



Code of Practice
Upstream Polyethylene Gathering
Networks – CSG Industry
Version 4

Companion Paper CP-05-001
Safety in Construction

Rev 1

September 2020

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Important note on use of the APGA Code of Practice for Upstream Polyethylene Gathering Networks in the Coal Seam Gas Industry.

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Acknowledgements

This Companion Paper has been prepared by the Australian Pipelines and Gas Association (APGA) CSG Committee working group. The working group members contributed significant time and resources at the working group level in developing and reviewing this companion paper and their support is acknowledged.

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Feedback process

Feedback on this Companion Paper or recommendations for the preparation of other Companion Papers is encouraged.

A form has been provided to enable the submission of feedback. The form can be found on the APGA website under Publications or by following this link: <https://www.apga.org.au/apga-code-practice-pe-gathering-networks-queries-and-proposed-updates-form>

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Preface

Companion Papers have been developed by the Working Group responsible for the *APGA Code of Practice for Upstream PE Gathering Networks – CSG Industry* (the Code) as a means to document technical information, procedures and guidelines for good industry practice in the coal seam gas (CSG) industry.

Since 2008, the development of the LNG export industry based in Gladstone, Queensland, with its related requirement for a large upstream CSG supply network of pipelines and related facilities presented the impetus for significant improvements in design and best practice approach.

The principal motivation for the initial development of the APGA Code of Practice was safety and standardisation in design and procedures and to provide guidance to ensure that as low as reasonably practicable (ALARP) risk-based requirements were available to the whole CSG industry. Accordingly, the Code is focused solely on this industry and the gathering networks using locally-manufactured PE100 pipeline. The Code is a statutory document within Queensland.

The incorporation of Companion Papers in Version 4 of the Code is intended to provide information and best practice guidelines to the Industry, allowing the Code to be limited to mandating essential safety, design, construction and operation philosophies and practices.

These documents form part of the suite of documents together with the Code and are intended to:

- a) be used in the design, construction and operation of upstream PE gathering networks
- b) provide an authoritative source of important principles and practical guidelines for use by responsible and competent persons or organisations.

These documents should be read in conjunction with the requirements of the Code to ensure sound principles and practices are followed. These documents do not supersede or take precedence over any of the requirements of the Code.

A key role of the Companion Papers is to provide the flexibility to incorporate endorsed industry practices and emerging technologies expeditiously, as/when necessary.

A related benefit is that the Companion Papers can be referenced by the wider resources industry which uses similar PE gathering networks for gas or water handling, including coal bed methane (CBM) in underground coal mines; mine de-watering; or the emerging biogas industries (agricultural, landfill, etc.).

1 APGA Health, Safety and Environment Committee

The APGA Board established the HS&E Committee to implement its policy with the principle objective being to provide an effective and proactive forum for APGA members to meet, discuss and implement strategies which improves health, safety and environment outcomes for the member, its employees and contractors and the Australian community as a whole.

Membership of this committee is open to all APGA members and member companies are encouraged to participate in the work of the committee by either being a committee member or designating a company contact who can be the conduit between the committee and its business unit(s) to:

- Raise HS&E issues or matters of concern for the committee to address;
- Where possible, contribute to and provide expertise to assist in the work of the Committee;
- Share safety alerts and other HS&E information with APGA members; and
- Disseminate to the organisation information prepared and issued by the committee on industry guidelines, safety alerts etc.

2 Introduction

We all share an obligation, both morally and legally, to reduce the risk of harm to as low as reasonably practicable (ALARP) in the workplace, and undertaking construction of CSG gathering networks is no exception to this rule.

The construction of gathering networks, while relatively low in technical complexity and repetitive in nature, includes risks which are distinctive from those in the other construction industries. Gathering projects are typically based in remote rural locations, with ever-changing site conditions and variable terrains. The work involves driving significant distances in remote areas, working in hot, dusty, and windy environments, working near live services, lifting and handling of heavy loads, and exposure to energy sources. These risks must be assessed, managed and controlled in order to keep workers safe.

