Our Ref: TPES/36204

Your Ref: APP/20/01221

Email Address: Zakir.Ali@sgn.co.uk

Telephone Number: 07583 689537

Tuesday, 27 April 2021

To. Havant Borough Council

Planning Application Reference: APP/20/01221

Property: Land to the west of B&Q, Purbrook Way, Havant

We write on behalf of Southern Gas Networks PLC ("Southern Gas") in relation to the application relating to the erection of retail foodstore with associated car parking, access, landscaping and engineering works ("the Development") which was submitted to Havant Borough Council by Lidl Great Britain Limited ("the Applicant") and is recorded under the Planning Application Reference.

Southern Gas objected to the Development given its proximity to a pipeline operated by Southern Gas in its capacity as a transporter of gas to homes and businesses situated throughout the South East of England. Said pipeline is used, by Southern Gas, to transport gas at high pressure and as such it is particularly sensitive and forms a critical part of the gas network.

Since lodging the said objection Southern Gas has engaged with the Applicant to raise its concerns and discuss how the Development might proceed without adversely affecting said pipeline. Southern Gas has agreed that the Development can proceed provided that the Applicant comply with those conditions which are set out in the Annexure attached to this letter.

If you should have any questions then please contact me using the details provided in this letter.

Yours faithfully,

Zakir Ali

Senior Pipeline Asset Engineer, SGN

Annexure – Conditions

1. Nothing can be done which is likely to cause damage or injury to the gas main

2. Not, without consent make any material alteration or deposit any of anything on the easement (20 feet either side of the pipeline) so as to interfere with or obstruct access to the gas main

3. Not to erect or install any building or structure or permanent apparatus in through, upon, or over the easement strip (20 feet either side of the pipeline). Under this clause, agreement has been made to remove a flagpole structure shown on indicative plans being within the easement

4. No occupied buildings are permitted within 12m of the pipelines. A copy of a plan, showing the approximate locations of the pipelines, is enclosed with this letter.

5. All site works must comply with those conditions set out in a document published by Southern Gas and which is titled "SGN/WI/SW/2 - Work Instruction for Safe Working in the Vicinity of Pipelines & Associated Installations with maximum operating pressure >7barg". A copy of this document is enclosed with this letter.

6. Tree planting must comply with SGN tree planting guidelines. A copy of these guidelines is enclosed with this letter. Details of tree planting types and proximities must be provided to SGN for review. SGN reserve the right to remove any trees which might become a danger, or restrict access to the pipelines at any time.

7. Details of the locations of site boundary features (e.g. the location of fences) must sent to SGN for review.

8. SGN reserves the right to introduce further conditions if the Applicant's plans should change from that which are currently shown on the drawing titled "210326 19139 AD 110 REV B". A copy of this drawing is enclosed with this letter.

19 QUARRIES

19.1 Management of Quarry Visits

Quarry visits must be undertaken in addition to routine pipeline surveillance to comply with TD/1 Edition 5 to minimise the likelihood of damage by external factors and third parties, and also to determine where the environment in which the pipeline is situated has altered. Refer to SGN/SP/GM/1, SGN/SP/GM/4 and SGN/PR/PW/12.

The frequency of monitoring of quarry activities should be as defined in Appendix C.

19.2 Records

Quarry visits must be recorded on the 'Quarry Inspection Report' and a copy sent to SGN Policy within 7 days. It is recommended photographs are taken and kept on file.

20 TREE PLANTING GUIDELINES

Before any tree planting is carried out on permanent easements, written approval should be obtained from SGN. This approval must be subject to SGN retaining the right to remove any trees which might become a danger, or restrict access to the pipeline at any time in the future.

The written consent to plant trees should state what area may be planted and also the type of tree.

The only hardwood plants which should be planted directly across the pipeline are hedge plants such as quickthorn and blackthorn. These should only be planted where a hedge is necessary either for screening purposes or to indicate a field boundary.

Raspberries, loganberries, gooseberries and currents may be planted on the easement but a 3 m strip centred on the pipeline should be left clear at all times except in places where planting is required for surface stabilisation.

Apple trees grafted onto dwarf root stocks may be planted to within 3.0m of the pipeline.

The following trees must not be planted within 6.0m of the pipeline: ash, cedar, larch, beech, elm, horse chestnut, sweet chestnut, London plane, hornbeam, lime, lime alder, scots pine, black pine, oak, sycamore, apple, plum, cherry, pear, and also included in this category are most conifers. The above trees should only be planted as individual specimens or a single row in the area between 6 m and 10 m of the pipeline. Dense mass planting should only be carried out at a distance greater than 10 m from the pipeline.

Poplar and willow trees should not be planted within 10 m of the pipeline.

In cases where screening is required, the following are shallow rooting and may be planted over the pipeline, road and field crossings, etc. where necessary: blackthorn, broom, cotoneaster, elder, hazel, laurel, privet, quickthorn, snowberry and most ornamental shrubs.

Christmas trees (Picea Abies) may be planted to within 3 m of the pipeline. However, permission is given on the strict understanding that they are clear-felled at intervals not exceeding seven years.

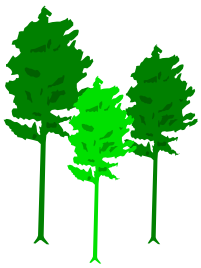
Features such as wind breaks, forestry belts, river crossings and engineering access are individual items and should be treated as such, with advice given as the need arises.

Further details are given in APPENDIX N, which should be issued on request.

Uncontrolled when printed
Complies with GRM

APPENDIX N - TREE PLANTING GUIDELINES

TREE PLANTING GUIDELINES



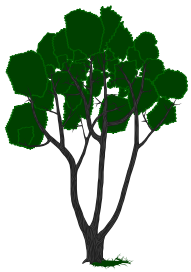
Large growing species of:
Poplars and Willows

10.0 m

Large Conifers and Deciduous Forest Trees

Scots Pine	Horse Chestnut	Apple
Black Pine	Sweet Chestnut	Pear
Cedar	London Plane	Plum
Larch	Hornbeam	Cherry
Ash	Lime Alder	Lime
Beech	Elm	
Sycamore	Oak	

6.0 m



Dwarf Stock Fruit Trees

Amenity Trees Trees	**Ornamental**
Field Maple	Mountain Ash
Wild Cherry	Whitebeam
Crab Apple	Cockspur Thorn
Cobnut	False Acacia
Birch	Lawsons Cypress
Elder	

3.0 m

Shrub Planting Bushes		**Fruit**
Holly	Dogwood	Gooseberries
Laurel	Spindle	Raspberries
Privet	Guelderrose	Currants
Rhododendron		Roses
Christmas Trees		Loganberries

1.5 m

<u>Hedgeplants and Groundcovers</u>
Hedgeplants only where necessary over the pipeline, road and field crossings etc.

Ground Cover:		
Hawthorn	Blackthorn	Heathers
Snowberry	Berberis	Cotoneaster

Distance from Pipeline

SGN/WI/SW/2

Safety Management Framework
Work Instruction for Safe Working in the Vicinity of Pipelines & Associated Installations with maximum operating pressure >7barg

June 2018

Work Instruction for Safe Working & Development in the Vicinity of Pipelines & Associated Installations with maximum operating pressure >7barg

SGN/WI/SW/2

Document Owner: David Wylie

Context

Who is this Work Instruction for?

This instruction is for all persons involved with works carried out in the vicinity of SGN's high pressure pipelines and associated installations with maximum operating pressures >7barg.

What does this Work Instruction do?

This instruction sets out the safe working practices to be employed when carrying out excavation works in proximity to pipelines and associated installations with maximum operating pressures >7barg.

Scope

This instruction is to be used for all works requiring excavation near to, or to expose a high-pressure gas pipeline and associated installations with maximum operating pressure >7barg. This includes trenchless technologies.

Pipelines with a maximum operating pressure >7barg include any that temporarily operate above 7barg even if only for maintenance and pipeline inspections.

Why do we need this Work Instruction?

To ensure safe working practices for works in the vicinity of pipelines and associated installations with maximum operating pressures >7barg, and to prevent damage to high pressure pipelines, fittings and associated installations.

Note. SCO as used in this document means Safe Control of Operations as described by SGNs procedure GDN/PM/SCO/1

Preliminary Requirements		Excavation Related Works		Additional Requirements	
1	Nature of Works	12	Construction Traffic	27	Cathodic Protection
2	Undertaker of the works	13	Hazard and Danger Zones	28	New Services Crossings
3	Safe Control of Operations [SCO]	14	Fittings and Standpipes	29	Trenchless Techniques
4	Agricultural Activities	15	Powered Hand Tools	30	Backfilling
5	Competency	16	Mechanical Excavation	31	Damage to the Pipeline
6	Records	17	Mechanical Assistance	32	Document Control
7	Pipeline Locating	18	Top soil stripping	33	Encroachment Reporting
8	Trial Holes	19	Highway Surface Maintenance	A	Site Document Control Form
9	Mechanical Assistance during Trial Holes	20	Mechanical Excavation – Additional Control Measures	B	Encroachment Reporting Form
10	Risk Assessment	21	Deep Excavation Safety	C	Mechanical Assistance Request Form – Trial Holes Requiring Deep Excavation
11	Method Statement	22	Use of Vacuum Excavators	D	SW/2 Technician – Competency Requirements
		23	Chain Trenchers	E	PTW Requirement Matrix
		24	Slabbing & Protective Measures		
		25	Exposed Pipelines		
		26	Lifting Operations		

Roles and responsibilities

The responsibilities listed below are a summary and must be read in conjunction with the instructions contained within this procedure.

