Northern Gas Networks

Working safely near high pressure gas pipelines and associated installations

Third party requirements

November 2017

we are the network

Contents

Welcome 3

A step by step process for when you're working near a high pressure pipeline 4

The requirements 5

1. Scope 5
2. Formal consent 5
3. EH&S considerations 5
4. Pipeline locating 6
5. Slabbing and other protective measures 6
6. Excavation 6
7. Construction traffic 7
8. Specific activities 7
9. Backfilling 9
10. Action in the case of damage to the pipeline 9
11. References 9
12. Glossary of terms 9

Welcome

What's it all about?

This work procedure is meant for third parties who are working nearby high pressure gas pipelines and associated installations (anything above 7 bar gauge). We need you to follow this best practice procedure so we can be sure that all measures are taken to prevent damage.

It's essential that all procedures in this document are complied with because damage to a high-pressure gas pipeline or its coating can result in failure, causing hazardous consequences for anyone nearby. If NGN thinks any work is in breach of this document, they'll stop the work until the correct procedure is being followed.

Regulation 15 of the Pipelines Safety Regulations states: 'No person shall cause such damage to a pipeline as may give rise to a danger to persons'. This means that if you don't follow these requirements the Health and Safety Executive (HSE) could also prosecute you.

All the requirements in this document are in line with the HSE's and the Institution of Gas Engineers and Managers (IGEM) recommendations. You can find these in HSE's guidance document *HS(G)47 Avoiding Danger From Underground Services.* They are also available in document *IGE/SR/18 Edition 2 - Safe Working Practices To Ensure The Integrity Of Gas Pipelines And Associated Installations.*

Third parties must also make sure that all work follows the requirements of the Construction and Design Management Regulations and all other relevant health and safety legislation.

Disclaimer

It is the responsibility of anyone carrying out work near our pipeline infrastructure to ensure that the requirements of this document are applied correctly.

Please keep in mind that being compliant with this document doesn't make you immune to prosecution for breaches of any other statutory or legal obligations.

Important definitions

Must: This indicates a mandatory requirement.

Should: This indicates both best practice and the preferred option. You can use an alternative method but you must complete a suitable and sufficient risk assessment to show that the alternative method delivers an equal, or better, level of protection.

The step by step process for when you're working near a high pressure pipeline

Use this flowchart alongside this entire document and never in isolation.
If the pipeline is damaged at any time, even slightly, follow the precautions in Section 10.
If in any doubt at all please contact NGN.

Step 1
Contact NGN

Before starting work you need formal consent from NGN (see Section 2). NGN need at least 7 days' notice in advance of work starting.

Step 2
Consider safety

Think about all the safety requirements, both legal and practical (see Section 3).

Step 3
Contact NGN and request pipeline location

Contact NGN to let them know about the work and arrange for them to locate the pipeline (see Section 4). Note: NGN needs at least 7 days' notice.

Step 4
Observe restrictions

Ensure you read and follow the NGN restrictions on how near mechanical excavators and other power tools are allowed. You must also follow all measures to protect the pipeline from construction vehicles (see Sections 5, 6 and 7). NGN might decide to supervise the work. You can contact NGN to find out if this is necessary.

Step 5
Specific activities

You must comply with the requirements in Section 8 if work involves any of the following activities:

- No-dig techniques
- Hot work
- Landfilling
- Increase in cover
- Blasting
- Pressure testing
- Piling
- Surface mineral extraction
- Seismic surveys
- Demolition
- Deep mining
- Excessive loading (eg cranes)
- Drainage/sewerage work
- Ditch maintenance

Step 6
Consult NGN

Get NGN's agreement before backfilling over, alongside or under the pipeline. NGN usually need 48 hours' notice before backfilling (see Section 9).

If in any doubt at all please contact NGN

The requirements

Section 1
Scope

This work procedure sets out the safety precautions and other conditions affecting the design, construction and maintenance of services, structures and other works in the vicinity of NGN pipelines and associated installations operating at pressures greater than 7 bar gauge, located in both negotiated easements (see Section 12) and public highways.

Section 2
Formal consent

High pressure pipelines are generally laid across country within an easement agreed with the landowner or within the highway. As the required arrangements for working within an easement and working within the highway differ, this document has been structured to highlight the specific requirements for these two types of area where work may be carried out.

Generally, normal agricultural activities are not considered to affect the integrity of the pipeline, however please consult NGN prior to undertaking deep cultivation in excess of 0.5m. In all other cases no work shall be undertaken in the vicinity of the pipeline without the formal written consent of NGN.