This Companion Paper provides guidance to assist with the planning and safe execution of PE gathering construction projects. It is intended to be a reference for engineers, construction managers, superintendents, supervisors, HSE advisors, and other supporting personnel working on PE gathering projects in either operating or contractor companies.

3 Scope

This paper discusses three principles of construction safety and applies them specifically to gathering network construction.

- Planning for safe construction of PE gathering networks.
- Hazards and control measures used when constructing gathering networks.
- Training and competency best practices specific to construction of gathering networks.

The scope of the paper covers conventional construction methods used for PE gathering networks, including the installation of power and fibre optic services commonly installed with PE gathering networks.

Excluded from the scope of this paper is content pertaining to the design, pre-commissioning and commissioning of PE networks, as these topics are covered by other companion papers.

4 Planning for safe construction of gathering networks

Safe construction starts in the planning phase before construction work commences. The value of detailed planning by the project team should not be underestimated as a means to reduce construction risk, and to ensure execution is safe and controlled.

Planning for safe construction involves a multitude of activities which differ from project to project. In addition to the Code requirements of Section 2.8 Construction Safety, and Section 2.9 Site Safety, a list of common planning activities to be considered in the preparation for construction work is provided below for reference.

Common Pre-construction Planning Activities to prepare for Safe Construction:

- The appointment of a Contract Owner/Holder/Sponsor who is competent to manage the contract and associated risks.
- Selection and on-boarding a contractor to perform the work. This should include an evaluation of the proposed contractor's safety statistics, HSE management system and a determination of which HSE management system the contractor will operate under. For example, it must be determined if the contractor will work under the Operator's HSE management system, or the Contractor's own HSE management system, or a combination of both. This determination should be documented. Note the HSE management system is also referred to as a Safe System of Work under the Queensland Workplace Health and Safety Act and Regulation, and the Safety Management System under the Petroleum and Gas Act 2004 (Production and Safety).
- The appointment of site safety managers (SSMs) and site managers (SMs) if not already appointed, and the delineation of site ownership between these appointments. SSMs are required under the Queensland Petroleum and Gas Act to supervise activities on 'operating plant'.
- The appointment of Permit Authorities and the training/appointment of Permit Holders.
- Establishment of an approved, scope specific HSE Plan or Safety Management Plan before contracted work begins, along with all other applicable HSE management documentation required to safely execute the works.
- Establishment of a contractor mobilisation plan, including details of how mobilisation risks will be managed and controlled (if contractor is not already mobilised).
- Establishment of a Plant Register with associated plant risk assessments and records of statutory inspections (where applicable).
- Project specific hazard identification and risk assessments prior to commencement of work.
- Establishment of Work Procedures and Safe Work Method Statements (SWMS).
- Approved HSE Competency matrix. This includes qualification of procedures and personnel as required by the APGA Code of Practice, for example, weld procedures (EF and butt welding), squeeze-off procedures, and hot tap procedures.