Roles	Responsibilities
• **Competent Person** • Registered as a Competent Person under SCO • Team Leader or Supervisor for the works • On site at all times while work is carried out • In direct control of the works undertaken on site	• Responsible for ensuring compliance with the approved Method Statement, Risk Assessment, Permit to Work and all relevant procedures • Responsible for confirming appropriate Permits to Work are in place at all times
• **Nominated Responsible Person – 3rd party** • Must be identified as competent in the specific works being undertaken • Temporarily registered under SCO as a Nominated Responsible Person to hold SGN PTW	• Responsible for all 3rd party works on site • Holder of the SGN Permit to Work for the works as required, following temporary registration with SGN's SCO control desk • Must remain on site at all times when an SGN Permit to Work has been issued
• **Controller of the Works** • The person with the authority for managing the works to be undertaken within the vicinity of a HP pipeline or associated installation • The [CDM] Principal Contractor or main contractor for the works with overall responsibility to ensure the work is undertaken safely	• Responsible for providing suitable risk assessments and Method Statements • Responsible for accepting the Site Document Control Form before work begins • Responsible for ensuring the works are undertaken in compliance with the accepted Method Statement • Responsible for ensuring workers and machine operators are suitably competent and have been briefed, and understand the Method Statements, relevant procedures and risk assessments • Responsible for ensuring suitable arrangements are in place for supervision and monitoring of the works [in addition to the role of the SGN SW/2 technician], including works undertaken by sub-contractors • Nominate a suitable competent person for the role of SCO Competent Person for works requiring a Permit to Work

Roles	Responsibilities
• **SW/2 Technician** • Meets all competency requirements identified in Appendix D Cannot be the Competent Person for the works	• See Appendix D • Responsible for liaising with those undertaking the works • Responsible for locating and suitably marking the pipeline • Responsible for establishing the 'Hazard Zone' 'Danger Zone' and depth of the pipeline • Responsible for monitoring excavation activities on site as required, including trial holes • Reviewing and accepting a satisfactory Risk Assessment and Method Statement provided by the undertaker of the works prior to any works commencing for works not requiring a Permit to Work • **Cannot** authorise the use of mechanical excavators within the 3m 'Hazard Zone' but must be on site to monitor all mechanical excavation within the Hazard Zone following approval by the Authorising Engineer • Responsible for stopping works if he/she identifies any deviation from the approved Method Statement and/or Permit to Work, and escalating any non-conformance to the SW/2 AE
• **SW/2 Authorising Engineer** • Registered under SCO as an SW/2 Authorising Engineer • In direct communication with the Project Manager or controller of the works	• Reviewing and accepting a satisfactory Risk Assessment and Method Statement for any works using mechanical excavators within the 3.0m hazard zone of a HP pipeline • Confirms the Competent Person/Nominated Responsible Person for the proposed works • If required, issues a Permit to work in accordance with GDN/PM/SCO/2 • Can authorise the use of Mechanical Excavators within the 'Hazard Zone' in accordance with Mechanical Excavation • **CANNOT** authorise Mechanical Excavation within the Danger Zone • Responsible for briefing the Competent Person and the SW/2 Technician on the accepted Method Statement and the Permit to work requirements
• **SGN Asset Manager** • Custodian of relevant pipeline records • Reports to Head of Network Management (Transmission)	• Provide all relevant Pipeline information and records when requested by the SW/2 Technician, Authorising Engineer, or Controller of the Works

Roles	Responsibilities
• **Network Controller** • As described by SGNs Safe Control of Operations procedures	• Responsible for verifying the AE & CP are registered on the SCO database for the relevant activities (e.g. deep excavation, working in the vicinity of HP pipelines etc.) • Responsible for checking for conflict between SCO projects

Safe Control of Operations	PPE
See the Safe Control of Operations [SCO] section of this procedure	Appropriate PPE must be worn at all times by all persons on site including but not limited to: • Fire retardant overalls • High Visibility Jacket • Safety Boots • Hard Hat • Eye Protection • Gloves • Hearing Protection when required • Personal Atmosphere Monitor (PAM) capable of detecting Natural Gas

Note. SCO means Safe Control of Operations as described by SGNs procedure GDN/PM/SCO/1

1. Nature of Works

All works in the vicinity of SGN's high pressure pipelines require appropriate control measures to be identified and implemented to prevent any damage to the pipeline. These works are all subject to SGN's Safe Control of Operations procedures (SCO).

Works directly on High Pressure Pipelines are carried out by SGN directly or by an appointed contractor, these are referred to as 1st and 2nd party works. Works in the vicinity, but unrelated to the pipeline can be carried out by a landowner, occupiers' farmers or an appointed contractor, these are referred to as 3rd party works. 3rd parties may not be familiar with the requirements for safe working near high pressure pipelines, therefore, it is necessary to communicate the requirements and to provide contact details for any enquiries. The SW/2 Technician will liaise with 3rd parties to determine the nature of the works and to provide the information on safe working practices to protect both the pipeline and those working near it.

The following activities are not covered in this procedure and the SGN Asset Manager must be consulted in advance of any of the following;

- Piling within 15m of the pipeline
- Demolition within 150m
- Blasting within 250m
- Quarrying or landfilling within 100m
- Deep mining within 1km
- Pressure testing within 8m
- Siting of Wind Turbines
- Siting of Solar Panel Arrays

Additional advice can be found in SGN/WI/DP/1 & SGN/SP/GM/4.

2. Undertaker of the works

Before any work begins the undertaker of the works and all persons responsible for managing and supervising the works must be identified. This is to allow confirmation that they are competent, and to ensure that Method Statements are provided by an appropriate person who is also responsible for ensuring that they are complied with.

The SW/2 Technician must determine the relationships between the undertaker of the works, the main contractor and any sub-contractors involved and identify the Controller of the Works (see Roles and responsibilities on Page 4).

The Controller of the Works is usually the [CDM] Principal Contractor or main contractor for the works with overall responsibility to ensure the work is undertaken safely.

For all works in the vicinity of high pressure pipelines and associated installations SCO procedures will apply. Principal or main contractors appointed to carry out work for SGN should be fully SCO registered. It is the responsibility of the SW/2 Technician to identify who the undertaker of works has appointed as their Competent Person to liaise with, regarding Permit's to Work (PTW). The SW/2 Authorising Engineer is then required to verify this person is an appropriate person for works requiring an excavation PTW.

The principle or main contractor is responsible for providing the Risk Assessment and Method Statement, and to assess the competency of the Competent Person where SGN SCO procedures apply. They are also responsible for ensuring all workers and machine operators involved in the works are suitably competent, are fully briefed, and understand the Method

Statements, relevant procedures and where applicable, the requirements of the PTW.

The Controller of the Works must sign the **Site Document Control Form** referencing relevant Method Statement, procedures, and instruction that apply to the works.

The Controller of the Works must provide a suitably competent team leader or supervisor for the works who must remain on site whenever work is being carried out within the hazard zone (**Hazard and Danger Zones**).

3. Safe Control of Operations [SCO]

Works on and around High-Pressure pipelines are subject to the controls in GDN/PM/SCO/1 and GDN/PM/SCO/2. For excavation, backfill and HDD works an SCO registered SW/2 AE must issue the PTW to an appropriate CP or for 3rd party works to a Nominated Responsible Person. The SW/2 Technician cannot also be the SCO Competent Person for the works.

For works being undertaken by third parties, the Controller of the Works must nominate a suitable candidate to be temporarily registered under SCO as a 'Nominated Responsible Person' for the duration of the planned works.

For this process to be carried out the prospective candidate must be able to provide demonstrable evidence of suitable experience, training and high levels of vocational competence in the activity they wish to carry out. They must be briefed on the safe working practices detailed in this procedure and receive the SCO/2 briefing on the PTW system and roles and responsibilities. It is the responsibility of the SW/2 AE to ensure these briefings take place.

Evidence of these briefs, in addition to evidence of sufficient training and experience must then be presented to the Responsible Engineer to allow him to be satisfied that the person can be temporarily registered under SCO for the duration of the works. The Nominated Responsible Person **must** be on site at all times when work is being undertaken that is subject to a PTW.

For excavation works being carried out by third parties or contractors [including SGN contractors] that require a PTW, the SW/2 Technician must also be on site to monitor the works and ensure the Method Statement and PTW is being adhered to at all times. If the SW/2 Technician observes any deviation they must stop the works immediately and escalate to the SW/2 AE. Any PTW issued must reference the Method Statement produced for the planned works. The SW/2 AE must attend site to assess the risks and the suitability of the proposed Method Statement.

The SW/2 AE must be satisfied that the Method Statement adequately describes a safe method of working to prevent damage to the pipeline and any fittings, standpipes, and connections.

For works being carried out near to, but not within the hazard zones, the undertaker of works does not require a PTW. In this situation, the pipeline must still be located and marked with the hazard zones established. The undertaker of works must be provided will all the relevant safety information regarding the pipeline, and be briefed on permissible working methods by the SW/2 Technician. This interaction must be captured using the Site Document Control Form & the Safe working near high pressure pipelines booklet.

Any Permit issued for excavation works, trenchless technologies and backfilling **must** be issued by an SW/2 AE. For other works requiring a permit an AE that has the required competencies under SCO for that activity may issue the PTW.

Activities where an SW/2 AE must authorise a PTW

- Use of Mechanical excavators inside the hazard zones including during backfilling
- Use of powered hand tools for excavation inside the inner hazard zone and danger zone, including vibro-tampers/plates for backfilling
- Use of vacuum excavators in the danger and hazard zones
- Any 'trenchless techniques', through or under the hazard zones

Permits to Work for activities not listed above can be issued by an AE competent to do so.

- Any lifting operations within the danger and hazard zones
- Any 'Hot Works' i.e. welding, cutting, burning within the easement
    - Hot Works near pipelines are controlled by T/SP/P9 welding procedures and NRO's in accordance with SCO.

A PTW is not necessarily required for hand digging, unless it is deemed appropriate by the SW/2 AE.

4. Agricultural Activities

Pipelines are designed to operate safely beneath routine agricultural conditions including ploughing to a depth of 500mm without monitoring by SGN.

Figure 1. Chisel Plough

An SW/2 Technician must attend site and assess the risk of damaging the pipeline for deep cultivation works such as mole or chisel ploughing exceeding 500mm or the installation of land drainage or other services at depths greater than 500mm. A PTW is required if mechanical excavators or other mechanical equipment is to be used for agricultural works within the hazard zones to depths greater than 500mm. The position of fittings and standpipes must be confirmed by hand excavated trial holes and mechanical excavators or other mechanical equipment must not be used within 1.5m of fittings and standpipes.

Ditch maintenance is a common agricultural activity and, whilst the objective of this work is not to expose the pipeline, there is a risk of damage to the pipeline. SGN must be notified about ditch maintenance using mechanical excavators and a SW/2 Technician 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 inner hazard zone.

For all ditch clearing works using mechanical excavators or similar, the SW/2 Technician must check pipeline records to confirm the position and indicated depth of the pipeline at the time it was constructed to determine if the ditch existed at the time of construction and if the pipeline depth of cover was increased for the ditch crossing. The SW/2 Technician must also check pipeline records for the presence of stabbings or fittings. The SW/2 Technician must use an approved pipeline locator to establish the position and indicated depth of cover of the pipeline. If the pipeline cover at the ditch crossing was increased during construction enabling safe maintenance of the ditch it is not necessary to locate the pipeline by hand excavated trial holes provided that:

- There are not <u>any</u> fittings or standpipes near the planned works
- There is evidence to show that the ditch existed at the time of the pipeline construction
- The ground levels have not been reduced
- At least 750mm can be maintained between the new invert level [bottom of the cleared ditch] and the indicated top of the pipeline
- The bottom of the ditch is probed to at least 500mm below the new invert level by the SW/2 Technician to confirm the pipeline is not within 500mm of the new invert level before work with a mechanical excavator starts
- The machine operator is experienced and has good visibility of the bucket and bottom of the ditch
- An SW/2 Technician must be on site when the excavator is used in the hazard zones [even if a PTW is not issued].

