives to reduce the figure.
 - Changes in the pipeline operators reporting systems has meant that this data was not recorded in most cases for 2022. The IWG are going to agree how this should be progressed and had been added as an additional action for 2022.
- Action 2: IWG aim to revise its strategy to help operators target a reduction in infringements in these key areas (Road/rail/utility works, Excavation works and Ditching).
 - Operator sharing has continued during 2021 although a final strategy is yet to be developed.
- Action 3: IWG aim to investigate what members have been doing to decrease the number of fencing infringements and utilise these learnings in other key areas.
 - Fencing infringements have increased during 2021 and as such more focus is going to be given to fencing issues in 2022.
- Action 4: IWG will find ways of engaging with the forestry industry body to raise awareness with the aim of reducing this figure.
 - The forestry industry body has yet to be identified, however work has progressed on a tree planting guide for the industry. This action will be carried forward into 2022.
- Action 5: Awareness raising initiatives by IWG and UKOPA member companies will continue with the aim of reducing the number of infringements in Farmland, Private Land and in Road / Waterways.
 - This continues as part of the IWG meetings.
- Action 6: IWG with UKOPA members will continue to work together to improve the categorisation of infringements to try and ensure that the number of 'unknown' reports are reduced.
 - Unknown report numbers have decreased, although further work is still required to keep this number reducing.

It was noted that the IWG would also:

- Complete the UKOPA 'Working Safely' video update, rollout via the UKOPA website including a PR campaign aimed at landowners and farmers.
 - The working safely video is available on the UKOPA website <https://www.ukopa.co.uk/working-safely-near-high-pressure-pipelines/> and members are using on the landowner liaison and contractor visits.

- Complete the presentation for use in agricultural colleges to raise awareness of high pressure pipeline issues and engage colleges to get this on their curriculums
 - Presentation has been completed and is hosted on the Landex Agricultural College platform. The course will be rolled out from September 2022.
- Re-establish links with NFU and SNFU and explore ways of raising awareness of high pressure pipelines
 - This link has yet to be re-established and has been added to the work plan for the IWG for 2022.

3. MAIN FINDINGS

Appendix D provides the definition of infringements as agreed by UKOPA members. In summary infringements are categorised based on a Risk Index (A – pipeline damage or leak, B – serious potential for damage, or C – limited potential for damage) and a Location Index (1 – within operators’ wayleave or easement or 2 – within operators’ notification zone).

3.1 Infringements by Category

Figure 3-1 below presents the overall combined UKOPA data by infringement category. Analysis of the 2021 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’).

