

Occupational Health and Safety
Guidelines for work Near QGC Pipelines
QCOPS-OPS-HSS-GDL-000001

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UPSTREAM OPERATIONS

DOCUMENT INFORMATION SHEET

TITLE: Guidelines for work Near QGC Pipelines

PURPOSE AND SCOPE:

The purpose of this document gives QGC guidance and powers to limit third party activities on and in the vicinity of their pipelines to ensure their security, safety and regulatory penalties apply for organisations and individuals who do not comply as noted in sections 144 & 145 of the Petroleum Act 1923; Sections 555,805,807, 808, of the Petroleum and Gas Act 2004.

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1.0 INTRODUCTION

1.1 Scope of Document

Under the Petroleum and Gas (Production and Safety) Act 2004, QGC is issued with petroleum authorities, namely Pipeline Licences and Production leases. This authority gives QGC powers to limit third party activities on and in the vicinity of their pipelines to ensure their security and safety. Regulatory penalties apply for organisations and individuals who do not comply.

These guidelines provide direction to third parties on how work can be safely conducted on and in the vicinity of QGC's steel and poly pipelines.

1.2 Document Revisions and Approval

This document bears a revision status identifier which will change with each revision. All revisions to this document (after approval and distribution) will be subject to review and endorsement by the same functions as the original.

1.3 Distribution and Intended Audience

This document is intended for Upstream Operations and Projects Team members and other QGC stakeholders. It will also be provided to third parties requesting to work within the vicinity of QGC steel and poly pipelines. The document will be made available via the intranet. This document will be updated during subsequent lifecycle stages and changes communicated as applicable.

1.4 Definitions

In this document, the following definitions apply:

Term	Meaning
Dial Before You Dig (DBYD)	Australia's National Referral Service for Information on Underground Pipes & Cables.
Pipeline	Any buried QGC infrastructure made of steel, polyethylene, fibreglass or other material pipeline used for carrying gas, water, brine, fuel or other liquid as well as any buried power cable or fibre optic cable.
QGC	Means QGC, its associates etc – standard words

1.5 Acronyms and Abbreviations

In this document, the following acronyms and abbreviations apply:

Acronym/Abbreviation	Meaning
ATA	Asset Technical Authority
CBR	Californian Bearing Ratio
DCVG	Direct Current Voltage Gradient
GQAL	Good Quality Agricultural Land
PTW	Permit to Work
ROW	Right of Way

1.6 Referenced/Associated Documents

Document Number	Title/Description
QCLNG-BX00-HSS-PLN-000004	HSSE Management Strategy and Plan for the QCLNG Upstream Project
QCOPS-BX00-HSS-PCE-000002	Permit to Work Procedure
QCLNG-BX00-CON-PCE-000014	Managing Crossings of QGC Infrastructure by Third Parties and QGC Contractors Procedure
QCOPS-BX00-HSS-PCE-000007	Excavation Procedure
QCOPS-OPS-PLN-PCE-000002	Blasting Near QGC Pipelines

2.0 PRELIMINARY

1. Provision of this document by QGC to the third party does not give approval for work to proceed.
2. The Authority, Contractor or Third Party carrying out the work must have appropriate approval issued by QGC Upstream Operations personnel before the work can commence on any QGC easement or within fifteen (15) metres or a steel or poly pipeline. Dependent on the work scope, QGC Upstream Operations may elect to provide supervision and direction.
3. Any referral to “approval” in this document means approval in writing from QGC.
4. Before any work can commence:
 - a. The QGC Crossing process must be followed.
 - i. QGC construction contractors must email the QGC Crossings team at CrossingQGC@bg-group.com to obtain a QGC Crossing reference number before they submit the PTW request to the relevant area and asset Permit Issuer (completion of a formal Crossings Application is not required)