- Early Contractor involvement (ECI) if the project complexity, scale, and schedule warrant early input by the Contractor. Refer Section 3.1.
- Establishing emergency response plans and protocols for emergency rescue, including the nomination of emergency escort locations and helicopter landing locations.
- Identify SIMOPS scenarios and controls to manage the risk of different work parties working in the same area. For example, SIMOPs between construction crews and drilling and well completions crews.
- Assess the ground conditions and work environment and implement controls to mitigate any geo-hazards where necessary. This assessment is usually best done by site visits and assists in the development of environmental management plans.
- Understand the land access conditions and factor these into execution plans e.g. site access points, speed limits, travel distances, wet weather protocols, specific landholder requirements.
- Planning of traffic movements to/from camp and within properties, typically documented in a Traffic Management Plan or similar.
- Establishment of third-party crossing agreements where required.
- Determining the location of facilities and ablutions for the work force
- Selecting construction methods to be used, particularly for special crossings.
- Identifying site security requirements and incorporating into the HSE plan.
- Development of isolation plans for brownfield tie-ins and preparation of work permits.
- Execute readiness reviews and the development of project documentation including execution plans and test packs.
- Protocols for working in remote locations or lone work.
- Defining the induction requirements for any personnel completing physical work.
- Creation of a clear and defined communications plan and escalation process.
- Development and roll out of safety-based programs for the work force. Some common programs used by CSG proponents include:
 - Helping Hands – a Safer Together initiative for Hand and Finger Preservation.
 - Hazards and Habits – a Safer Together activity to improve frontline worker connection with the hazards that they are exposed to in their day-to-day activities.
 - Assist and Assure – a Safer Together program that focuses on engaging the work force through various strategies.
 - Safe Spine – a program offered by Vitality Works aimed at prevention of soft tissue injuries by implementing stretching exercises as a regular part of pre-start meetings.

4.1 Early Contractor involvement

There are a range of benefits to be gained from engaging an experienced Contractor during the design or planning phase of a gathering construction project. Early involvement provides the Contractor with more time to understand the scope of work, leading to improved planning, execution and safety on the ground.

Some common ECI activities that can add value to a project may include:

- Participation in project review meetings and safety in design workshops. For example, design reviews, HAZID workshops, constructability and commissioning reviews. Attendance to key workshops helps the Contractor understand the scope, and often leads to better identification of field hazards which may not be obvious to office-based personnel, or even overlooked.
- Identification and planning for specific skills and resources required to complete the work.
- Providing input to the selection of safe construction methods for special crossings.

- Early development of site-specific emergency response plans.
- Site visits to assess ground conditions, geo-hazards, vehicle and machinery routes, and the access/egress to work areas.
- Review of the design documentation to ensure that the design can be safely and efficiently constructed, including review ROW widths and special crossings.
- Identification of areas where additional construction work spaces may be required.
- Identification of early works activities such as construction of laydown areas set-up of offices, ablutions etc.
- Identification of long lead materials for early procurement to improve the mobilisation duration and overall schedule timeframe.
- Planning the sequence of work and identifying any schedule constraints or interfaces to be managed.
- Providing input into decisions around tie-in methodologies, and risk assessments thereof.
- Identification of water sources for construction purposes.
- Positive identification of existing services via vacuum excavation (this can also be deferred to execution phase after contractor has mobilised)

5 Hazard identification and risk assessment

All operating and contractor companies have a legislative duty to implement a risk management process to maintain a work environment risk that is ALARP to health or safety of personnel. The limit of reasonable practicability is defined as the point where the cost of implementing any further option or change is disproportionately great and does not justify the risk reduction involved. The risk management process should follow AS ISO 31000:2018 and should include identification of the hazards, assessment of the risks, and the implementation of controls. This is part of the Safe System of Work mandated by the Qld WHS Act and Regulation.

5.1 Hazards and controls specific to construction of gathering networks

Table 1 provides a reference list of hazards and control measures typical in the construction of CSG gathering networks. The control measures provided are not an exhaustive list but are commonly used and recognised as best practice.

Table 1 - Common hazards and control measures

Hazard	Example of control measures
Driving	<ul style="list-style-type: none"> • Safer Together IVMS Specification • 4WD training course by RTO (refer to Training and Competency Requirements in Section 5.0) • Vehicles compliant with the Safer Together Light Vehicle Specification • Safer Together Common Industry Competencies Specification - Driver competencies have a validity period of 5 years • Safe driving and vehicle management procedures • Journey management procedures • Vehicle inspection checklists • Traffic management plans • Routine drug and alcohol testing conducted at camps in the morning before driving to site • Use of bulk transport where appropriate to transport people (e.g. bus).