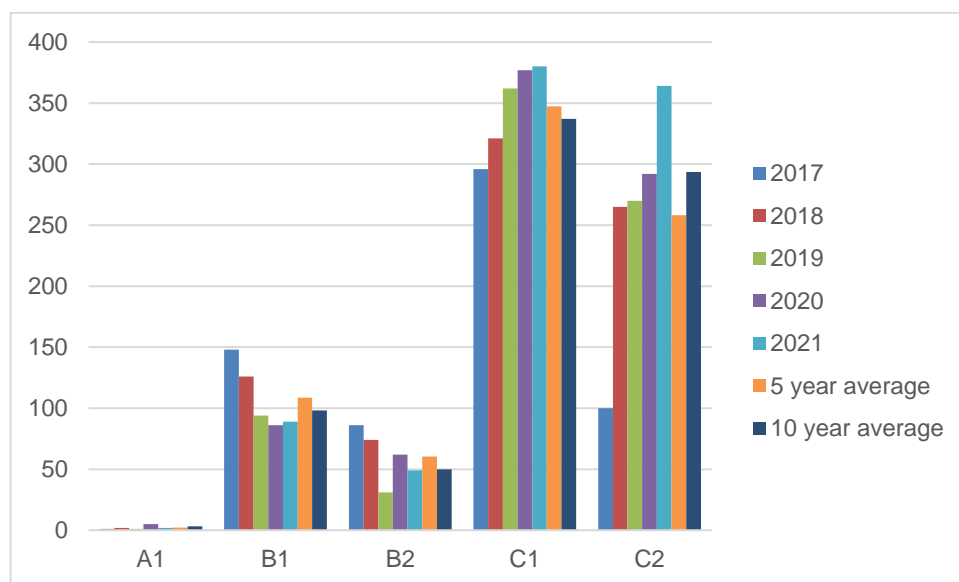


Figure 3-1 Infringements by category

	2017	2018	2019	2020	2021	5 year rolling average	10 year rolling average
A1	1	2	1	5	2	2.2	3.1
B1	148	126	94	86	89	108.6	98.2
B2	86	74	31	62	49	60.4	49.9
C1	296	321	362	377	380	347.2	337
C2	100	265	270	292	364	258.2	293.5
Total	631	788	758	822	884	776.6	781.7

Table 3-1 Rolling average by category

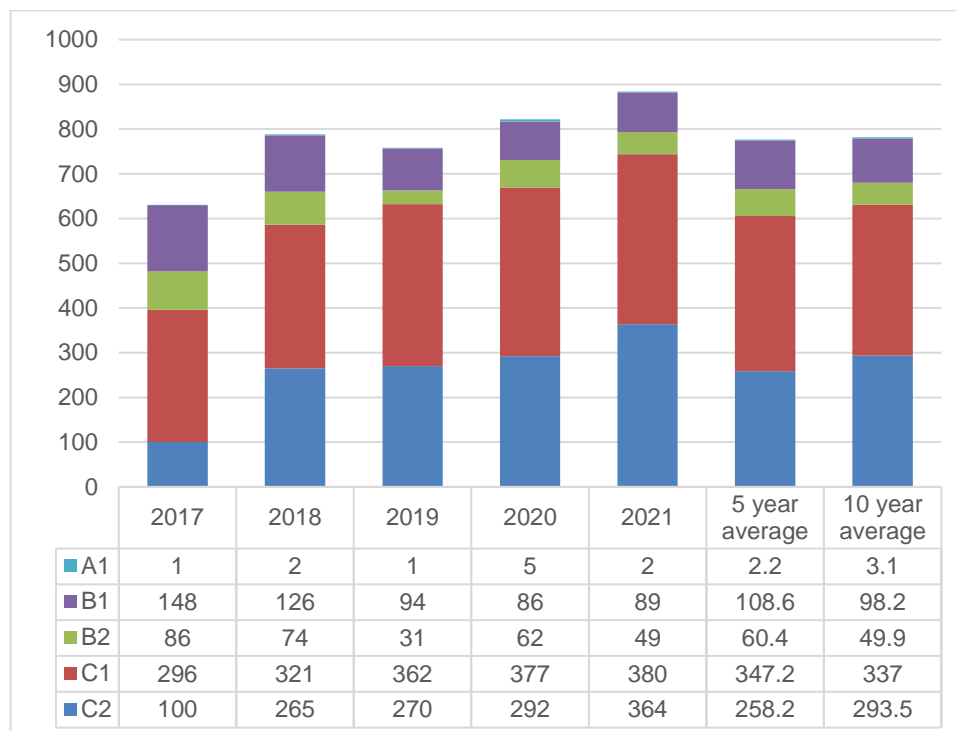


Figure 3-2 Annual Total Number of Infringements

In 2021 there were a total of 884 infringements recorded in the database this is 60 more than in 2020, equivalent to a 7.75% increase. This is similar to the increase from 2019 to 2020.

There were two A1 category (actual damage) infringement in 2021, out of 884 recorded events, (0.2%) compared with five A1 reports for 2020.