Any documents, handed to contractors on site by NGN, must be signed for by the site manager. NGN will record a list of these documents, and the contractor should maintain a duplicate list.

2.1 Within an Easement

The promoter of any works (see Section 12) within an easement must provide NGN with details of the proposed works including a method statement of how the work is intended to be carried out.

Work must not go ahead until formal written consent has been given by NGN. This will include details of NGN's protection requirements, contact telephone numbers and the emergency telephone number. On acceptance of NGN's requirements the promoter of the works must give NGN 7 working days' notice, or shorter only if agreed with NGN, before commencing work on site.

2.2 Within the Highway

Work must be notified to NGN in accordance with the requirements of The New Roads and Street Works Act (NRSWA) and HS(G)47.

The promoter of any works within the highway should provide NGN with details of the proposed works including a method statement of how the work is intended to be carried out. This should be submitted 7 working days before the planned work is to be carried out or shorter, only if agreed with NGN. If similar works are being carried out at a number of locations in close proximity a single method statement should be adequate.

Work should not go ahead until formal written consent has been given by NGN. This will include details of NGN's protection requirements, contact telephone numbers and the emergency telephone number.

Section 3
EH&S considerations

3.1 Safe Control of Operations

All working practices must be agreed by NGN prior to work commencing. All personnel working on site must be made aware of the potential hazard of the pipeline and the actions they should follow in case of an emergency.

3.2 Deep Excavations

Special consideration should be given to the hazards associated with deep excavations. The HSE website provides further guidance, particularly at http://www.hse.gov.uk/construction/safetytopics/excavations.htm.

3.3 Positioning of Plant

Mechanical excavators must not be sited or moved above the pipeline unless written authority has been given by the NGN responsible person.

Mechanical excavators must not dig on one side of the pipeline with the cab of the excavator positioned on the other side. Mechanical excavators and other traffic must be positioned far enough away from the pipeline trench to prevent trench wall collapse.

3.4 General

Activities associated with working in the vicinity of pipelines operating above 7 bar gauge may have impact on the safety of the general public, NGN staff and contractors, and may affect the local environment. Contractors must carry out suitable and adequate risk assessments prior to the commencement of work to ensure that all such issues are properly considered and risks mitigated.

Section 4
Pipeline locating

Where formal consent to work has been given, the third party should give 7 working days' notice or shorter, only if agreed with NGN, to ensure that the pipeline is suitably located and marked out by NGN prior to the work commencing.

Prior to work commencing on site the pipeline must be located and pegged or suitably marked out by NGN personnel. In exceptional circumstances, with the prior agreement of NGN, the locating and marking out of the pipeline could be carried out by competent third parties on behalf of the contractor, as long as NGN is assured of their competence and the procedures to be followed.

Safe digging practices, in accordance with HSE publication HS(G)47, should be followed as both direct and consequential damage to gas plant can be dangerous both to employees and to the general public. Previously agreed working practices should be reviewed and revised based on current site conditions. Any changes must be agreed by the NGN responsible person.

The requirements for trial holes to locate the pipeline or determine levels at crossing points must be determined on site by the NGN responsible person. The excavation of all trial holes must be supervised by the NGN responsible person.

Section 5
Slabbing and other protective measures

Protective measures including the installation of concrete slab protection should only be installed over or near to the NGN pipeline with prior permission from NGN. NGN will need to agree the material, the dimensions and method of installation of the proposed protective measure. The method of installation must be confirmed through the submission of a formal written method statement from the contractor to NGN.

Where permanent slab protection is to be applied over the pipeline, NGN will normally carry out a survey of the pipeline to check that there is no existing damage to the coating of the pipeline prior to the slab protection being put in place. NGN must therefore be contacted prior to the laying of any slab protection to arrange for them to carry out this survey.

The safety precautions detailed in Sections 3 and 6 of this document should also be observed during the installation of the pipeline protection.

Section 6
Excavation

6.1 In Proximity to a Pipeline in an Easement

Third parties may excavate, unsupervised, with a powered mechanical excavator to within 3 metres of the NGN located pipeline and with handheld power tools to within 1.5 metres. Any fitting, attachment or connecting pipework on the pipeline must be exposed by hand. All other excavation should be by hand. Consideration may be given to a relaxation of these limits by agreement with the NGN responsible person on site and only whilst he remains on site. In this case a powered mechanical excavator shall not be allowed to excavate closer than 0.6 metres to the nearest part of the pipeline.