- ii. Third parties crossing QGC infrastructure must lodge a Dial Before You Dig inquiry and submit a Crossings Application Form to the QGC at least 6 weeks in advance of construction and be granted approval in the form of a crossings approval letter to cross from the Crossings Team before they submit the PTW request.
 - iii. Contact the QGC Crossings team at CrossingQGC@bg-group.com and refer to *Managing Crossings of QGC Infrastructure by Third Parties and QGC Contractors (BX00-CON-PCE-000012)*.
 - b. A QGC Permit to Work must be issued for all work occurring in the vicinity QGC pipelines.
 - i. Third parties must give at least 2 weeks' notice to the relevant area and asset department.
 - ii. Third parties must submit a completed PTW request form, along with all relevant supporting documentation to undertake the work (including Crossings reference number), at least 72 hours prior to the scheduled start date to the relevant area and asset Permit Issuer
 - The Crossings Team can assist, where required, by supplying the contact details of the Permit Issuer for the relevant area and asset type.
 - iii. All Permit Holders must be trained in QGC PTW process and possess adequate experience and competence to supervise the work party for the proposed work scope.
 - iv. Refer to and follow the [Permit to Work procedure QCOPS-BX00-HSS-PCE-000002](#) as well as the relevant high risk [procedures](#).
 - c. Subject to the approval conditions in clause 4a and 4b above, all parties must be QGC Our Way inducted.
 - i. Commencement of works will not be permitted unless this induction is undertaken by those involved in carrying out the work.
 - ii. This induction must be undertaken by any additional or replacement staff before they begin any work.
 - d. For emergency works, contact must be made with QGC through the emergency call number. Telephone: 1300 765 033.
- 5. All relevant specifications, including the types of backfill to be used, distances to be maintained on either side or above and under the pipeline shall be determined by QGC Upstream Operations in accordance with Pipeline Code Specifications and Environmental requirements. These specifications must be adhered to.

3.0 REQUIREMENTS FOR ROAD-WORKS AND SERVICES CROSSINGS ABOVE OR NEAR QGC GAS PIPELINES

3.1 ROADWAY CROSSINGS

- 1. The minimum cover (from road crown to top of pipeline) required for the pipeline under roadways is 1200mm (in accordance with AS2885:1 Pipelines – Gas and liquid petroleum, Section 4.3). *Sections 144 & 145 of the Petroleum Act 1923; Section 555, 805, 807, 808 of the Petroleum and Gas (Production and Safety Act 2004.*

The actual agreed cover must be determined using engineering practise in compliance with AS2885 and taking expected loads and area conditions into consideration.

2. Whenever possible the pipeline must cross roadways at right angles. Where the pipeline runs parallel to a road there must be a minimum of 1500 mm from the back of the kerb to the centre line of the pipeline.
3. Where a roadway is to be built over a steel pipeline:
 - a. The pipeline coating must be surveyed for coating defects to assess the need for any repairs using DCVG or other approved method. The survey is to be arranged by the party constructing the roadway and a contractor agreed on with QGC.
 - b. If repairs are required, the pipeline must be excavated, cleaned and inspected for damage
 - c. After inspection the pipeline must be primed and double wrapped with an approved pipe wrap.
 - d. Backfill must be carried out as follows:
 - i. The space 300 mm below, 300 mm either side and 300 mm above the pipeline must be backfilled with bedding sand (free of stones and debris) and hand compacted (Wacker Packer or equal) in lifts of no greater than 100 mm.
 - ii. Warning tape (supplied by QGC) must be laid on the top of this backfill.
 - iii. Protective slabs to be installed as required by the approved design.
 - iv. The remaining backfill material should have a CBR rating of 15% or better as determined by the design and be hand compacted in lifts no greater than 100 mm to a minimum of 95% of its maximum dry density (as specified by AS1289, Section E 2.1-1977) unless otherwise approved.
 - v. Hand compacting must continue until a minimum cover of 900 mm has been established over the pipeline. Additional cover to be compacted as required by the road design.
 - vi. Conventional earthmoving equipment, other than vibrating rollers, can only be used after backfilling has occurred as outlined above.

All work above is to be done by or under the supervision of QGC personnel at the expense of the party requesting to construct the roadway.
4. Where a roadway is to be built over a polyethylene pipeline:
 - a. The pipeline is to be excavated and protective slabs installed as required by the approved design.
 - b. If the pipeline has to be exposed it must be inspected for any damage. If damage is detected, it must be repaired.
 - c. Backfill must then be carried out as follows:
 - i. The space 300 mm below, 300 mm either side and 300 mm above the pipeline must be backfilled with bedding sand (free of stones and debris) and hand compacted (Wacker Packer or equal) in lifts of no greater than 100 mm.
 - ii. Warning tape (supplied by QGC) must be laid on the top of this backfill.