An overview of each of the 2020 A1 infringements is given below:

- Contractors erecting marquees for a music festival had pneumatically driven 5 x 1.2-1.5 mtr tent pegs (metal anchor stakes) into the ground directly above a 14barg gas pipeline. A survey of the pipe section was conducted, 3 areas of concern were identified, excavated, and inspected. All damage was located beneath original positions of 3 of the metal anchor stakes. These were assessed, repaired, wrapped and backfilled. The pressure reduction was then removed allowing the pipeline to return to normal operating pressure.
- Ditch cleaning had been carried out at a semi remote location which involved excavations over pipeline. The infringement was reported by the landowner who noted that he had not done the work and was aware of the pipeline route. Investigations identified scores lines to the pipeline coating, but that it had remained intact. Discussions took place with landowners in the vicinity regarding the infringement, who caused the damaged has not been confirmed.

There was a very slight increase in the number of B1 infringements recorded (89 in 2021 compared with 86 in 2020 and 94 in 2019), but B2 infringements reduced from 62 in 2020 to 49 in 2021. Overall, the number of category 'B' Infringements (B1+ B2), i.e. those infringements with a serious potential to cause harm reduced to 15.6% in 2021 from 18% in 2020. This is the lowest percentage that this figure has been in the last 5 years.

Category C infringements, those with limited potential to cause damage, accounted for 744 of the 884 or 84.2%. This is a slight increase from the 81.4% in 2020 and correlates to the decrease in A and B infringements in 2021.

Due to changes in recording systems for many of the operators, we were unable to establish how many of the 884 infringements had occurred in areas where the pipeline operator was already aware of the work taking place.

Action 1: The IWG should agree the definition of ‘aware of work taking place’ and ensure that all operators recording systems collect the same data.

3.2 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 3-3 shows the distribution of infringements across reported activity types.