Where sufficient depth of cover exists, following evidence from hand dug trial holes, light tracked vehicles may be permitted to strip topsoil to a depth of 0.25 metres, using a toothless bucket. No topsoil or other materials should be stored within the easement without the written permission of NGN. No topsoil or materials should be stored over the pipeline. No fires should be allowed in the easement strip or close to above ground gas installations.

After the completion of the work the level of cover over the pipeline should be the same as that prior to work commencing unless agreed otherwise with the NGN responsible person. No new service shall be laid parallel to the pipeline within the easement. In special circumstances, and only with formal written agreement from NGN, this may be relaxed for short excursions where the service shall be laid no closer than 0.6 metres to the side of the pipeline. Where work is being carried out parallel to the pipeline within or just alongside the easement a post and wire fence must be erected as a protective barrier between the works and the pipeline.

6.2 In Proximity to a Pipeline in the Highway

Removal of the bituminous or concrete highway surface layer by mechanical means is permitted to depth of 0.3 metres, although the use of chain trenchers to do this shall not be permitted within 3 metres of the pipeline. The NGN responsible person may want to monitor this work.

Where the bituminous or concrete highway surface layer extends below 0.3 metres deep it should only be removed by handheld power assisted tools under the supervision of the NGN responsible person. In exceptional circumstances, and following a risk assessment, these conditions may be relaxed by the NGN responsible person.

Third parties may excavate, unsupervised, with a powered mechanical excavator to within 3 metres of the located NGN pipeline and with handheld power tools to within 1.5 metres. Any fitting or attachment must be exposed by hand. In special circumstances consideration may be given to a relaxation of these rules by agreement with the NGN responsible person on site and only whilst he remains on site.

The use of 'No Dig' techniques is covered in Section 8.1.

Any new service running parallel to the pipeline should be laid no closer than 0.6 metres to the side of the pipeline (see Section 6.4).

6.3 Crossing Over a Pipeline

Where a new service is to cross over the pipeline a clearance distance of 0.6 metres between the crown of the pipeline and underside of the service must be maintained. If this cannot be achieved the service must cross below the pipeline with a clearance distance of 0.6 metres. In special circumstances this distance may be reduced at the discretion of the NGN responsible person on site.

6.4 Crossing Below a Pipeline

Where a service is to cross below the pipeline a clearance distance of 0.6 metres between the crown of the service and underside of the pipeline shall be maintained.

The exposed pipeline should be suitably supported. Where lengths of pipeline greater than 5 metres are to be exposed and unsupported the NGN responsible person shall be consulted and a stress analysis shall be required in order to establish support requirements. The stress analysis should be carried out by individuals with demonstrated expertise in this area, NGN can be consulted for advice on suitable specialists. NGN may request a copy of the stress analysis to confirm its adequacy. Such supports must be removed prior to backfilling. The exposed pipelines must be protected by matting and suitable timber cladding.

6.5 Cathodic Protection

Cathodic Protection is applied to all of NGN's above 7 bar gauge buried steel pipelines and is a method of protecting pipelines with damaged coatings from corrosion by maintaining an electrical potential difference between the pipeline and anodes placed at strategic points along the pipeline.

Where a new service is to be laid and similarly protected, NGN will undertake interference tests to determine whether the new service is interfering with the cathodic protection of the NGN pipeline.

Should any cathodic protection posts or associated apparatus need moving to facilitate third party works reasonable notice, typically 7 days, should be given to NGN. NGN will undertake this work and any associated costs will be borne by the third party.

Section 7
Construction traffic

Where existing roads cannot be used construction traffic should only cross the pipeline at previously agreed locations. All crossing points will be fenced on both sides with a post and wire fence and with the fence returned along the easement for a distance of 6 metres. The pipeline shall be protected at the crossing points by temporary rafts of either sleeper, reinforced concrete construction or bog mats, constructed at ground level. The NGN responsible person will review ground conditions, vehicle types and crossing frequencies to determine the type and construction of the raft required.

Section 8
Specific activities

This section details the precautions that need to be taken when carrying out certain prescribed activities in the vicinity of the pipeline. Consult NGN if you are intending to undertake one of the listed prescribed activities and/or you require further advice on whether the work that you are intending to undertake has the potential to affect the pipeline.