- iii. Protective slabs to be installed as required by the approved design.
 - iv. The remaining backfill material should have a CBR rating of 15% or better as determined by the design and be hand compacted in lifts no greater than 100 mm to a minimum of 95% of its maximum dry density (as specified by AS1289, Section E 2.1-1977) unless otherwise approved.
 - v. Hand compacting must continue until a minimum cover of 900 mm has been established over the pipeline. Additional cover to be compacted as required by the road design.
 - vi. Conventional earthmoving equipment, other than vibrating rollers, can only be used after backfilling has occurred as outlined above.
- d. All work above is to be done by or under the supervision of QGC personnel at the expense of the party requesting to construct the roadway.
5. For uncased pipelines, maximum particle velocity allowed directly above the pipeline is 10 mm/sec. This severely restricts the use of blasting, vibrating rollers, jack hammers, pile drivers and similar techniques in the vicinity of the pipeline.
- Vibrating rollers (depending on size) are not to be operated within 20 metres, and jack hammers are not to be operated within 5 metres of the pipeline without approval from QGC.
- For cased pipelines, maximum particle velocity and associated conditions may be substantially reduced. Use is subject to consultation with and approval from QGC.
6. If the minimum cover, as specified in step 1 of this section, cannot be achieved then an acceptable alternative may be additional protection of the pipeline.
- a. QGC must approve methods to be used to provide this additional protection.
 - b. Additional protection methods include but are not limited to:
 - i. lowering of the pipeline,
 - ii. concrete slabs or
 - iii. box culverts over the pipeline.
 - c. The QGC approved methods must be adhered to.

3.2 PIPE, MAIN OR CABLE CROSSINGS

1. All pipe, main or cable crossing above the pipeline must have a separation distance equal to or greater than half the diameter of the service plus 300 mm. (e.g. if a sewer is 150 mm diameter then separation distance is $75 \text{ mm} + 300 \text{ mm} = 375 \text{ mm}$ minimum). Separation distance is measured from the outside of the pipeline to the outside of the service.
2. All pipe, main or cable crossing below the pipeline must have a minimum separation distance of 500 mm provided the surrounding soil has good compaction and load bearing characteristics (non-swamp areas) and the depth of pipeline cover to natural surface is less than 3000 mm. For all other cases a suitable engineered design shall be provided to QGC for approval.

3. Where the service crosses the pipeline, the backfill must be re-compacted in such a manner to ensure the specified separation distance is not affected due to sag of the upper service pipe.
4. The separation distance in the horizontal plane must be such that the new service is at the pipeline easement boundary where possible; in all cases a minimum distance of 3000 mm is required.
5. Separation distance must be measured from the outside diameter of the pipeline to the outside diameter of the pipe, main, or cable, crossing the pipeline.
6. The pipeline must be protected by Vinidex planking, concrete pavers, non-reinforced concrete (maximum 50 mm thick) or equal, with warning tape (supplied by QGC) anywhere that a service crosses over or under the pipeline.
7. Any telephone or low voltage underground electrical cable crossing the pipeline must be installed above the pipeline. Signage and marker tape must be installed to identify the crossing point.
8. High voltage cables crossing the pipeline require special consideration due to possible AC and thermal interference. The design of such crossings will be undertaken by the party crossing the pipeline and must be approved by QGC prior to installation.
9. All costs associated with any required changes to the Cathodic Protection systems will be the responsibility of the authority or contractor carrying out the crossing.
10. Interference to the QGC Cathodic Protection system and the likelihood of thermal damage to the pipeline coating must be evaluated by the third party, and the results provided to the satisfaction of QGC.
11. For services crossing the pipeline easement which are Cathodically Protected; dissipate heat to the surrounding soil; or have associated earthing structures, the method of mitigating of any detrimental or interference effects to the QGC line must be submitted for approval.
12. Plans for power cables (above or below ground) and associated earthing structures installed parallel to the pipeline must be submitted for approval by QGC. The method of mitigation of any detrimental or interference effects and the required service separation must be detailed.
13. All excavation work must be carried out in accordance with QGC Excavation procedure *QCOPS-BX00-HSS-PCE-000007*.
14. The presence of any underground service crossing the easement must be clearly marked so that anyone excavating the pipeline can identify the service location.