A PTW is not required if all of the above conditions are met, otherwise a PTW is required and a SW/2 Technician must be on site when the mechanical excavator is used in the hazard zones

Figure 2. Ditch Maintenance

5. Competency

All persons carrying out work in proximity to SGN's high pressure pipelines and associated installations must be suitably trained and competent.

If an SW/2 AE allows the use of a mechanical excavator in the Hazard Zone (Hazard and Danger Zones), he/she must satisfy himself that the CP or Nominated Responsible Person is suitably competent, and can demonstrate clear understanding of the requirements for safe working and the potential danger of damaging the pipeline or any associated fittings.

6. Records

Prior to any work commencing all available records must be sought for the assets in the area. This must include, where available, In-Line Inspection (ILI) data, which can provide valuable information regarding the presence of fittings on the pipeline. Records must also be consulted regarding the potential for defective welds on the pipeline (T/PR/P/18).

7. Pipeline Locating

Prior to any work commencing the SW/2 Technician is responsible for locating and marking the pipeline. All available mapping and pipeline records must be consulted to establish information on the depth of cover and any fittings or attachments on the pipeline. Where available the ILI data for the pipeline must be checked. Pipeline locating must be carried out using a suitably approved and calibrated locator with a pipe depth measurement accuracy of ±5% of depth for cover up to 5 metres. **It should be recognised that radio detection pipeline locators will detect the centreline of the pipeline and not the crown, hence the radius of the pipeline must be considered when interpreting the indicated depth of the pipeline.**

In all circumstances, even if a third party locates and marks out a pipeline, the SGN SW/2 Technician will locate the position of the pipeline as described below.

Once located the pipeline must be pegged out at a minimum of **3m** intervals. In addition to the 3m intervals a peg must be positioned at the point of every change of direction and at every change in depth of cover, there must be no bends between pegs. Marking out of the pipeline must also extend for 15m laterally along the pipeline from either side of the planned works.

Proposed work areas must be marked out, clearly showing the hazard zones and pipeline centreline. Safe entry and exit points should be established to avoid crossing the pipeline where possible. **A check for any overhead services must also be carried out**.

Figure 3. Example Pipeline Locator

8. Trial Holes

Trial holes are required in advance of most works near pipelines to confirm the route and depth of the pipeline. All available pipeline records, information, site conditions, recorded and indicated depth of cover must be considered prior to any excavation works. The excavation of **all** trial holes must be supervised by the SGN SW/2 Technician.

Trial holes will normally be carried out by hand excavation, however vacuum excavators may be used to assist hand excavation by removing spoil from the excavation. They should not be used as the primary ground engaging tool (in accordance with the approved code of practice for the safe use of vacuum excavators). The use of any vacuum excavators in the Hazard Zones must be authorised with a PTW and be monitored by an SW/2 Technician.

Vacuum excavators must not be used within 1.5m of any fittings or stabbing, if it is inconclusive whether there are fittings or stabbings present a vacuum excavator should not be used until demonstrated as safe to use.

For works outside of the hazard zones it is the SW/2 Technician's responsibility to determine if there is a need for trial holes. This will depend on the nature of the work being undertaken and the plant and equipment being used and the proximity to the assumed position of the pipeline.

If mechanical excavators, trenchless technologies, auger boring equipment or any other powered plant [other than routine agricultural cultivation to a depth of 500mm] are being used close to the hazard zone, it is recommended that at least one hand excavated trial hole is undertaken to prove the reliability of the assumed pipeline position and depth; this is essential if there are fittings and/or standpipes on the pipeline.

Trial holes **may** not be required for Highway Surface Maintenance (see this section for further information).

If necessary Powered Hand Tools may be used for excavating trial holes, depending on proximities a PTW may be required.

A PTW is not mandatory for **hand excavation only** of trial holes.

Figure 4. Hand Excavated Trial Hole

Trial holes **may** not be required for Highway Surface Maintenance (see this section for further information).

9. Mechanical Assistance during Trial Holes

If it is not practicable, or it is not safe to use a vacuum excavator to assist with deep trial holes, a mechanical excavator can be used to provide mechanical assistance in the hazard zone (Mechanical Assistance); this must be authorised by the Head of Network Management (Transmission) in accordance with the following:

- Under **no circumstances** is a mechanical excavator permitted to be used in the danger zone (0.6m) or within a 1.5m radius of fittings and standpipes, even after exposing the pipe or fittings.
- A site specific Risk Assessment and Method Statement must be prepared, in accordance with this procedure.
- Consideration must be given to ground stability, taking into account the laden weight of any plant to be used.
- The Method Statement must detail the arrangements for trench support, access and egress, and permitted proximity of heavy plant to the excavation.
- The form in Appendix C of this procedure must be completed with all relevant information, as indicated on the form and submitted to the Head of Network Management (Transmission) for consideration. The request is only approved when the Head of Network Management (Transmission) has returned a signed copy of the Appendix C approval form.
- Following authorisation by the Head of Network Management (Transmission) a PTW must be issued for the trial holes **only** (see Safe Control of Operations [SCO]). Additional PTW's will be required for further mechanical excavation inside the Hazard Zone following confirmation of the pipeline location and depth.
- An SW/2 Technician must remain on site whilst work is being undertaken to excavate the deep trial hole.
- The PTW must specify all proximity restrictions and reference the Method Statement and Risk Assessment.
- All workers and machine operators involved in the operation must be briefed and a briefing register signed by all persons must be kept.

This level of authorisation is required as a mechanical excavator is being introduced without yet confirming the depth and route of the pipeline.

10. Risk Assessment

The inherent risk arising from damaging a high-pressure gas pipeline is severe. A detailed site-specific risk assessment must be completed for each activity to be carried out to ensure the pipeline is not damaged. The risk assessment should consider:

- The operating pressure of the pipeline
- Pipeline diameter and wall thickness
- The depth of cover of the pipeline
- The presence of fittings, standpipes and connections and where available in line inspection (ILI) data must be used as part of a risk assessment to identify if and connections, fittings or standpipes are present.
- The proximity of the planned work to the pipeline
- The complexity of the pipeline configuration
- The activity to be undertaken in close proximity to the pipeline, in particular, the use of plant and equipment that is hazardous to pipelines [e.g. mechanical excavators]
- Any existing pipe protection
- Condition of the girth welds on the pipeline (T/PR/P/18)
- The competency and experience of workers and machine operators
- The level of supervision and monitoring
- Environment conditions such as adverse weather and low visibility [e.g. snow conditions] that could lead to errors of judgement
- The presence and proximity of any other hazardous utility apparatus
- **The controls to manage the risk to a level as to prevent any damage to the pipeline.**

11. Method Statement

All works in the vicinity of high pressure pipelines and associated installations require a Method Statement to be produced. For excavation works requiring a PTW the Method Statement must be provided to and accepted by the SW/2 AE. For works not requiring a PTW the SW/2 Technician must check and if satisfactory accept the Method Statement.

For works requiring a PTW, the Method Statement and Risk Assessment must be site specific. The Method Statement will describe the planned work program in detail, and will include all findings from trial hole excavations and the interrogation of all available records including, where available, ILI data. Special consideration must be given to the presence of fittings, standpipes and connections, which are more vulnerable to damage. It may be necessary to have a separate Method Statement for the preliminary phase of undertaking trial holes and the Method Statement for the main work phase may have to be modified or amended following trial holes.

The Method Statement must also include a detailed description of what safety precautions and control measures are to be employed to prevent damage to the pipeline. The Method Statement must also include:

- Suitably dimensioned drawings where appropriate
- Details of the plant to be used (excavators/bucket sizes/vibration compactors etc.)
- Detail what site supervision will be in place
- List of personnel involved in works
- The sequence of works from planning and excavation to completed reinstatement
- Emergency response plans (in the event damage is caused to a pipeline)

If works requiring a PTW are authorised, any additional safety precautions required by the Permit must be described in the Method Statement. The Permit must also reference the accepted Method Statement.

Deviation from the accepted Method Statement is not permitted. It may be necessary to review and amend the Method Statement as work progresses to ensure that the work plans take into account any unanticipated change. The respective SW/2 AE must be advised of any changes and if agreed amend the PTW accordingly.

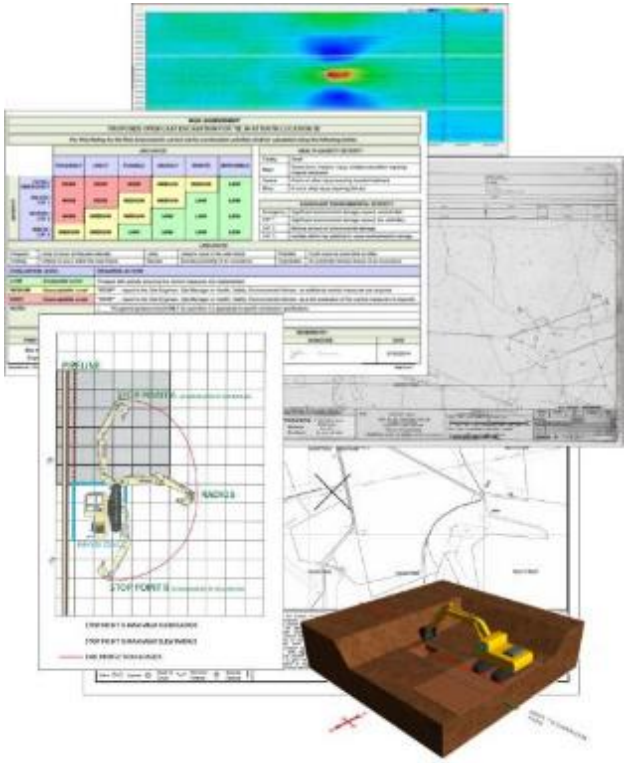


Figure 5. Example Information included in Method Statement

12. Construction Traffic

Where existing roads cannot be used, heavy construction traffic must only cross the pipeline at previously agreed locations. All crossing points over a pipeline must be fenced on both sides with a post and wire fence and with the fence returned along the easement for 6 metres. A minimum distance of 3 meters must be maintained between a crossing point and any fittings, valves or branches, where possible a distance of 10 meters is preferred.