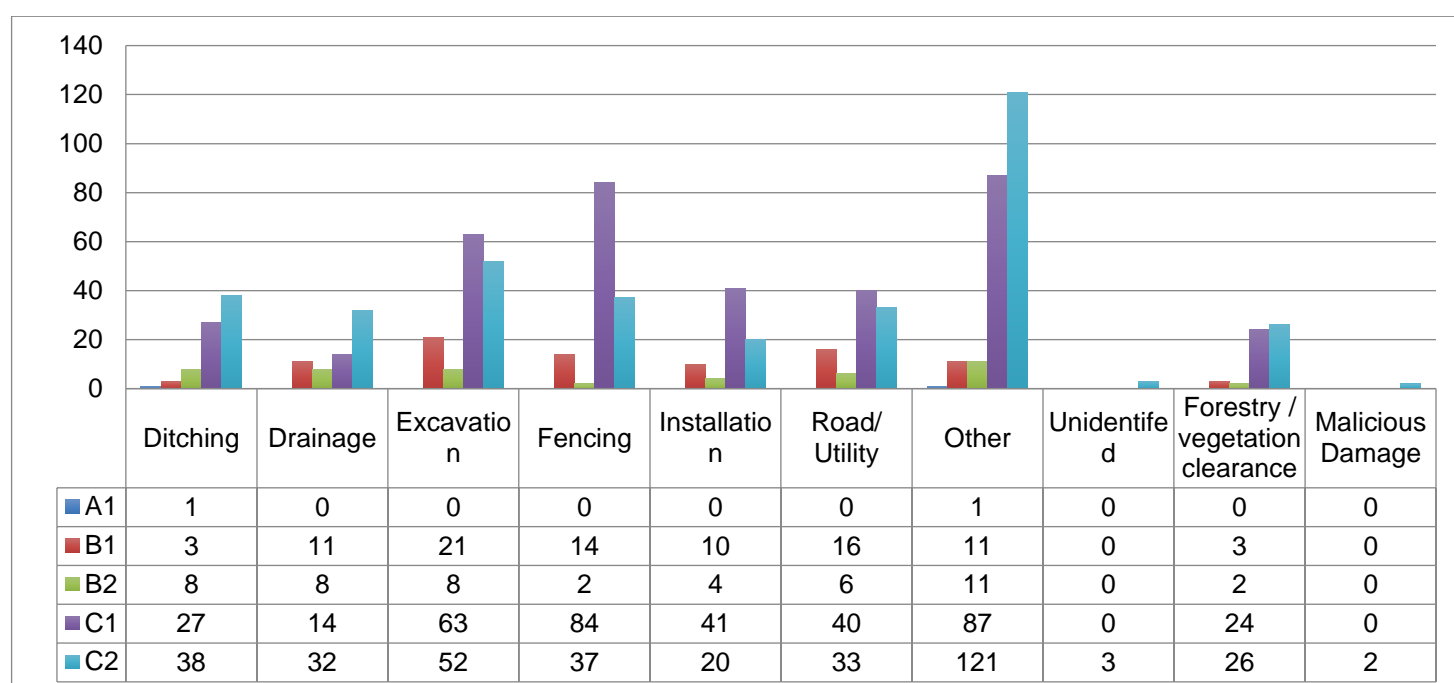


Figure 3-3 Infringements by activity type 2021

During 2021 there were only 3 infringements recorded as unknown, all of which were in the C2 category. This continues to be a downwards trend. There were 2 damages recorded as malicious damage, but not related to pipeline theft as has been the case in previous years.

The A infringements have been categories as 1 x Ditching, 1 x Other – which was due to the erecting of a marquee for a festival.

Excavation works (including excavations for services, repairs, earthmoving, groundworks etc) had the greatest number of recorded B1 infringements with 21, followed by Road/Utility works (including pipelaying and surveying, roadworks, utility works, railway maintenance) with 16, and Fencing and Other both accounting for 14 B1 infringements each. There has however been a large reduction in ditching B1 infringements from 10 in 2020 to 3 in 2021, which can only be viewed as positive.

In 2021, fencing infringements increased from 94 to 137 infringements an increase of almost 46%, following a reduction of 16% between 2019 and 2020.

Action 2: IWG will investigate the increase in fencing infringements, and if required put in place an action plan for reducing the number.

Those activities grouped together as “other” are made up of 12 activity types – Archaeology (1), Crossing by Heaving Vehicles/machinery (18), Flooding (8), Landscaping (6), Machinery Parked (58), Structures near pipelines/Caravan parks (8), Quarrying/Mineral extraction (2), Ground Movement (2), Storage (10), Waste Burning/Fire (6), Waste Dumping (19) and Waterway repairs/Riverbank Erosion (6) - which individually are low in the number of events but total 144 infringements. There is however, also a specific activity type in the infringement database entitled ‘other/festivals’ which accounts for 87 infringements (up 85% from 47 in 2020). This is how members record infringements that do not specifically fit into one of the categories in the data base.

The combined total of all the ‘other’ infringements is 231 compared with 181 in 2020. This is 32.4% of all infringements and up from 22% in 2020.

Forestry infringements continue to increase with 41 infringements in 2021, 37 in 2020 and 27 in 2019. Action 4 from 2020 should be closed out in 2022 with the aim of reducing this figure.

3.3 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.