3.3 USE OF MACHINERY

1. If there is to be excavation near or around the pipeline, QGC supervision is to be as per the Excavation Procedure QCOPS-BX00-HSS-PCE-000007
2. Earthmoving by machinery shall be limited as per the [Excavation Procedure QCOPS-BX00-HSS-PCE-000007](#)
3. When using mechanical excavation, soil must be removed by the back blading method only.
4. Where potholing using water lance and vacuum excavation the maximum permissible pressure is 3200psi.
5. Earth moving equipment shall not run parallel to the pipeline within a distance equal to the pipeline depth, in all cases being a minimum of 1000 mm measured from extremity of the pipeline to extremity of equipment (QGC will confirm distance prior to permit issue).
6. Equipment must cross the pipeline at right angles.
7. Designated pipelines crossings (sealed roads, unsealed public roads, well access roads, crossings identified by signage) are engineered to be trafficable by road registrable vehicles within legal load limits.
 - a. Any machine or vehicle over 15,000kg is not permitted to cross steel pipelines without approval.
 - b. For poly pipelines right of way crossings:
 - i. In GQAL where the depth of cover is confirmed to be 1200mm or greater, vehicles complying within legal load limits may cross occasionally. For frequent crossings approval must be obtained.
 - ii. When cover is not confirmed to be 1200mm or greater; soil conditions are poor; and/or vehicles do not comply with legal load limits, Right of Way approval must be obtained from QGC.
8. Poor soil conditions / coverage
 - a. In all cases pipeline crossings must not be allowed to proceed in:
 - i. wet or boggy conditions; or
 - ii. where the pipeline ROW has reduced depth of cover from conditions such as, but not limited to, erosion, scour, subsidence or inundation.
 - b. Where soil conditions exhibit poor compaction and load bearing characteristics (swamp areas), equipment is not allowed to cross the pipeline irrespective of weight without the construction of an approved pipeline protection structure.
 - c. Recently excavated backfill constitutes unfavourable conditions for vehicular loading. Where vehicle loadings will be incurred, the backfill must be compacted in such a manner to obtain the original soil compaction characteristics.
 - d. If a vehicle or machine becomes bogged over a pipeline, the vehicle must not be moved or recovered until advice is received from QGC.
9. Suitable warning barriers with beacons must be erected around any unattended excavation which exposes the pipeline.

10. Before any excavation in the vicinity of the pipeline is permitted to commence the operator of the equipment must produce:
 - a. Licence to operate the equipment
 - b. Machinery Inspection Certificate

No work at all will be permitted if these cannot be produced. QGC reserves the right to reject any equipment on the grounds of mechanical condition, and the contractor must replace the equipment at his cost.

11. If damage or a hit to the pipeline is suspected, works must stop immediately and QGC must be notified.
12. Cranes must never carry or suspend materials over or across an exposed pipeline.

3.4 BLASTING

Blasting is strictly prohibited under any circumstances within 500 metres of the pipeline centre line without prior approval of QGC. Blasting shall be carried out as per QCOPS-OPS-PLP-PCE-000002 – Blasting Near QGC Pipelines.

3.5 OTHER

1. Poles should be located on the pipeline easement boundary. In all cases the minimum separation distance will be the depth of pole plus 1 meter below natural surface level.
2. The minimum distance that a pier or pile may be placed to a pipeline is 2.5m
3. The minimum cable clearance at any point of the easement shall be 10m from ground.
4. Any pipe, main or cable running parallel to the pipeline and all power poles, posts, etc., shall not encroach on the pipeline easement.
5. QGC does not normally charge for locating the pipeline and supervising work near the pipeline. However, any costs incurred for major works requiring cleaning, applying protective coating, etc., shall be borne by the company carrying out the work.