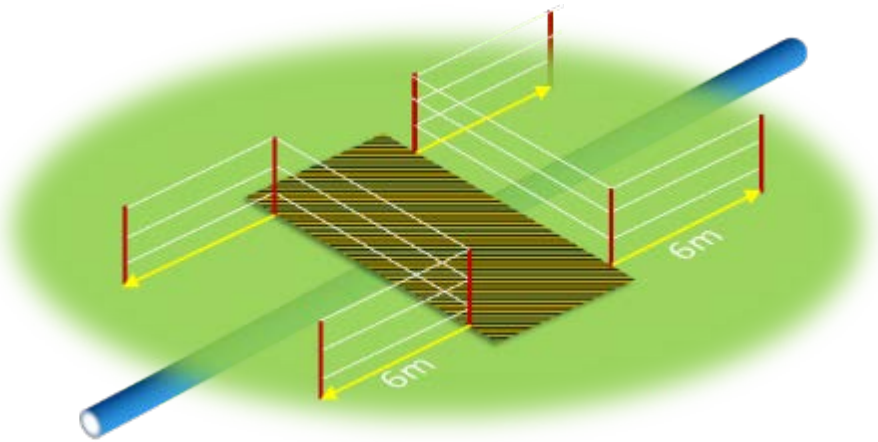


Figure 6. Example Crossing Layout

These crossing points must have suitable temporary surfaces to prevent ground penetration. This can include heavy duty timber, roadway plates, or reinforced concrete construction, constructed at ground level.

The SW/2 AE must review ground conditions, vehicle types and crossing frequency to determine the type and construction of the raft required. For sites with high levels of heavy industrial plant and vehicles crossing the pipeline, the SW/2 AE should consult the Asset Manager.

Notices directing traffic to the crossing points must be erected.

Figure 7. Example Temporary Rafts

13. Hazard and Danger Zones

These zones dictate what activity is allowed and what is not allowed. When excavation work requiring a PTW in these zones is being carried out, the SW/2 Technician **must** be on site to monitor and ensure safe working.

The following diagrams illustrate the inner and outer hazard zones and the danger zone in relation to a high-pressure gas pipeline. Different restrictions and requirements for PTW apply depending on the activity being carried out. These are described further in the relevant sections of this procedure.

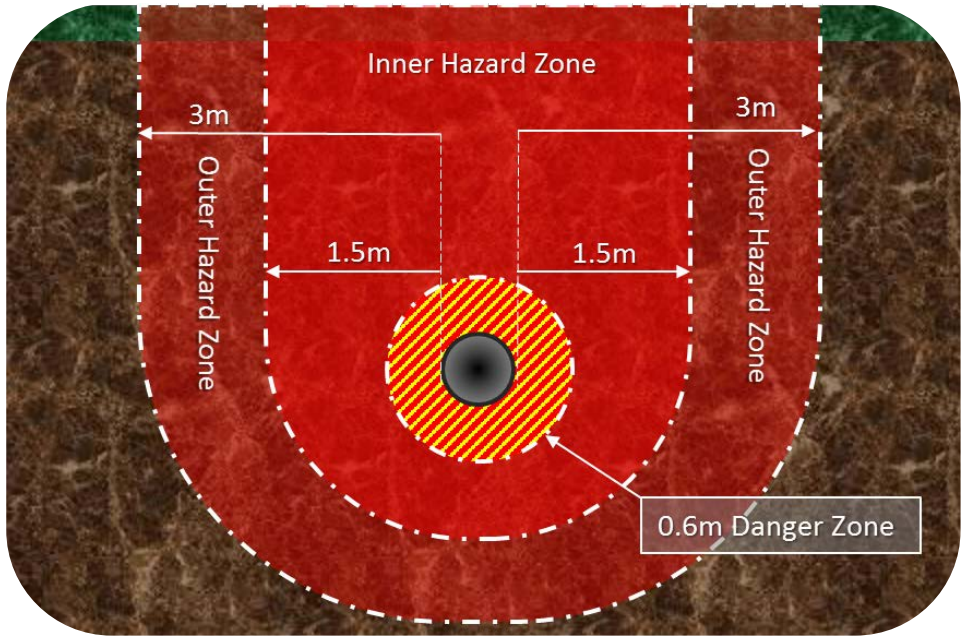


Figure 8. Hazard and Danger Zones

The Danger Zone is applied radially from the pipeline, at a distance of 0.6m. This distance is a **minimum**, the SW/2 AE can mandate a greater distance if required based on a site-specific risk assessment.
The Inner Hazard Zone extends from the Danger Zone to 1.5m from the pipeline, rising to ground level and 1.5m below the pipeline.

The Outer Hazard Zone extends from the Inner Hazard Zone to 3.0m from the pipeline, rising to ground level and 3.0m below the pipeline.

The SW/2 Technician must explain these markings and zones to the Controller of the Works [on site] to ensure they are understood prior to planning the works and confirm them to the CP/team leader on site before work starts.

The proximity zones must be marked on site and maintained by the SW/2 Technician, to avoid confusion with pipeline markers.

For further information on restrictions applying to different activities see the following sections of this procedure:

- Mechanical Excavation
- Use of Vacuum Excavators
- Trenchless Techniques
- Powered Hand Tools
- Highway Surface Maintenance
- Mechanical Assistance
- Lifting Operations
- Backfilling
- Top soil stripping

14. Fittings and Standpipes

Fittings and standpipes on a high-pressure gas pipeline are particularly vulnerable to damage. Additional safety margins should be applied when these are in proximity to works.

Mechanical excavators (see Mechanical Excavation) **must not be used** within a 1.5m radius of fittings and standpipes.

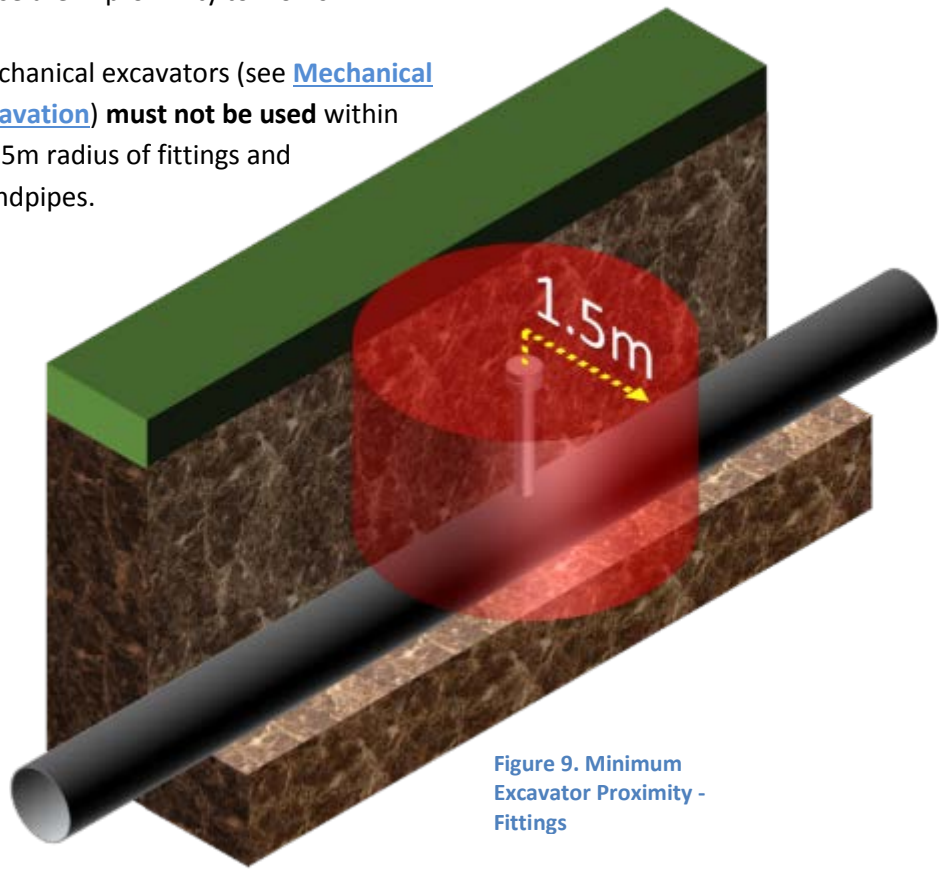


Figure 9. Minimum Excavator Proximity - Fittings

Records must be checked by the SW/2 Technician to identify if fittings and standpipes, including those not extended to ground level, are present on the pipeline in the vicinity of works, and at proposed traffic crossing points.

Fittings and standpipes **must** be hand excavated. A PTW is required if Powered Hand Tools need to be used. Trial holes must be undertaken to locate and confirm the position of fittings and standpipes if a mechanical excavator is to be used within the hazard zones.

15. Powered Hand Tools for Excavation

The use of Powered Hand Tools in the Inner Hazard Zone & Danger Zone requires a PTW, and the SW/2 Technician must be on site at all times when these tools are being used in these zones. Powered hand tools should only be used in the danger zone if it is necessary and the SW/2 AE must specify the permitted depth and proximity to the pipe that they can be used to on the PTW.

A PTW is not required for using powered hand tools in the outer hazard zone.

16. Mechanical Excavation

In relation to this section of this procedure a mechanical excavator is a powered tracked or wheeled machine with an extending arm and bucket or attachments for assisting excavation such as 'peckers' or concrete breakers. It includes mini-excavators and large excavators. Mechanical excavation is using these machines to excavate or assist excavation (see Mechanical Assistance). Mechanical excavators have been the cause of the most serious pipeline damage incidents. They are the most likely cause of damage to a pipeline.

Mechanical excavators must not be used in the Danger Zone or within a 1.5m radius of fittings and standpipes on the pipeline.

Mechanical excavators must always be positioned far enough away from the excavations/trenches to prevent trench wall collapse, considering the laden weight and the ground conditions on site.

Mechanical excavators must **not** dig on one side of the pipeline with the cab of the excavator positioned on the other side. This is to prevent the digging arm pulling towards the pipe or any fittings increasing the risk of damaging the pipe, or, causing damage to the pipe by lifting over the pipe. Under no circumstances is this permitted.

The digging bucket must be toothless when used in the hazard zone and when excavating, a narrow bucket [up to 0.6m width] should be used when excavating unless specifically otherwise authorised on the PTW.

A banksman must be used to assist the mechanical excavator operator as it is likely that the operator will have restricted visibility in deep excavations. Measures must be in place to ensure workers are not at risk of being injured by the mechanical excavator. Machine operators should not work for longer than 2 hours in the hazard zone without a break.

A PTW is required for:

- Using a mechanical excavator to excavate within the outer and inner hazard zones
- Using a mechanical excavator to assist hand digging within the outer and inner hazard zones
- Using a mechanical excavator to assist with any lifting operations within the hazard and danger zones (Lifting Operations).

A mechanical excavator is not permitted to excavate **within the 0.6m danger zone.**

Particular attention must be given to the presence of Fittings and Standpipes in the vicinity of the works and additional precautions are described within this procedure in (Mechanical Excavation – Additional Control Measures).

Figure 10. Excavator Positioning

Where available in line inspection (ILI) data must be used as part of risk assessment to identify connections, fittings and or standpipes in the vicinity of the works. A mechanical excavator is **not** permitted to excavate or to provide

Mechanical Assistance within the Danger Zone or within a 1.5m radius of any fittings or standpipes.

A SW/2 Technician is not authorised to permit the use of a mechanical excavator within the hazard zones or amend any requirements detailed in a PTW or to a Method Statement associated with the PTW. Only the SW/2 AE can permit the use of a mechanical excavator inside the hazard zones.