Hazard	Example of control measures
<p>Transportation of goods using heavy vehicles</p>	<ul style="list-style-type: none"> • Safer Together Heavy Vehicle Specification • Heavy Vehicle National Law (HVNL) • Heavy Vehicle Regulations covering vehicle standards, mass, dimension, and loading, fatigue management • Load Restraint Guide (developed by the National Transport Commission) • Safer Together Loading and Unloading Exclusion Zone Guidelines (LUEZ).
<p>Heat Stress / Working in Hot Environments</p>	<ul style="list-style-type: none"> • Safer Together Management of Heat Stress Guideline • Monitoring hydration levels via routine urine sampling • Monitor real time apparent temperatures and notify via pre-starts, email, radio communications • Identification and communication of Red Alert Days (>40C High Heat Risk) and Critical Heat Days (>54C) • Provision of shaded or cool areas • Increase the regularity of work breaks during very hot days • Provision of cool fresh drinking water at the worksite • Scheduling of hazardous manual tasks for cooler periods of the day.
<p>Lifting and Handling</p>	<ul style="list-style-type: none"> • Safer Together DROPS Management System Self-Assessment Guideline • Lift plans and procedures • Safe Work Method Statements • Training, licensing, and verification of competency • Inspection and tagging regime to ensure the integrity of lifting gear • Exclusion zones enforcement • Lifting equipment rated above the actual item being lifted. • Mobile cranes with a rated capacity of greater than 10 tonnes are to be registered • Compliance with prescribed lifting angles when using chains or slings • The use of closed eye lifting attachments on excavator dipper arms • Burst protection fitted to excavator hydraulic cylinders (boom and dipper cylinders). <p>Note: earthmoving plant owners should seek advice on fitting of burst protection from original plant manufacturers, to help avoid fitting faulty or unsafe systems.</p>
<p>Work carried out on or near to existing pressurised gas services (Note 1)</p>	<ul style="list-style-type: none"> • Positive identification of existing services via vacuum excavation • Excavation plan • Live dig procedures and Safe Work Method Statement • Permit to work system • Dial before you dig • Use of spotter and live dig supervisors • Approved live dig operators • Use of poly buckets • Manual excavation (hand digging or vacuum excavation) within 300mm of existing service • Approved contingency isolation plans.

Hazard	Example of control measures
Working carried out in an area in which there is any movement of powered mobile plant (Note 1)	<ul style="list-style-type: none"> • Two-way radio communications between operators and ground workers • Enforcement of exclusion zones around moving plant • Plant fitted with emergency stops and warning devices e.g. flashing lights and audible alarms • Hi-visibility clothing • Training to ensure operators and ground workers familiar with blind spots of particular items of plant.
Work carried out in an excavation or trench or bell hole with an excavated depth greater than 1.5 metres (Note 1)	<ul style="list-style-type: none"> • Procedural controls or Safe Work Method Statement • Shoring by shielding or other compatible means • Benching or battering • Barricading and/or fencing of bell holes • Traffic hazard warning lamps (where appropriate).
SIMOPS	<ul style="list-style-type: none"> • SIMOPS risk assessment and SIMOPS plan • Permit to work system • Site handover procedures.
Working alone or remote work	<ul style="list-style-type: none"> • Lone working procedures including communication protocols • Secondary communication device to be available, e.g. satellite phone • Vehicle fitted with panic alarm • Adequate water supply and first aid kit carried with vehicle.
Work carried out on, in or adjacent to a road, railway, or other traffic corridor that is in use by traffic other than pedestrians (Note 1)	<ul style="list-style-type: none"> • Traffic management plans produced by qualified person • Safe Work Method Statement
Stored energy in coiled pipe	<ul style="list-style-type: none"> • Safe Work Method Statement • Training • Verification of Competency.
Fusion welding (small and medium diameters up to DN500)	<ul style="list-style-type: none"> • Welder training and qualifications in line with APGA CSG PE Code of Practice Sections 6 and 7 • Safe Work Method Statement • Training • Verification of Competency.
Welding of large diameter PE pipe (including DN630 and above diameters)	<ul style="list-style-type: none"> • All requirements for small-medium diameters listed above • Verification of Competency – it is recommended to undertake individual VOCs for pipe sizes 630, 710, 800, 900, 1000, 1200.
Operating plant near overhead	<ul style="list-style-type: none"> • Compliance with the Electrical Safety Code of Practice 2010 – Working Near Overhead and Underground Electric Lines including:

Hazard	Example of control measures
electric lines (Note 1)	<ul style="list-style-type: none"> ○ Strict enforcement of exclusion zones around live power lines ○ Use of a safety observer (spotter) ○ Positive communication between safety observer and operator ● Use of height markers to delineate exclusion zones (tiger tails on powerlines) ● Use of fail-safe height limiting or warning devices on mobile plant to prevent the boom or load from entering the exclusion zone.
Hydraulic and Pneumatic testing	<ul style="list-style-type: none"> ● Training of pressure test personnel ● Verification of Competency assessments/records ● Test packs reviewed and approved. MAOP and test pressures confirmed by a competent and experienced person. ● Approved testing procedures ● Exclusion zones enforced ● Isolation lockout plan implemented on each test ● Pressure safety devices fitted to test equipment ● Hose whip checks ● Adequate pressure rating of equipment and fittings used in the test spread.
Water cartage / transporting liquid loads	<ul style="list-style-type: none"> ● Trucks carrying bulk liquids should be compliant to the Safer Together Heavy Vehicle Standard. ● All drivers to have completed RIIMPO206D conduct bulk water truck operations ● Water capacity will remain within legal and manufactures requirements ● After large amounts of rainfall, approval required to access roads safely ● Heavy Vehicle National Law and Regulations.
Work carried out on or near to buried high voltage or low voltage equipment or cable (Note 1)	<ul style="list-style-type: none"> ● Compliance with the Electrical Safety Code of Practice 2010 – Working Near Overhead and Underground Electric Lines ● Dial before you dig ● Confirm services through GIS Data and marked by survey ● Positive identification of services using vacuum extraction ● Isolate power through asset owner ● Once exposed maintain separation and exclusion.
<p>Notes:</p> <p>1. This activity is classified as high-risk construction work in the Queensland WHS Regulation.</p>	

6 Training and competency

Companies with management and control of work sites have a legislative obligation to ensure their workers have the necessary knowledge, skills, training, and competence to complete the work safely. This requirement is mandated in both the Queensland WHS Regulation and the Petroleum and Gas (Production and Safety) Regulation.

Training and competency checks are first carried out in the employment and on-boarding process. Checks should be completed by the hiring party to ensure the person is suitably qualified and experienced for the tasks they are required to perform.

Before starting work it is considered industry best practice to conduct a Verification of Competency (VOC) assessment. The VOC assessment typically involves the observation of the person physically performing the task in the work place before he/she starts work. Guidance for training and competency responsibilities and assessments is provided in Companion Paper CP-02-01 Competency.

Safer Together has developed a Common Industry Competency Specification aimed at standardising the training and competency requirements across the industry. This Specification applies to many of the hazards described in Table 1, and allows workers to easily transfer their competencies between contractor and operator companies within the industry. For more information refer to Table 2.

Training and competency assessments should be recorded in a register maintained by the employer.

6.1 Verification of competency

The VOC process should be documented in the Safety Management Plan of the responsible company.

Generally acceptable evidence items to prove competency are:

- The employees resume with a Statutory Declaration completed, outlining the information in the resume is true and correct
- Verified copies of relevant licences, Statement of Attainments, or qualifications
- Evidence items that should not be accepted to show competency are:
- A letter from an employer or supervisor claiming that the worker is competent.

The main method of verifying competency is the observation of personnel performing tasks in the workplace by an assessor. The assessor who is observing the task can also be referred to as a subject matter expert (SME).