8.1 No-Dig Techniques

Where the contactor intends using no dig techniques then a formal method statement must be produced for all work that would encroach (either above or below ground) within the pipeline easement. This method statement must be formally agreed with NGN prior to the commencement of the work. NGN may wish to be present when the work is being carried out and must therefore be given adequate advance notice before the commencement of the work.

8.2 Increase in Cover

A pipeline integrity assessment must be provided for situations involving a final cover depth exceeding 2.5 metres. This assessment should take due account of both soil 'dead' loading and ground settlement due to earthworks. Embankment design and construction over pipelines must give consideration to prevention of any instability. Expert advice may need to be sought which can be arranged through NGN.

8.3 Piling

No piling will be allowed within 15 metres of a pipeline without an assessment of the vibration levels at the pipeline. The peak particle velocity at the pipeline should be limited to a maximum level of 75 mm/sec. Where the peak particle velocity is predicted to exceed 50 mm/sec, the ground vibration shall be monitored by the contractor and the results available to the NGN responsible person at their request.

Where ground conditions are of submerged granular deposits of silt and sand, an assessment of the effect of vibration on settlement and liquefaction at the pipeline shall be made.

Expert advice may need to be sought which can be arranged through NGN.

8.4 Demolition

No demolition should be allowed within 150 metres of a pipeline without an assessment of the vibration levels at the pipeline. The peak particle velocity at the pipeline must be limited to a maximum level of 75 mm/sec. Where the peak particle velocity is predicted to exceed 50 mm/sec, the ground vibration shall be monitored by the contractor and the results available to the NGN responsible person at their request.

Where ground conditions are submerged granular deposits of silt or sand, an assessment of the effect of vibration on settlement and liquefaction at the pipeline shall be made.

Expert advice may need to be sought which can be arranged through NGN.

8.5 Blasting

No blasting should be allowed within 250 metres of a pipeline without an assessment of the vibration levels at the pipeline. The peak particle velocity at the pipeline must be limited to a maximum level of 75 mm/sec. Where the peak particle velocity is predicted to exceed 50 mm/sec, the ground vibration must be monitored by the contractor and the results available to the NGN responsible person at their request.

Where ground conditions are of submerged granular deposits of silt or sand, an assessment of the effect of vibration on settlement and liquefaction at the pipeline shall be made.

Expert advice may need to be sought which can be arranged through NGN.

8.6 Surface Mineral Extraction

An assessment must be carried out on the effect of surface mineral extraction activity within 100 metres of a pipeline. Consideration should also be given to extraction around ground beds and other pipeline associated plant and equipment.

Where the mineral extraction extends up to the pipeline easement, a stable slope angle and stand-off distance between the pipeline and slope crest must be determined by NGN. The easement strip should be clearly marked by a suitable permanent boundary such as a post and wire fence, and where appropriate, slope indicator markers shall be erected to facilitate the verification of the recommended slope angle as the slope is formed, by the contractor. The pipeline easement and slope needs to be inspected periodically to identify any signs of developing instability. This may include any change of slope profile including bulging, the development of tension cracks on the slope or easement, or any changes in drainage around the slope. The results of each inspection should be recorded.

Where surface mineral extraction activities are planned within 100 metres of the pipeline but do not extend up to the pipeline easement boundary, an assessment, by NGN must be made on whether the planned activity could promote instability in the vicinity of the pipeline. This may occur where the pipeline is routed across a natural slope or the excavation is deep. A significant cause of this problem is where the groundwater profile is affected by changes in drainage or the development of lagoons. Where the extraction technique involves explosives the provisions of section 8.5 apply.

8.7 Deep Mining

Pipelines routed within 1 km of active deep mining may be affected by subsidence resulting from mineral extraction. The determination of protective or remedial measures will normally require expert assistance, which can be arranged through NGN.

8.8 Landfilling

The creation of slopes outside of the pipeline easements may promote instability within the vicinity of the pipeline. An assessment should therefore be carried out, by NGN, on the effect of any landfilling activity within 100 metres of a pipeline. The assessment is particularly important if landfilling operations are taking place on a slope in which the pipeline is routed.

8.9 Pressure Testing

Hydraulic pressure testing will not be permitted within 8 metres of the pipeline unless suitable precautions have been taken against the effects of a burst. These precautions should include limiting of the design factor to 0.3 for the third party pipeline for a distance of 6 metres either side of the NGN pipeline, and the use of mill tested pipe or sleeving.