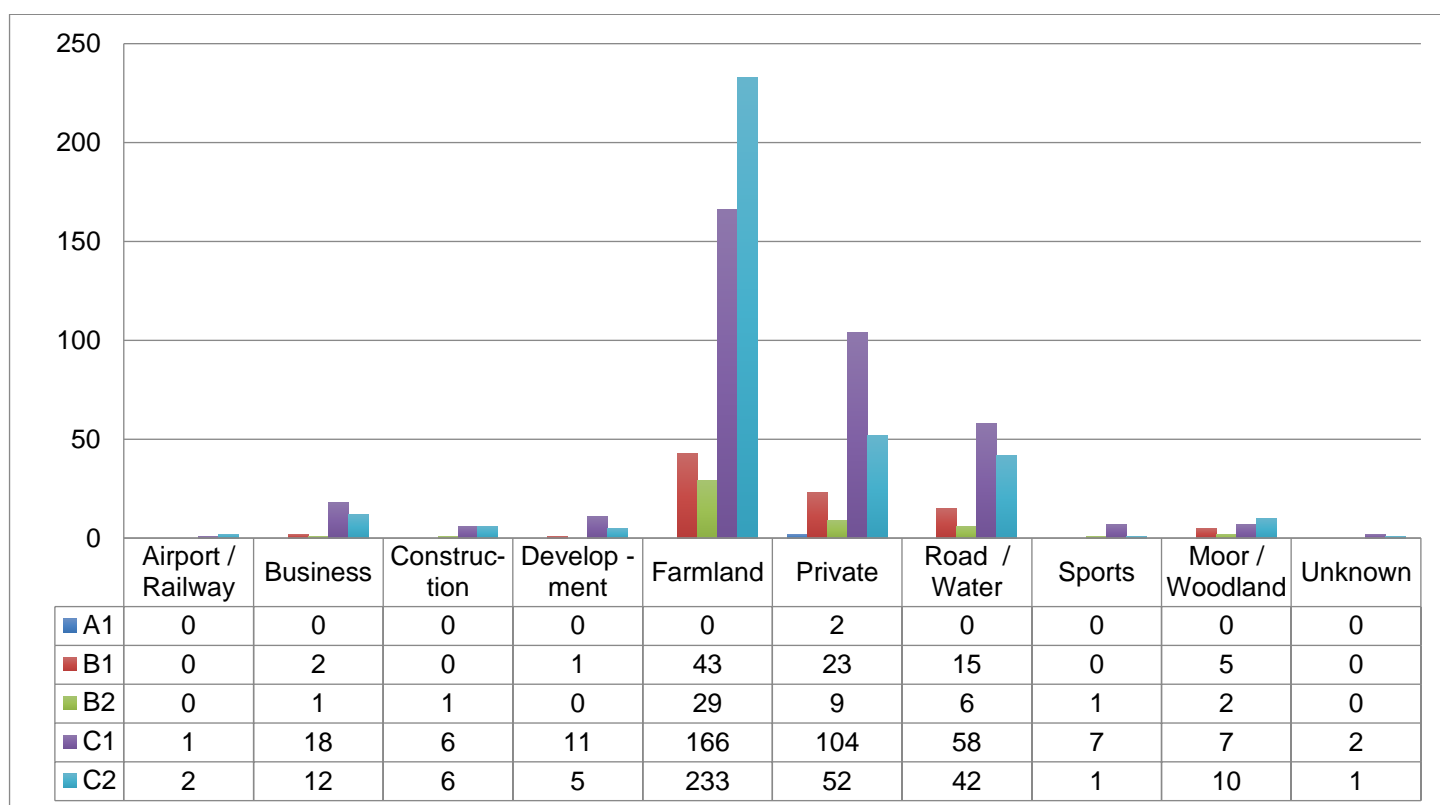


Figure 3-4 Infringements by location type 2021

Incidents in 'Farmland' continues to provide the largest number of records in the database. In 2021 these accounted for 471 infringements or 53.3% of all records. This is an increase of approximately 4.5% on the previous 3 years, where the percentage figures had been between 48 and 48.8%. The majority of these infringements, 399 (45.1%) fall into the C category.

It should be noted that there is possibly an overlap between those records reported as being in Farmland and those recorded in Private Land (another 190 of the 884 records), but the reports themselves do not go into enough detail to investigate further.

Development of the course for agricultural colleges took place during 2021. This was converted into a Moodle based interactive presentation and has been uploaded onto the Landex Agricultural College platform. The aim is for the course to go live in September 2022, with UKOPA member companies offering supporting colleges should this be required.