Mechanical excavators cannot be used to excavate within the 3.0m inner and outer hazard zones of a high-pressure gas pipeline, unless authorised by an SCO registered SW/2 AE. The use of mechanical excavators within the hazard zones can only be authorised subject to the following requirements:

- A detailed site specific Risk Assessment has been carried out
- The pipeline location and depth has been confirmed by trial holes and all indicated fittings and stabbings have been located
- A site specific Method Statement has been submitted to and accepted by the SW/2 AE, who must attend site before authorising the use of a mechanical excavator within 3.0m hazard zone of the pipeline.
- A PTW has been issued as described in Safe Control of Operations [SCO].
- The SW/2 AE is satisfied that those undertaking the work are suitably competent and experienced and that a team leader or supervisor who understands his/her role and responsibilities will be on site at all times [in addition to the SW/2 Technician]
- If approved, the proximity should not default to the minimum, appropriate distances greater than 1m should be considered to minimise the risk of damage to the pipeline
- Every effort must be made when introducing a mechanical excavator into the hazard zone to make the risk of damage as low as reasonably practical.

The SW/2 Technician must consider the **environmental conditions** in which the works are taking place, for example adverse weather conditions such as snow or low natural light conditions. Work must be stopped in the hazard zone if the visibility of excavator operators is affected such that there is an increased risk of causing damage. These considerations should form part of the Risk Assessment.

17. Mechanical Assistance

A PTW is required for mechanical assistance in the outer and inner hazard zones. It is not permitted in the danger zone.

Mechanical assistance is, for example, using a mechanical tracked digger to assist with removing already excavated/loosened ground material or to assist with lifting operations. For example, if a mechanical excavator is prohibited from being used to excavate within the danger zone, it might be acceptable for it to assist manual hand digging by operating outside of the danger zone where hand dug material can be shovelled to a safe distance enabling the mechanical excavator to safely remove the loosened soil.

Powered Hand Tools including hand held air lances can be used to loosen soil and ground material and displace it to a safe distance outside of the 0.6m danger zone.

If connections, fittings or standpipes are present there is a significant risk of accidental damage through unauthorised or unintended movement of the machine bucket. In such circumstances, **mechanical assistance is not permitted within the 1.5m inner hazard zone** and damage prevention measures must be applied to protect them from accidental damage by the bucket. Preventative measures include a protective barrier and slew locks/chains that restrict the movement of the excavator arm and bucket. See Mechanical Excavation – Additional Control Measures.

A mechanical excavator can also be used to lift/lower trench support materials etc. Lifting is a good example of a hazard to a standpipe, even though the machine is not being used to dig, as the standpipe could accidentally be knocked by the bucket/arm or load being lifted if the lift is close to an exposed unprotected standpipe. Refer to the Lifting Operations section of this procedure for lifting operations.

Figure 11. Example of Mechanical Assistance

18. Top soil stripping

Top soil stripping is the removal of top soil over a large area for a temporary works or construction site; it does not mean the removal of the first 250mm depth of ground for discrete excavations. Top soil stripping within pipeline easements and across the hazard zones using mechanical excavators can be permitted by the SW/2 Technician up to a depth of 250mm providing hand excavated trial holes have confirmed it is safe to do so.

Standpipes and fittings are vulnerable to damage during topsoil stripping so they must be located by hand excavated trial holes before top soil stripping starts. Top soil stripping using a mechanical excavator is not permitted within 3.0m of standpipes and fittings and the SW/2 Technician must ensure that the restricted area is clearly marked and that barriers are erected to demarcate the position of the standpipes and fittings.

A PTW (Safe Control of Operations [SCO]) is not required for top soil stripping. If top soil stripping has been undertaken, no further excavation by mechanical excavator is permitted within the Hazard Zone, unless approved by the SW/2 AE (see Mechanical Excavation).

An SW/2 Technician must be on site to monitor all top soil stripping, and the pipeline route and hazard zones should be remarked following top soil stripping.

Figure 12. Top Soil Stripping

19. Highway Surface Maintenance

This section relates only to highway surface maintenance work. It does not apply to, or as part of, works below the road surface structure.

High pressure gas pipelines are designed to operate safely beneath roadway structures, and provided there are not any standpipes or fittings present on the pipe, the pipeline should be safe from surface activity. Surface maintenance includes the use of surface planes to mechanically remove the wearing courses of roadways [not to exceed 300mm] and this is allowed within the hazard zones subject to the requirements described below. Powered hand tools and mechanical excavators must be used within the hazard zones for excavations deeper than 300mm, as described in the **Mechanical Excavation** and **Powered Hand Tools** sections of this procedure of this procedure.

Figure 13. Road Planer

For depths of cover up to 1.5m trial holes must be hand excavated to confirm the position and depth of high pressure pipelines prior to surface removal. If a concrete protective slab has been installed, it is only necessary to locate and confirm the depth of the concrete slab. If pipeline records and pipeline locators indicate the pipeline is deeper than 1.5m cover and the highway surface removal will not exceed 300mm, it is not mandatory to locate the pipe by trial hole, subject to approval by the SW/2 AE. Consideration must be given as to whether there has been development that has altered ground levels since the pipeline was constructed.

For road surface maintenance/removal that does not remove more than 150mm of road surface a PTW is not mandatory. All parties must still be made aware of the presence of the pipeline. If the works are planned to remove more than 150mm of road surface within 3m of a pipeline a PTW is required and it must be issued to a Nominate Responsible Person within the contractor's organisation.

If a PTW is issued then the SW/2 Technician must remain on site to take regular measurements and ensure the maximum depth of 300m is not exceeded.

A road surface plane must not be used within 3m of standpipes and fittings, even if these are not at surface level. If there are any standpipes or fittings on the pipe they must be located and the position must be confirmed and marked clearly. Mechanical excavators and hand powered tools can be used as described in the **Mechanical Excavation** and **Powered Hand Tools** sections of this procedure.

Where surface maintenance or removal is to be carried out across the hazard zones or along the route of a pipeline, an SW/2 Technician must make contact with the undertaker of the works and establish who the Controller of the Works is. To then to discuss the scope of the works and equipment to be used, and most importantly the depth of surface removal and how this will be controlled.

The SW/2 Technician must check pipeline records including In-Line Inspection (ILI) data, where available, which can provide valuable information regarding the presence of fittings on the pipeline that may not be shown on drawings.

In some circumstances records might confirm or indicate that additional protection has been provided to the pipeline such as a protective sleeve or a protective slab. A protective slab must not be removed as part of highway surface renewal.

In all circumstances, the SW/2 Technician must inform the Controller of the Works of the pipeline route and areas where restrictions apply.

20. Mechanical Excavation – Additional Control Measures

It is understood that there will be instances in which the use of mechanical excavators is requested to operate within 3m of a pipeline, fittings or associated installations.

The risk of damage or incident greatly increases with plant operating in such close proximity to pipelines. Fittings such as branches and small diameter stabbings are particularly vulnerable and where these are present, a mechanical excavator is **not** permitted to excavate or to assist hand digging within 1.5m of the fittings and standpipes [i.e. in the inner hazard zone]. Slew locks and/or chains must also be used to control movement of the machine.

If pipelines are exposed or fittings/standpipes are within 3.0m of where mechanical excavators are operating, control measures as described in this section must be applied to protect against/prevent damage from improper or unintended movement of machines. It is not necessary to apply all of the described control measures, but it is necessary to apply those that are most suitable to **prevent** damage to the pipeline and any fittings or standpipes. Applicable control measures must be detailed within the Method Statement.

Examples of additional Control Measures to reduce the risk of damage to pipelines or to limit unintended movement of mechanical excavators/buckets are listed below.

- **Physical Protective Barriers**

Temporary structures constructed around the pipeline to create a physical barrier between excavators and pipelines, preventing any direct contact and to protect the pipeline whist work is carried out in the area. All temporary structures must be removed prior to backfilling the excavation.

Figure 14. Protective cladding applied to pipeline

- **Depressurisation**

Depressurising pipework and installations can be considered a risk reduction measure as the stored energy in the system is reduced, however the full requirements of this procedure apply to any depressurised pipework that will be represurised to pressures >7barg.

- **Excavator Safety Systems / Movement Limiting Devices**

Figure 15. Electronic Movement Limiter

Excavators fitted with Mechanical or Electronic Slew, Height and Reach limiters give an increased level of control and should be used inside the 3.0m hazard zone if there is a risk of damage to the pipeline or fittings and standpipes. These include slew locks and chains to restrict the movement and reach of the machines arm, and Electronic movement control devices.

Figure 16. Mechanical Slew Lock

21. Deep Excavation Safety

Deep excavations are vulnerable to trench collapse and create fall from height hazards. T/PR/SW/1 details the correct working practices for deep excavations and must be followed at all times during deep excavation works.

It is recognised that there are practical difficulties in carrying out hand excavation at depths greater than 1.5m, however a mechanical excavator must not be used within the 3m Hazard Zone until the location and depth of the pipeline and any fittings/standpipes have been confirmed by hand excavated trial holes – See **Trial Holes Requiring Deep Excavations**.

Mechanical excavators and other plant traffic must be positioned far enough away from the excavation to prevent trench wall collapse, appropriate access and egress from excavations must be established. A PTW is required for all deep excavation works.

22. Use of Vacuum Excavators

Vacuum Excavators can be used in the Hazard and Danger Zones subject to a Risk Assessment and a PTW issued by an SW/2 AE, this includes the excavation of Trial Holes. However, they cannot be used within 1.5m of any fitting or stabbing, if records are inconclusive regarding the presence of fittings in the area where the trial holes are required then excavation must be carried out by hand.

Figure 17. Large Vacuum Excavator

The weight of the excavators must be taken into account, the weight will increase as the excavator is in use. Vacuum excavators can pose a risk of causing trench collapse if used near to unsupported excavations or trenches. A suitable and sufficient risk assessment must be undertaken if the vacuum excavator is positioned within 3.0m of an unsupported excavation [for deep excavations this distance may have to be increased].

The design of trench support must take into consideration the proximity of vacuum excavators, 'stop blocks' should be used to prevent creep towards an excavation.

Damage can be caused to the pipe coating by toothed hoses that are used for loosening ground material, so preference should be given to using toothless hoses in conjunction with air lances or hand powered tools; this is particularly important in the inner hazard zone and danger zone.

The SW/2 Technician must be on site when vacuum excavators are used within the hazard and danger zones.

23. Chain Trenchers

Chain trenchers are not permitted to be used in the hazard zones or danger zone.

Figure 18. Chain Trencher

24. Slabbing & Protective Measures

The design and construction of permanent protective measures, such as installation of concrete slabs is specified in SGN/SP/CE/12 and is subject to SGN/PM/PS/5 using either standard or bespoke designs as required. The method of installation must be confirmed through the submission of a formal written Method Statement.