8.10 Seismic Surveys

NGN must be advised of any seismic surveying work in the vicinity of pipeline that will result in NGN's pipeline being subjected to peak particle velocities in excess of 50 mm/sec. The ground vibration near to the pipeline shall also be monitored by the contractor whilst the survey work is being carried out. Where the peak particle velocity is predicted to exceed 50 mm/sec, the ground vibration should be monitored by the contractor and the results available to the NGN responsible person at their request.

8.11 Hot Work

The NGN responsible person on site should supervise all welding, burning or other 'hot work' that takes place within the easement.

8.12 Excessive Loading

Cranes and lifting equipment must not be sited or moved above the pipeline unless written authority has been given by the NGN responsible person. Permission will only be granted after a load displacement assessment is carried out by a suitably qualified organisation.

Protective measures including the installation of concrete slab protection should be installed over or near to the NGN pipeline with prior permission from NGN. NGN will need to agree the material, the dimensions and method of installation of the proposed protective measure. The method of installation must be confirmed through the submission of a formal written method statement from the contractor to NGN.

8.13 Drainage/Sewerage Work

The promoter of any works working within a pipelines easement or within 3m of a pipeline, intending to carry out drainage/sewerage works at a depth greater than the pipeline, must provide NGN with details of the proposed works including a method statement of how the work is intended to be carried out. Special consideration

should be given to the hazards associated with deep excavations. The HSE website provides further guidance, particularly at http://www.hse.gov.uk/construction/safetytopics/excavations.htm.

Work must not go ahead until formal written consent has been given by NGN. This will include details of NGN's protection requirements, contact telephone numbers and the emergency telephone number. On acceptance of NGN's requirements the promoter of the works must give NGN 7 working days' notice, or shorter only if agreed with NGN, before commencing work on site.

8.14 Ditch maintenance

NGN must be notified about ditch maintenance using mechanical excavators and an NGN responsible person must attend site to locate the pipeline and to discuss the work to be carried out and to ascertain the depth of material to be removed from the ditch. If it is reasonably practicable to do so the ditch should be maintained by hand excavation across the danger zones.

Section 9
Backfilling

Third parties must provide NGN with 48 hours' notice, or shorter notice only if agreed with NGN, of the intent to backfill over, under or alongside the pipeline. This requirement should also apply to any backfilling operations alongside the pipeline within 3 metres of the pipeline. Any damage to the pipeline or coating must be reported to the NGN responsible person in order that damage can be assessed and repairs can be carried out. Minor damage to pipe coating and test leads shall be repaired by NGN free of charge.

No backfilling should be undertaken without NGN agreement to proceed. The NGN responsible person will stipulate the necessary consolidation requirements. If the pipeline has been backfilled without the knowledge of the NGN responsible person then he will require the material to be re-excavated in order to enable the condition of the pipeline coating to be confirmed.

Section 10
Action in the case of damage to the pipeline

If the NGN pipeline is damaged, even slightly, and even if no gas leak has occurred then the following precautions must be taken immediately:

Step 1
Shut down all **plant and machinery** and extinguish any potential sources of ignition.

Step 2
Evacuate all **personnel** from the vicinity of the pipeline.

Step 3
Notify NGN using the free 24 hour emergency telephone number **0800 111 999**. All calls are recorded and may be monitored.

Step 4
Notify the **NGN responsible person** immediately using the contact telephone number provided.

Step 5
Ensure no one approaches the **pipeline**.

Step 6
Do not try to stop any **leaking gas**.

Section 11
References

NRSWA: New Roads & Street Works Act

HS(G)47: Avoiding Danger from Underground Services

IGE/SR/18: Safe Working Practices to Ensure the Integrity of Gas Pipelines and Associated Installations

Section 12
Glossary of terms

Contractor: The person, firm or company with whom NGN enters into a contract to which this specification applies, including the Contractor's personal representatives, successors and permitted assigns.