Work in Farmland (471), Private Land (190) and Roads / Waterways (121) continues to provide the greatest number of incident reports recorded, accounting for 88.5% up from 86.1% in 2020. This is another slight increase from 2019 whereas the figure had remained almost static (between 84 and 83%) for the 5 years previously (2015-2019).

Action 3: Awareness raising initiatives by IWG and UKOPA member companies will continue with the aim of reducing the number of infringements in Farmland, Private Land and in Road / Waterways.

UKOPA members do need to consider how infringements are recorded since it is difficult to understand how an infringement could be recorded where the location type is unknown – although in 2021 there were only 3 infringements classified as location type unknown.

3.4 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?

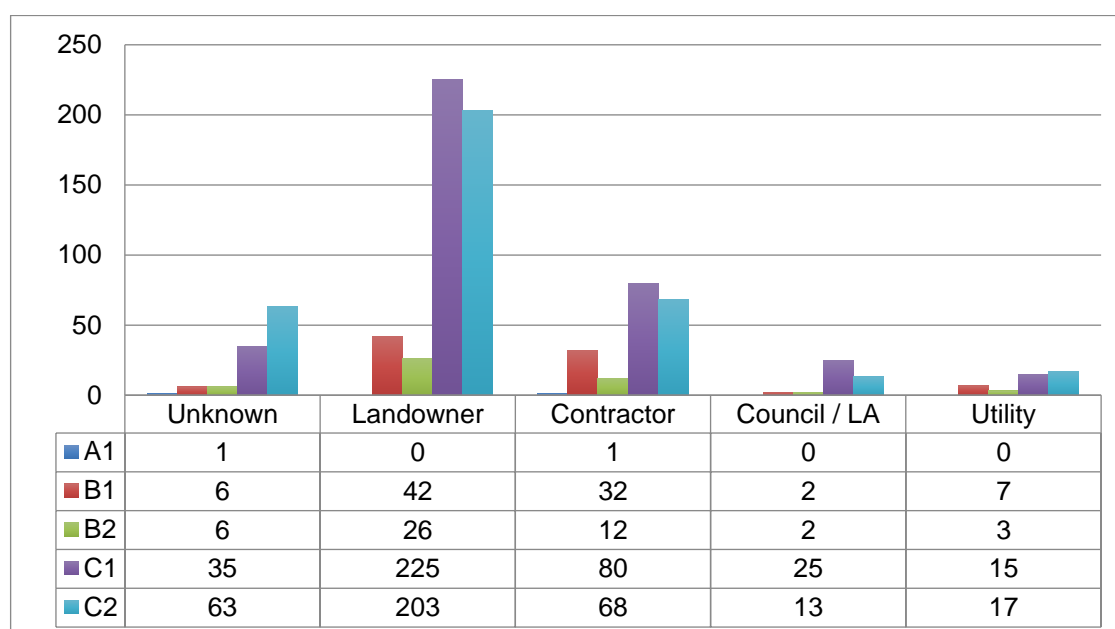


Figure 3-5 Infringements by infringer type 2021

Figure 3-5 describes the current position of infringements by infringer type. Landowners continue to be the largest single infringing group with 56.1% of all infringements being in this category. This is 4.3% higher than in 2020, which was 1% higher than the figure in 2019.

Contractor infringer type accounts for 21.8%, which continues the slight increase from previous year 20.2% in 2020 and 19.3% in 2019.

It is acknowledged that the Contractor figure will include both rural (for example agricultural activities) and urban activities (for example on development land). It should be noted, however, that the distinction between 'Contractor', 'Utility' and 'Council/Local Authority' work can be seen as a very fine one and is masked by the significant level of contractor-delivered utility and council services in the UK. Utility infringements and Council/Local Authority infringement accounted for 4.8% each.

Action 5: IWG to consider if there is a need to reissue the 'contractor' working safely guidance document with the aim of helping to reduce the number of contractor / utility infringements.