Figure 19. Protective Slabs

Where permanent slab protection is to be applied over the pipeline SGN must carry out a coating defect survey of the pipeline to check that there is no existing damage to the coating of the pipeline prior to the slab protection being installed. The SW/2 Technician must therefore request that the contractor contact the Asset Manager prior to the laying of any slab protection to arrange this survey.

25. Exposed Pipeline

Any exposed pipeline must be suitably supported. Where lengths of pipeline greater than 5m are to be exposed and unsupported the Asset Manager must be consulted and a stress analysis must be carried out in order to establish the necessary support requirements.

Figure 20. Pipeline Supports

The stress analysis must be carried out in accordance with IGEM/TD/12 by individuals with demonstrated expertise in this area. Any temporary pipeline supports installed **must** be removed before backfilling. The exposed pipeline must be protected by matting and suitable timber cladding where necessary. Consideration must be given to T/SP/P/18 when pipelines are exposed.

26. Lifting Operations

All lifting operations carried out over the Hazard and Danger Zones must be carried out in accordance with Safe Control of Operations [SCO]. All lifting operations near HP plant must be fully detailed in a method statement and a PTW must be issued by an AE trained and competent in lifting operation and have the SCO site type competency for the live plant near the lift.

Lifting operations should only be permitted in the danger zone for works on the pipeline such as hot tap and stopple operations, or where it is necessary to install trench support. Consideration must be given to avoiding or minimising lifting operations in the danger zone where it is practicable. Standpipes and fittings are particularly vulnerable to damage during lifting operations, including the lifting of trench support equipment and materials and damage prevention measures must be taken [i.e. barriers to prevent damage and/or restraints on the lifted load to restrict its movement].

Lifting operations includes the lifting of pipes, fittings, valves, stopple equipment, tools and equipment, trench support materials or frames etc. whether by crane, Hiab vehicles, mechanical excavators or other.

Lifting operations must be carried out in accordance with SGN/PM/DIS/3.6. For guidance on lifting Protective Slabs refer to SGN/SP/CE/12.

Those overseeing and assisting lifting operations and operating lifting equipment must be competent and experienced.

The free movement of suspended loads must be restrained and controlled. A slinger/signaller/banksman must assist.
Lifting operations should be planned to avoid, where possible, lifting over pipelines and especially fittings and standpipes by **having the lifting equipment on the same side of the pipeline as the lift**.

Figure 21. Example Lifting Operation

27. Cathodic Protection

All pipelines are cathodically protected in accordance with SGN/PM/ECP/2. Where a new service is to be laid and similarly protected, the SW/2 Technician must arrange with the SGN Maintenance department for interference tests to be carried out to determine whether SGN's own system is adversely affected. If any cathodic protection posts or associated apparatus need to be moved to facilitate third party works SGN require reasonable notice, typically 7 days.

SGN must undertake this work and any associated costs should be borne by the third party

28. New Services Crossings

Where a new service is to cross over or under a pipeline a minimum clearance distance of 600mm must be maintained between the nearest point of the pipeline and the new service.

In special circumstances this distance may be reduced after consultation and written agreement with the SGN Asset Manager.

Ordinarily any new service crossing over a pipeline should be done by hand excavation. To limit the length of interaction between a pipeline and any new service the angle that a new service is permitted to cross a pipeline must be between ≥75°.

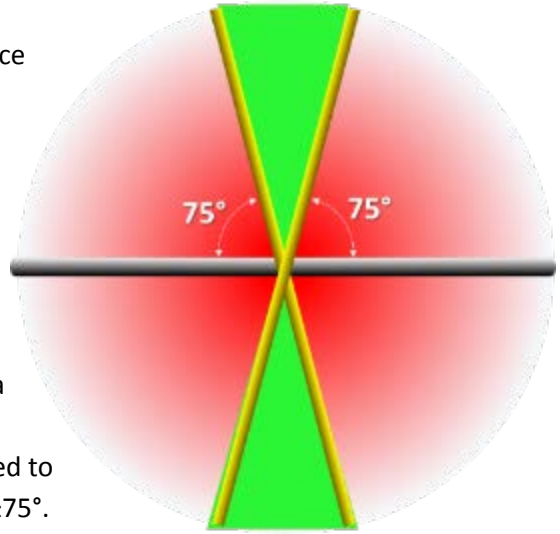


Figure 22. Crossing Angles

29. Trenchless Techniques

Trenchless techniques include moling operations; Horizontal Directional Drilling (HDD); auger boring; impact boring; pipe bursting; hand and powered tunnelling operations; etc. These activities can be highly hazardous to high pressure gas pipelines and can cause catastrophic damage to them.

Trial holes must be hand excavated to confirm the position and depth of the pipeline (Trial Holes) and any associated fittings, standpipes or connections, if any of these activities are to be carried out through or under the hazard and danger zones or in the vicinity of the hazard zones.

A **PTW** issued by an SW/2 AE is required for all trenchless techniques carried out within the hazard zones or for passing under a high pressure gas pipeline at any depth.

Any proposal to use trenchless technologies in the hazard zones or under the pipeline at any depth must be referred to the Asset Manager who will review the risk assessments and method statements and will, where necessary, seek specialist advice.

The Head of Network Management (Transmission) must be consulted and must authorise the use of trenchless techniques through or within the inner hazard zone.

Figure 23. Horizontal Directional Drill

A site-specific Method Statement must be provided by the Controller of the Works. The potential harm to the pipe or its coating from vibration must be considered.

An SW/2 Technician must observe any work within or through the pipeline easement and hazard zones to monitor compliance with the agreed method statement and PTW.

30. Backfilling

For backfilling activities in the Hazard and Danger Zones the use of any plant must have a PTW in place with an SW/2 technician monitoring works throughout. If the works are small scale, e.g. reinstatement of trial holes and does not involve the use of any plant, the works can proceed without a PTW – however an SW/2 technician must be on site to monitor the first 300mm of consolidated cover over the pipeline to ensure there is no damage to the pipeline coating. The AE can prescribe further monitoring if considered necessary.

When issuing the PTW the SW/2 AE must consider the presence of any fittings on the pipeline, particularly vulnerable small diameter fittings, and where necessary insist on appropriate proximities and the use of lower impact compaction tools, such as ergo tampers. Backfilling works must also be carried out in accordance with SGN/SP/P/10.

If backfilling works are to be carried out by a third party SGN require a minimum of 48 hours' notice prior to any works being carried out. This should be communicated to any contractors working on the pipeline by the SW/2 Technician. This is applicable for any works over, under or parallel to the pipeline, within 3m.

If the pipeline has been backfilled without the knowledge of the SW/2 Technician, then he/she **must** insist the material is re-excavated to enable the condition of the pipeline coating to be checked and to confirm suitable fine fill material has been used around the pipeline.

Any damage to the pipeline or pipeline coating, however minor, **must** be reported to the SW/2 AE prior to backfilling. The damage must then be assessed and suitably repaired by SGN. Minor damage to pipe coating and test leads may be repaired by SGN free of charge.

Safe Control of Operations [SCO] & Construction Traffic should be observed when manoeuvring plant near the pipeline.

When backfilling the pipeline must have 300mm of fine sand placed over and around the pipeline, packed by hand tools only. This must then be followed by 300mm of other suitable material again packed only by hand tools. If necessary, this may need to carried out in multiple layers. These measures must be followed before any mechanical compaction plant is introduced. If there are any fittings present, then this depth requirement is measured from the top most point of the fitting.

The vibration disturbance associated with compaction plant can have a

harmful effect on the integrity of a pipelines, vibration limits are contained in IGEM SR/18 and SGN/SP/GM/4.

The extent of the imposed stresses is a function of the different characteristics of the plant, i.e. weight, centrifugal force and the amplitude of movement. Plant with a static weight of less than or equal to 500kg should be used until a depth of 900mm of consolidated backfill has been achieved. The type and weight of all compaction plant must be detailed on the PTW.

Mechanical excavators may be used to assist in depositing backfill material in the hazard and danger zones, subject to the following controls:

- PTW in place & SW/2 Technician monitoring works
- A minimum of **300mm** of suitable hand placed & packed material must first be in place over the pipeline to protect the pipeline and the pipeline coating.
- The bucket must always remain a minimum distance of 1m from the pipeline.
- Backfill material is suitably screened for large rocks

A mechanical excavator **must not** be used to compact ground in the Inner Hazard and Danger Zones.

If there are fittings present in the areas to be backfilled the SW/2 AE must evaluate the individual scenario in accordance with the requirements of section 10 of this procedure and dictate an appropriate proximity zone appropriate to the vulnerability of the fitting. The SW/2 Technician will monitor all backfilling and stop all works if any non-compliance with the agreed method of working occurs.

Lifting Operations should be considered if plant needs to be lifted into the excavation.

31. Damage to the Pipeline

If the SGN pipeline is damaged, even slightly, and even if no gas leak has occurred then the relevant SGN Gas Control Centre **must** be contacted immediately and informed that the pipeline has been damaged along with the geographical location of the damage.

The Control Room must be asked to confirm that the pressure in the pipeline will not be increased until an assessment of the damage has been carried out in line with SGN procedure SGN/PR/P/11. The Control Room must also be asked to make preparations to reduce pressure whilst the assessment of damage is being carried out.

Figure 24. Examples of Severe Damage to Pipelines

In addition, the contractor must be told to follow the advice in SGN/PM/EM/76, namely: -

- Shut down all plant and machinery immediately and extinguish any potential sources of ignition
- Evacuate all personnel from the vicinity of the pipeline and ensure no one approaches the area
- Report any emergency to using the emergency number 0800 111 999
- Notify the SW/2 AE or his office immediately using the contact telephone number provided
- Do NOT try to stop any leak
- T/SP/P/18 & T/SP/P/9 must be observed when making any repair to the pipeline
- The incident must also be reported in accordance with SGN/PM/INV/1.

32. Document Control

All documents handed to contractors or landowners on site must be recorded and signed for by the recipient on the Site Document Control Form. Lack of information, and the lack of clear instruction is a major contributing factor in many pipeline damage incidents. It is the responsibility of the SW/2 Technician to ensure that all the required information is available and provided to the Controller of the Works.

33. Encroachment Reporting

Details of all third-party activities and SGN non-routine operations carried out within the easement, together with any activity outside of the easement which could have a detrimental influence on the integrity of the pipeline must be recorded on the standard encroachment form shown in Appendix C of this procedure (SGN Encroachment Reporting Form). On completion of the work the encroachment form must be signed by the AE and retained in the Pipeline File.