3.6 AT COMPLETION OF INSTALLATION

If not allowed for in the crossing agreement, at the completion of installation of all new services within 2 meters of the pipeline centre line or services which cross the pipeline, the following information must be emailed to CrossingQGC@bg-group.com within 14 working days:

- a. Crossings reference number provided for the work
- b. "As Built" drawings of the service in the vicinity of Gas Pipeline.
- c. Obvert level of services crossing under the pipeline and invert level of services crossing over the pipeline.
- d. Separation distance between new service and pipeline.

3.6 NON COMPLIANCE

Penalties apply under the Petroleum Act 1923 and the Petroleum and Gas (Production and Safety) Act 2004 for third parties who carry out the following without the pipeline licence holder's permission and/or authority:

- a. Destroy, damage or interfere with pipelines;
- b. Erect or place any building or structure in, on or over pipeline land or easement for pipeline purposes or for right of way;
- c. Turn over or dig in land except for the purpose of cultivating the land in accordance with recognised good land husbandry;
- d. Construct or place a structure on the land unless with the pipeline licence holder's consent;
- e. Change the surface of pipeline land in a way that changes, or may cause a change to, the depth of burial of a pipeline unless the change is necessary to preserve life or property because of a dangerous situation or emergency that exists or may exist or the person has a reasonable excuse.

3.7 COMMUNICATIONS

QCG is a member of the Dial Before You Dig service which is not an emergency service.

The Dial Before You Dig service is designed to provide a third party that intends to perform any excavation in the vicinity of a Pipeline easement, the asset owner's information and approximate location of underground assets in order to assist in planning for a safe excavation.

Approval from QGC is required before commencing any work.

Should damage of any underground asset occur, the third party must contact the affected asset owner (QGC) immediately. If the situation is at all life threatening, implement the approved emergency response plan, which will include contacting the Emergency Services on 000.

APPENDIX A – CHANGE HISTORY

QCOPS-OPS-HSS- GDL-000001_3

This procedure has undergone a review to align to the structure of, and controls stipulated, in the QGC Excavation and Trenching Standard QCQGC-BX00-HSS-STD-000021 & Excavation Procedure QCOPS-BX00-HSS-PCE-000007

Key changes and additional controls within this revision are outlined below

Section	Details
2.4	The crossing team details and overview added and direct contact details of the Pipelines Superintendent removed.
3.1.3	More detail added for roadway crossings of existing steel pipeline assets.
3.1.4	Details added for roadway crossing of existing polyethylene pipeline assets.
3.3	All earthmoving to be as per the Excavation and Trenching Standard and Excavation Procedure.
3.3.8	Added requirement for bogged vehicles over a pipeline to not be recovered until advice and approval has been received from QGC Pipelines.
3.4	Procedure for blasting near steel pipelines added.
3.5	Added requirement for minimum distance from pipeline to construct piers or piles.
Appendix A	Change History created
Appendix B	List of typical foreign crossing drawings inserted
Appendix C	Feedback Form inserted

APPENDIX B – TYPICAL DRAWINGS

Drawing Number	Title
QCLNG-BX00-PLE-DET-000009	Gathering Lines – Underground Utility Crossing – Typical Details
QCLNG-BX00-PLE-DET-000002	Gathering Lines – Pipeline Trench – Excavated – Typical Details
QCLNG-BB00-PLE-DET-000010	Trunklines – Underground Foreign Utility Crossing – Typical Details
QCLNG-BX00-TEL-STD-300012	Typical Fibre Optic Underground Utility Crossing – Telecommunications Standard Drawing
QCLNG-BX00-ELE-STD-300074	Typical Electrical Services – Underground Foreign Utility Crossing – Electrical Standard Drawing
QCLNG-BX00-ELE-STD-300114	Pipeline Test Points Standard Installation – Cathodic Protection Standard Drawing
QCLNG-BX00-ELE-STD-300113	Pipeline Test Points Connection Diagram – Cathodic Protection Standard Drawing

APPENDIX C – FEEDBACK FORM

FEEDBACK FORM																									
This form should be used to notify comment or suggestions for improvement, relating to any aspect of the document identified below. Please return the completed form by Email, to the Responsible identified in the associated RACIE matrix																									
Document title: Guidelines for Work Near QGC Pipelines	Document No: QCOPS-OPS-HSS-GDL -000001																								
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