The upward trend in the number of infringements recorded as 'unknown' in previous years had reversed in 2021 with 111 infringements being recorded as unknown, 12.56% compared with

approximately 16.5% in the previous 2 years. This figure will include infringements where parties have left the site between the sighting being reported and a site visit taking place, hence being recorded as unknown. However, the reduction in number builds on the work that members have been doing to investigate 'unknown' reports and where possible provide more information.

3.5 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 3-3 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. The weighted score for the unknown infringer type has decreased in 2021, this is due to a reduction in A and B infringements which have a greater bearing on the weighted average. The score is down to 185 compared with 298 in 2020, 269 in 2019 and 210 in 2018.

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 3-3 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 3-2.

A1	10
B1	5
B2	2
C1	2
C2	1

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

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 3-3 has been previously 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	Number of infringements	A1	Weight X10	B1	Weight X5	B2	Weight X2	C1	Weight X2	C2	Total weighted score
Unknown		1	10	6	30	6	12	35	70	63	185
Land/Farm		0	0	42	210	26	53	225	450	203	915
Contractor total		1	10	32	160	12	24	80	160	68	422
Council/LA/Government		0	0	2	10	2	4	25	50	13	77
Utility/Infrastructure		0	0	7	35	3	6	15	30	17	88
Company A	6	0	-	5	25	0	-	1	2	0	27
Company B	6	0	-	2	10	1	2	2	4	1	17
Utility A	3	0	-	2	10	0	-	0	-	1	9
Company C	4	0	-	1	5	0	-	1	2	2	7
Company D	4	0	-	0	-	0	-	3	6	1	6
Utility B	4	0	-	0	-	0	-	2	4	2	6
Company E	4	0	-	0	-	0	-	3	6	0	6
Utility C	3	0	-	0	-	0	-	2	4	1	5
Utility D	3	0	-	0	-	0	-	2	4	1	5

Table 3-3 Significant Infringers 2020

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 six years, the records for 2020 show no infringer with more than 10 infringements recorded against them. Many of the contractor companies in table 3.3 were working on behalf by a variety of Utilities/Infrastructure companies and Local Authorities and generally indicate those operating at a national level and across a number of work sectors. This year there were no significant issues noted with housing developers.

Following a reduction in the contractor weighted average score in 2019, down to 297, there was an increase of 15.8% to 343 and a further increase 23% to 422. **This reinforces Action 5 to review the need to reissue the contractor working safely guidance document.**

Given the low incident of overall number (and weighted averages) of infringements by any one organisation, then no individual company, contractor or local authority needs to be a focus of the IWG for 2022, instead specific industries (such as forestry and own vehicles parked in easements) should be the target.

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

4. CONCLUSIONS AND RECOMMENDATIONS

In 2021 there was an 7.5% increase in the number of infringements reported from 822 to 884.

There were 2 infringements that caused actual damage, category A, which accounts for 0.2% of all infringements reported. In 2020 this figure was 0.6%, with 5 A infringements recorded.

Those infringements that have serious potential to cause damage, i.e. B category (B1 and B2) total 138 of the 884 reports (15.6%) compared with 148 of the 822 reports (18%) in 2020. Category C infringements, those with limited potential to cause damage, accounted for 744 of the 884 reports (84.2%) compared with 669 of the 822 reports (81.4%) in 2020.

In 2021, the number of B1 and C1 findings (within the pipeline easement) was 469 or 53.1% of the total number infringements. This is a reduction of 3.2% from 56.3% (463 infringements) from 2020. This therefore means that the number of B2 and C2 (within the pipeline operator's zone of interest) accounted for 46.7% of the infringements compared with 43.1% in 2020. Operator companies do, however, investigate all types of infringements and are encouraged to share the findings across the UKOPA membership.