34. References

Internal Documents

SGN/PM/MAINT/5	-	Management Procedure for Maintenance of Pipelines Operating Above 7 Bar
SGN/PM/SW/3	-	Management Procedure For Use Of Mechanical Plant In Close Proximity To Utility Apparatus
SGN/PM/EM/76	-	Management Procedure for Managing Gas Release Emergencies and Damage on the Above 7 Bar Gas Transmission System
GDN/PM/SCO/1-5	-	Management Procedures for Safe Control of Operations
SGN/PM/DP/1	-	Management Procedure for the Prevention of Damage to SGN's <7bar Distribution System
T/PR/SSE/8	-	Work Procedure for Working on un-odorised gas installations
T/PR/P/18	-	Work Procedure for Working On Pipelines Containing Defective Girth Welds Or Girth Welds Of Unknown Quality
T/PR/SW/1	-	Work Procedure for Excavations
SGN/PM/ECP/2	-	Management Procedure for Cathodic Protection of Buried Steel Systems
T/SP/P/2	-	Specification for Welding of Land Pipelines and Installations Designed to Operate at Pressures greater than 7 bar (Supplementary to BS 4515-1)
T/SP/P/9	-	Specification For The Welding Of Fittings To Pipelines Operating Under Pressure (Supplementary to BS 6990).
SGN/SP/GM/4	-	Specification for the protection of steel pipelines operating at pressures above 7 bar subjected to vibrations caused by blasting, piling or demolition
T/SP/GM/1	-	Specification for The Protection of Pipelines From Ground Movement and External Loading. External Loading on Steel Pipelines and Buried Piping at Installations
T/PR/P/11	-	Work Procedure for Inspection and repair of damaged steel pipelines designed to operate at pressures greater than 2 bar
SGN/SP/P/10	-	Specification for general pipelining designed to operate at pressures greater than 7barg
SGN/SP/CE/12	-	Specification for the Design, Construction and Testing of Civil & Structural Works Part 12: Pipeline Protection Slabs
SGN/PM/DIS/3.6	-	Management Procedure for Lifting Operations
SGN/PM/INV/1	-	Management Procedure for Incident Reporting and Investigation

External Documents

HS(G) 47	-	Avoiding Danger from Underground Services
NRSWA	-	New Roads and Street Works Act 1991
GS(M)R	-	Gas Safety (Management) Regulations 1996
IGE/TD/1	-	Steel pipelines and associated installations for gas pressure transmission

Safe use of Suction/Vacuum Excavators – Construction Plant-Hire Association

Appendix A | Site Document Control Form

SITE DOCUMENT CONTROL FORM

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SITE DOCUMENT CONTROL FORM	
Project Reference	
Project Location	
Site Manager	
SW/2 Technician	
Controller of Works	
Agreed Method of Working	e.g. Hand Excavation only / Vacuum Excavation only / Mechanical Excavation (reference associated Method Statement & PTW)
The following documents were issued to:	<NAME>
	<COMPANY>
	<SIGNATURE>
	<DATE>
• *SGN/WI/SW/2* • *T/PR/P/18* • *Etc...* •	
SW/2 Technician:	<NAME>
	<SIGNATURE>
	<DATE>

Smell gas?
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Figure 25. Site Document Control Form

The Site Document Control form must be used to record all transfer of documents and instruction to the undertaker of works. This is a fundamental element of the safe working process, and provides a record of the interaction between the SW/2 Technician and the undertaker of works.

A blank version of this form can be downloaded from the following link: http://sgnnet/DownloadItem.axd?ID=1899970

Appendix B | Encroachment Reporting Form

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SGN ENCROACHMENT FORM

All work must be carried out in accordance with SGN/WI/SW/2

Utilities drawings must be on site before commencement of works

Date:		Pipeline:	
Name:			
Phone Number:			
Location		Grid Ref:	
Contractors Name		Contractor Address	
Contractor Contact Number			

Type of Encroachment: (Ring Appropriate)

Drainage	Ditching	Water Pipe	Telecoms	Electric	Gas
Road Works	Sewerage	Water Course	Other Pipeline	Cable Laying	Other

Provide Sketch Below:

Depth of Cover (If exposed)		**Depth of Crossing** (If applicable)	
Nearest Location to Pipe (If not crossed)		**Details of permanent protection over pipeline**	

Figure 26. SGN Encroachment Reporting Form

The Encroachment form must be used to record encroachment on SGN assets, the form must be filled out with detailed descriptions and sketches to show the nature of the encroachment. The completed form should then be returned to the Auhorising Engineer for assessment and capture into the pipeline records system.

A blank version of this form can be downloaded from the following link: http://sgnnet/DownloadItem.axd?ID=1899971

Appendix C | Mechanical Assistance Request Form – Trial Holes Requiring Deep Excavation

Approval form for use of 'mechanical assistance' (see section 17 - SGN/WI/SW/2) for excavation of trial holes onto pipelines where the depth is greater than 1.5m

Location:

Grid co-ordinates: E_____; N_____

Asset details:

Pipeline:_____

Depth of cover:_____m

Diameter:_____mm

Wall thickness:_____mm

Max. Operating Pressure:_____barg

Checklist of information required for assessment: Tick as appropriate ✓

- Details of activity (reason for excavation) including timescales ☐
- Key parties:
  - Client ☐
  - Principal Contractor ☐
  - Other ☐
- Details of observed ground conditions ☐
- Details of all available asset data:
  - ILI Pipe tally for section ☐
  - Construction strip map extracts ☐
  - Other pipe records ☐
- Results of initial pipeline location survey ☐
  - Measured depth of cover ☐

  Pipeline Technician undertaking survey:

  Name:_____;

  Title:_____; Date:_____
- Risk assessments ☐
- Full method statements ☐
  - Details of all mechanical plant ☐
  - Details of precautions to avoid entry into the 'danger zone' ☐
  - Details of other hazard mitigation measures e.g. pressure reduction ☐

Key *personnel:*

Authorising Engineer:_____; Title:_____

Competent Person:_____; Title:_____

SW/2 Technician:_____; Title:_____

Approval:

Signed:_____: Date:_____

Head of Network Management (Transmission)

Figure 27. Mechanical Assistance Request Form

The attached form must be used to support any request to utilise Mechanical Assistance whilst carrying out deep excavation trial holes. All available information, including ILI information must be sought and a detailed method statement produced before submitting to the Head of Network (Transmission) for approval.

A blank version of this form can be downloaded from the following link: http://sgnnet/DownloadItem.axd?ID=1899972

Appendix D SW/2 Pipeline Technician – Roles and Responsibilities and Competency Requirements

The SW/2 pipelines Technician described below fulfils the role set out in this procedure for safe working and development in the vicinity of high pressure pipelines and associated installation operating >7barg. The role requires the pipeline technician to:

- Interface with undertakers of works in the vicinity of high pressure pipelines to advise them on the presence and position of pipelines; restrictions on working within pipeline easements; the hazards and dangers of damaging high-pressure pipelines; and, safe working practices in the vicinity of high pressure pipelines and associated installations
- Understand and interpret gas engineering plans and maps
- Locate and mark out pipelines, bends and fittings using pipe location equipment
- Establish safe working proximities to high pressure pipelines
- Oversee hand excavation of trial holes to confirm the position and depth of high pressure pipelines
- Monitor works using mechanical excavators within 3.0m of high pressure pipelines, when such works have been authorised by an SGN AE, and intervene if agreed safe systems of work (including, but not limited to permits to work, risk assessments, Method Statements, and other written instructions) are not complied with, or there is a danger of damaging a high-pressure pipeline

This role is not an exclusive role and is usually part of an employee's wider job role for which additional training and competency will be required.

Minimum Training Requirements

D.1 Minimum Training

Evidence of suitable and sufficient training is required for the following elements:

a. Implementing SGNs procedure SGN/PM/SW/2 for safe working and development in the vicinity of high pressure pipelines and associated installation operating >7barg. This training is [will be] a company standard training course which will include:
    - The consequences of damaging high-pressure pipelines
    - Factors that lead to an increase in risk
    - The risks associated with mechanical excavation and the use of mechanical excavators in the vicinity of high pressure pipelines
    - The procedural requirements and safety rules prescribed in the procedure
    - Safe working methods
    - The role and responsibilities of the SW/2 Technician
b. Use of pipe locators and cable locators
c. Understanding an interpreting maps and engineering drawings [relating to pipelines]
d. Safe Control of Operations [SCO/1 and SCO/2]
e. Deep excavations safety
f. Lifting operations [relevant to typical lifting operations on pipeline activities]
g. Legal training [easements and wayleaves]
h. IOSH managing safely [or similar]
i. Behavioural training [i.e. influencing safety behaviours training and dealing with conflict etc.]

D.2 On-the-job Experience

Persons undertaking the SW/2 Technician role must have on-the-job experience to complement formal training. This must be provided using a suitably competent mentor (someone who is a competent SW/2 pipeline technician). On-the-job experience shall include:

- Understanding interpreting plans, using pipe location equipment and marking out pipelines
- Overseeing hand excavated trial holes
- Monitoring the use of vacuum excavators and mechanical excavators in the vicinity of high pressure pipelines
- Monitoring works applying 'mechanical assistance' as described in this procedure
- Monitoring works under Permit to Work conditions [i.e. using mechanical excavators in the hazard zone]
- Works involving deep excavations
- Dealing with people positively and assertively

Appendix E PTW Requirements Matrix

	Hand Excavation / Backfill	Powered Hand Tools for Excavation	Use of Vacuum Excavators	Mechanical Excavation	Road Planers Highway Surface Maintenance	Chain Trenchers	Hot Works	Trenchless Techniques	Lifting Operations	Top soil stripping	Vibro Tampers & Plates Backfilling	Vibrating Rollers Backfilling
	Conditions											
	Pipeline located, proximity zones established and marked. / SW/2 Tech monitors first 300mm of consolidated cover during backfill	For use in the Danger Zone the SW/2 AE must specify in the permit what proximities are permitted.	Consideration must be given to the positioning of the excavator and the laden weight. Cannot be used within 1.5m of any fitting/stabbing	A comprehensive site-specific risk assessment must be carried out by the SW/2 AE, every effort must be made to ensure the risk posed by any mechanical excavation is ALARP	For road surface removal to a depth of 150mm a PTW is not required. Deeper than 150mm PTW is required	Not Permitted	All Hot Works in the easement are subject to a PTW	Request to cross the Hazard & Danger Zones with HDD/trenchless must be submitted to Asset Manager	Lifting over the pipeline should be avoided where at all possible. All lifting operations carried out in accordance with T/PM/DIS/3.6	250mm of large excavation area. SW/2 Tech locates and marks pipeline route and monitors all top soil stripping	For use in the Inner Hazard & Danger Zones the following requirements must be met: PTW issued, 300mm of fine sand placed over & around the pipeline. A further 300mm of suitable backfill is hand compacted	The use of any vibrating rollers is subject to site specific Risk Assessment, 900mm of hand packed/ vibrotamped material over the pipe
Trial Hole Required	**No**	**Yes**	**May be used to assist excavation of Trial Holes**	**Yes**	**Only if depth of cover <1.5m**	**N/A**	**N/A**	**Yes**	**N/A**	**Yes**	**N/A**	**N/A**
Danger Zone	PTW Not Required	**SW/2 PTW**	**SW/2 PTW**	Not Permitted	**N/A**	Not Permitted	**PTW**	**Not** Permitted **within 600mm**	**PTW**	PTW Not Required	**SW/2 PTW**	**SW/2 PTW**
Inner Hazard Zone	PTW Not Required	**SW/2 PTW**	**SW/2 PTW**	**SW/2 PTW**	**SW/2 PTW (if >150mm)**		**PTW**	**SW/2 PTW**	**PTW**	PTW Not Required	**SW/2 PTW**	**SW/2 PTW**
Outer Hazard Zone	PTW Not Required	PTW Not Required	**SW/2 PTW**	**SW/2 PTW**	**SW/2 PTW (if >150mm)**		**PTW**	**SW/2 PTW**	**PTW**	PTW Not Required	PTW Not Required	**SW/2 PTW**

APPROVAL

This Work Instruction was approved by David Wylie on 26/09/17 for use by managers, engineers and supervisors throughout Scotia Gas Networks (SGN).