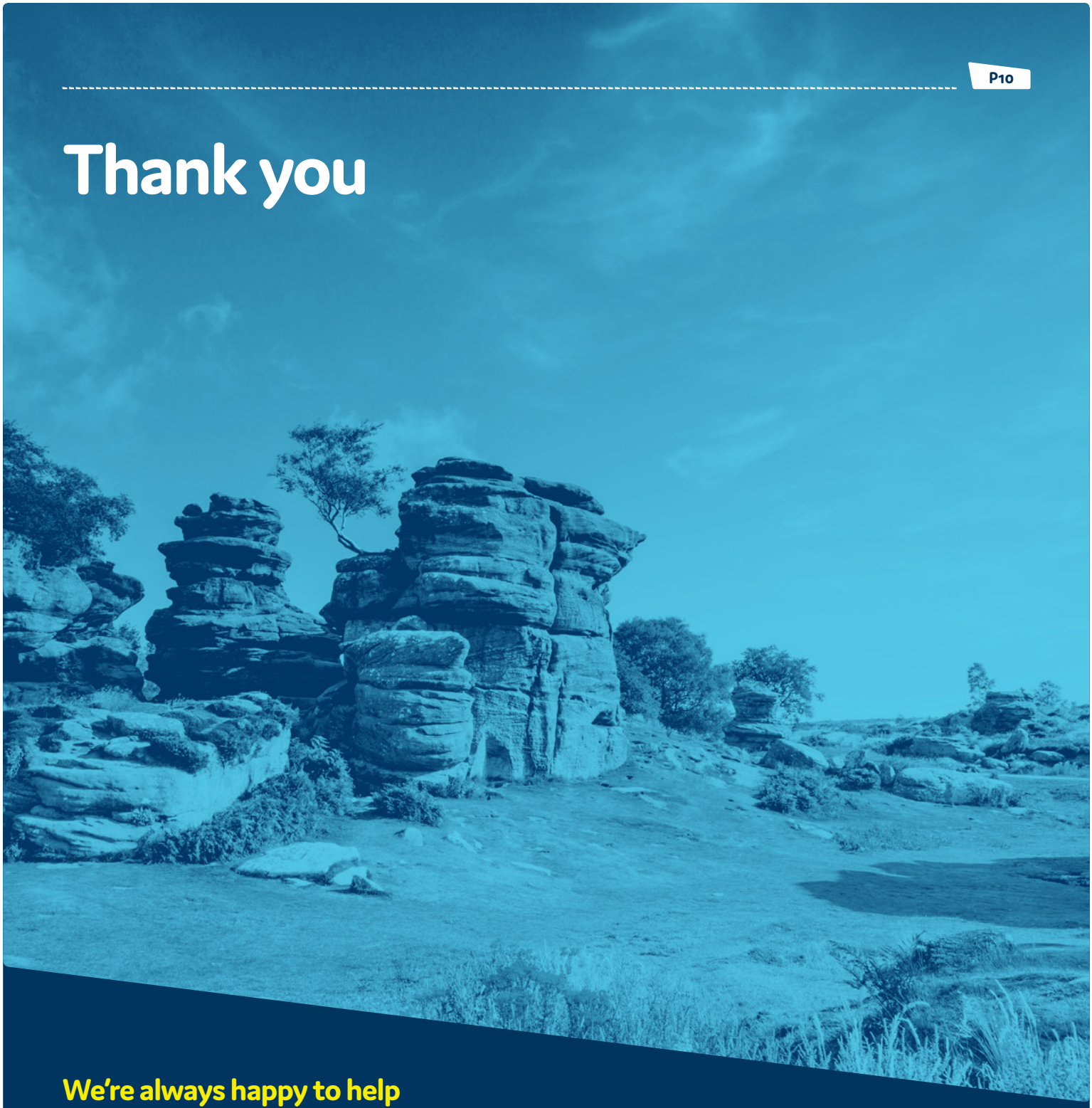
Easement: Easements are negotiated legal entitlements between NGN and landowner and allow NGN to lay, operate and maintain pipelines within the easement strip. Easement strips may vary in width typically between 6 and 25 metres depending on the diameter and pressure of the pipeline. Consult NGN for details of the extent of the easement strip where work is intended.

Liquefaction: Liquefaction is a phenomenon in which the strength and stiffness of the soil is reduced by earthquake shaking or other rapid loading. Liquefaction occurs in saturated soils, that is, soils in which the space between individual particles is completely filled with water. When liquefaction occurs, the strength of the soil decreases and the ability of the soil to support pipelines or other components is reduced.

Promoter of new works: The person or persons, firm, company or authority for whom new services, structures or other works in the vicinity of existing NGN pipelines and associated installations operating above 7 bar gauge are being undertaken.

NGN responsible person: The person or persons appointed by NGN with the competencies required to act as the NGN representative for the purpose of the managing the particular activity.

Thank you



We're always happy to help

If you have any comments or queries about the technical content of this document, please quote SSW22 and send them to:

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Call: **0800 040 7766**

Or send an email to the Before You Dig team at: **beforeyoudig@northerngas.co.uk**

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