IWG members have prepare 'Safety Alerts' from infringement investigations and share them with UKOPA members, these will be changed to 'Learning Bulletins' during 2022. This has now been added as an agenda item to the IWG with the aim of improving the dissemination of learning.

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. Work has continued on the development of the agricultural college working safely course, that has been incorporated into the Landex college platform in early 2022 and roll-out will begin in September 2022.

Members of IWG should continue to ensure that data is collected and submitted in a timely manner and engage with their companies to encourage completion of all fields within the infringement database. Consistency of reporting terminology and structured approaches to reporting needs to continue to be developed.

The IWG will continue engage with the HSE to obtain their support and discuss ways of raising awareness of pipeline infringements across all sectors.

4.1 Specific actions regarding infringements for IWG

The specific actions for 2022/23 for the IWG from this report are:

- Action 1: The IWG should agree the definition or 'aware of work taking place' and ensure that all operators recording systems collect the same data.
- Action 2: IWG will investigate the increase in fencing infringements, and if required put in place an action plan for reducing the number.
- Action 3: Awareness raising initiatives by IWG and UKOPA member companies will continue with the aim of reducing the number of infringements in Farmland, Private Land and in Road / Waterways.

- Action 4: IWG will find ways of engaging with the forestry industry body to raise awareness with the aim of reducing this figure.
- Action 5: IWG to consider if there is a need to reissue the 'contractor' working safely guidance document with the aim of helping to reduce the number of contractor / utility infringements.

The IWG will also:

- Re-establish links with NFU and SNFU and explore ways of raising awareness of high pressure pipelines

5. 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: CURRENT STATUS AND MANAGEMENT OF DATABASE

At the end of 2021, the following Operating companies provided a submission (including nil reports) for the UKOPA infringement database:

- BPA
- CATS
- Eon*
- Essar
- Exolum
- iGas
- Ineos FPS
- Manchester Jetline*
- National Grid
- Oikos Storage
- Petrolneos*
- SGN
- Total
- Uniper
- Cadent
- Conoco Philips*
- EP Langage*
- Esso
- Humbly Grove Energy*
- Ineos
- Mainline Pipelines Ltd
- Marchwood Power*
- Northern Gas Networks
- Perenco
- SABIC UK Petrochemicals
- Shell
- Wales & West Utilities

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

Those companies indicated with * provided a response indicating they had zero infringements during the year, there were no companies who did not report in 2021.

APPENDIX B: 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 review to improve pipeline safety awareness.
- Continue to collect 3rd party pipeline infringement data and publish an annual report.
- Raise the profile of the UKOPA and the management of pipeline safety 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.

IWG achievements from 2021:

- Completed the UKOPA ‘Working Safely’ video update and rolled out via the UKOPA website
- Agricultural Course completed and uploaded to Ladex website in readiness for September 2022 rollout to member companies.

And in 2022, the IWG (and member companies) will:

- Close out the actions from the 2022 infringement report (see section 3.1)
- Support Agricultural Colleges in the roll out of the agricultural working safely near high pressure pipelines course.
- Engage with NFU and SNFU.

B.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 the focus for the group.

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

Members 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, data quality is an issue and 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, although encourage to report throughout the year. 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. IWG is to liaise with Linewatch to try to ensure that those UKOPA members who are also members of Linewatch submit data. Even if no infringements have occurred, members should still return a ‘nil report’ submission.

- 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.

APPENDIX C: IWG MEMBERSHIP 2021

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 2020 was constituted as follows:

- IWG Secretary
- BPA (IWG Chair)
- GNI
- Cadent
- CATS
- Essar
- Esso Petroleum
- Exolum
- HSE (invited member)
- Ineos
- Ineos FPS
- National Grid Gas Transmission
- NGN
- Mutual Energy
- Perenco
- Petrolneos
- SABIC
- SGN
- Shell
- Wales & West Utilities

The 2021 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 D: 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 D-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 D-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 D-3 Infringement categories