SGN documents are revised, when necessary, by the issue of new editions. Users must ensure that they are in possession of the latest edition by referring to the SHE & Engineering Document Library available on SGNnet.

Compliance with this safety and engineering document does not confer immunity from prosecution for breach of statutory or other legal obligations.

BRIEF HISTORY

The activities covered in the scope of this procedure were previously covered by SGN/SP/SSW/2, T/PM/SSW/22 & Safety Engineering Instruction 599, following a comprehensive review, this document represents the guidance on safe working practices, the guidance previously contained in the above listed document on the management of enquires will be contained in SGN/WI/DP/1.

First Published as SGN/WI/SW/2	April 2016	
Revisions made following period of implementation, approved at the Engineering Safety Committee February 2017.	February 2017	DESC-1829-6032017
Revision made following feedback from operations regarding backfilling operations carried out by hand	September 2017	DESC-1896-1092017
Further revisions following recommendations from implementation working group meeting	June 2018	

KEY CHANGES

Section	**Amendments**
Section 13	Amended ‘Danger Zone’ proximity to be applied radially from the pipeline.
Section 19	Requirements amended to allow up to 150mm of road surface removal without mandatory PTW.
Section 22	Amended to allow the use of Vacuum Excavators to be used to assist in excavation of trial holes.
Section 30	Amended requirements around the deposition of backfill material and to allow the use of an excavator bucket below original ground level.

DISCLAIMER

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MANDATORY AND NON-MANDATORY REQUIREMENTS

In this document:

Must: Indicates a mandatory requirement.

Should: Indicates best practice and is the preferred option. If an alternative method is used then a suitable and sufficient risk assessment must be completed to show that the alternative method delivers the same, or better, level of protection.

END NOTE

Comments

Comments and queries regarding the technical content of this safety and engineering document should be directed to The SHE and Engineering Registrar at: engineering.registrar@sgn.co.uk

Buying documents

Contractors and other users external to SGN should direct their requests for further copies of SGN safety and engineering documents to the department or group responsible for the initial issue of their contract documentation.

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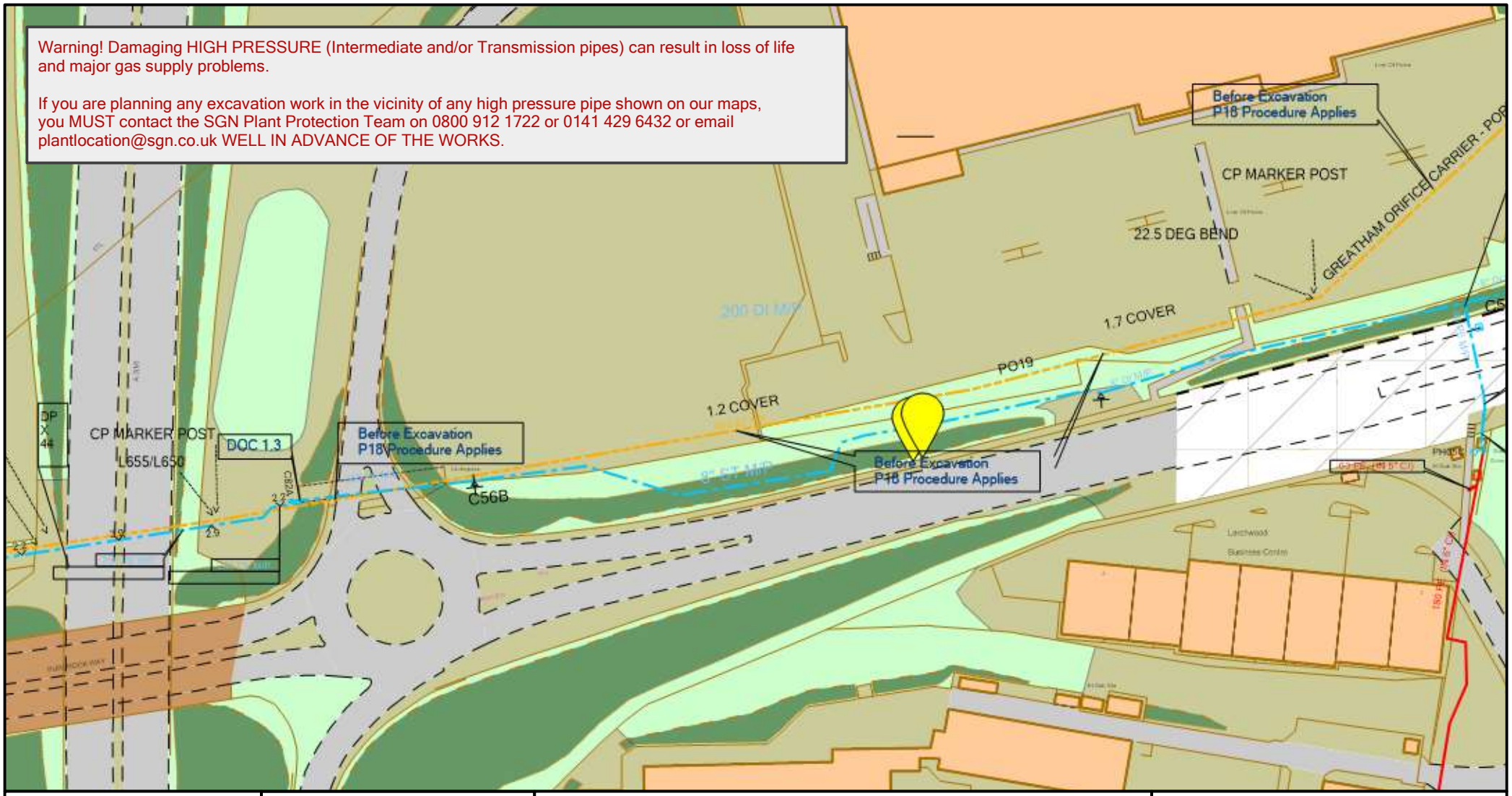
Warning! Damaging HIGH PRESSURE (Intermediate and/or Transmission pipes) can result in loss of life and major gas supply problems.

If you are planning any excavation work in the vicinity of any high pressure pipe shown on our maps, you MUST contact the SGN Plant Protection Team on 0800 912 1722 or 0141 429 6432 or email plantlocation@sgn.co.uk WELL IN ADVANCE OF THE WORKS.



SCALE: 1 : 1356

USER ID: za27274

DATE: 27/04/2021

GRID REFERENCE:
E469456, N107741, SU694077

LP MAINS
MP MAINS
IP MAINS
LHP MAINS
IGTs
SSSIs

Some examples of Plant Items

Valve | Syphon | Depth of Cover | Diameter Change | Material Change

This plan shows the location of those pipes owned by Scotia Gas Networks (SGN) by virtue of being a licensed Gas Transporter (GT). Gas pipes owned by other GTs or third parties may also be present in this area but are not shown on this plan. Information with regard to such pipes should be obtained from the relevant owners. No warranties are given with regard to the accuracy of the information shown on this plan. Service pipes, valves, siphons, sub-connections etc. are not shown but their presence should be anticipated. You should be aware that a small percentage of our pipes /assets may be undergoing review and will temporarily be highlighted in yellow. If your proposed works are close to one of these pipes, you should contact the SGN Safety Admin Team on 08009121722 for advice. No liability of any kind whatsoever is accepted by SGN or its agents, servants or sub-contractors for any error or omission contained herein. Safe digging practices, in accordance with HS (G) 47, must be used to verify and establish the actual position of mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that plant location information is provided to all persons (whether direct labour or sub -contractors) working for you on or near gas apparatus. Information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

SMELL GAS? CALL 0800 111 999

Map version: 2.11.1

Issued by: Scotia Gas Networks plc.

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SGN

LEGEND

- BOUNDARY LINE
- PROPOSED ZEBRA CROSSING AND TACTILE PAVING
- PROPOSED PARENT AND CHILD CAR PARKING SPACES
- PROPOSED DISABLED CAR PARKING SPACES
- PROPOSED LANDSCAPE AREAS
- PROPOSED BUILDING
- PROPOSED CYCLE PARKING
- PROPOSED TROLLEY BAY

RIBA Chartered Practice | CIAT Registered Practice | RICS

IMPORTANT INFORMATION
Dimensions to be confirmed on site prior to start of works and ODAS to be informed of discrepancies immediately. No dimensions to be scaled from this drawing.
All materials and works are to be carried out in accordance with current British Standards, Planning Approval, current Building Regulations and Codes of Practice.
Party Wall Act - Notices under the Party Wall Act are to be served by the property owner or appointed third party by property owner.
Health and Safety - CDM 2015 Regulations apply to all construction works to be carried out and apply to designers, contractors and the client. As such all parties have duties under these regulations.

0 10m 20m 30m 40m 50m

SCALE 1:500 @ A1

Notes

Rev	Date	Description	Revised By	Checked By
B	25.03.21	UPDATED IN LINE WITH CLIENT COMMENTS. REMOVE FLAGPOLE TO REAR OF SITE 3No VERTICAL CYCLE RACKS IN WAREHOUSE	KW	
A	05.03.21	UPDATED IN LINE WITH CLIENT COMMENTS	LMC	

Revisions

Client:
LIDL GREAT BRITAIN LTD.
FOXES PARK, BROWNHILL WAY,
SOUTHAMPTON, SO16 0AW

Project Name:
HAVANT

Drawing Title:
PROPOSED SITE PLAN

Drawing Status: PLANNING

Project No: 19139
Drawing No: AD 110_REV B
Drawn By: LMC
Checked By: PAH
Date: AUG 2020
Scale @ A1: 1:250

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