To be recognised as a competent assessor, or SME, he/she should possess as a minimum:

- A recognised assessor qualification (e.g. TAE40110 Cert IV Training and Assessment)
- Work experience related to HSE, ideally three (3) years or more
- Technical competence in the discipline area.

Observations should be supported by conversations to ensure that the person being assessed can apply relevant skills and knowledge in a full range of circumstances encountered.

VOC assessments should be recorded and maintained in a register. Competencies can typically be transferred between Australian States and Territories at the discretion of the employer. VOC's can be used between multiple projects where records have been maintained.

The following VOC guidelines are typically followed by Contactors the CSG industry:

- Verification of competency must be conducted onsite prior to commencement of operations, after all evidence of current competency has been collected and checked.
- VOC's undertaken for most activities will be valid for a period of three (3) years from the date of issue.
- The VOC must be signed off by an approved RTO or by a competent assessor or SME (approved by the contractor) and a qualified Trainer Assessor (if required).
- VOC assessment tools must be completed and signed by all parties as evidence. Should the employee be employed for more than three (3) years, a field observation assessment must occur, to show currency in the required skills and knowledge to operate.
- Should an employee be off-site for a period greater than twelve (12) months, a full VOC assessment should take place to revalidate the competency assessment.
- Should an employee be off-site for a period less than twelve (12) months (to the exclusion of periods of R&R), the field observation assessment must occur, to show currency in the required skills and knowledge to operate.

Note: If a SME has not been identified, all VOCs are to be undertaken using an independent third-party Registered Training Organisation.

6.2 Inductions

6.2.1 General construction induction training (White Card)

General construction induction training provides basic knowledge of construction work, the work health and safety laws that apply, common hazards likely to be encountered in construction work, and how the associated risks can be controlled.

Any person who is to carry out construction work, for example managers and engineers, foreman, supervisors, surveyors, labourers and tradespersons must successfully complete general construction induction training before starting work.

General construction induction training must be delivered in Australia by a Registered Training Organisation (RTO) and cover the content set out in the specified VET course for general construction induction training.

Once a person has successfully completed general construction induction training, they may apply to their regulator for a general construction induction training card, commonly referred to as a 'white card'.

6.2.2 Industry safety induction

The industry safety induction (ISI) is a Safer Together initiative aimed at all industry new starts. A new start is anyone who has not worked for at least 12 months in the past two years in the Australian oil and gas exploration and production industry. All new starts are required to satisfactorily complete the ISI prior to working on the development or operation of facilities in the CSG industry.

6.2.3 Company specific inductions

Along with the construction industry white card and the ISI, Operating and Contractor companies will have their own specific inductions to be completed. Some examples include:

- company specific HSSE induction
- emergency response induction for the office workers
- land access inductions
- Permit to Work training and Permit Holder courses.

6.3 Training and competencies for construction of gathering networks

The construction of CSG gathering networks requires workers with a range of different skills. A list of common qualifications and competencies specific to gathering construction is provided in Table 2 for reference.

Table 2 – Training and Competency Units relevant to gathering construction activities

Work activity	Relevant training and competency units
Driving	<ul style="list-style-type: none"> • Ref: Safer Together Common Industry Competencies Specification
First Aid, CPR, and Emergency Response	<ul style="list-style-type: none"> • Ref: Safer Together Common Industry Competencies Specification
Gas testing	<ul style="list-style-type: none"> • Ref: Safer Together Common Industry Competencies Specification
Confined space work	<ul style="list-style-type: none"> • Ref: Safer Together Common Industry Competencies Specification
Excavation and Earthmoving Operations	<ul style="list-style-type: none"> • Conduct Civil Construction Excavator Operations (RIIMP0319A and RIIMP320B) • Front End Loader Backhoe Operations (RIIMP0318A) • Grader Operations (RIIMP0324A) • Conduct Civil Construction Wheeled Front End Loader Operations (RIIMPO321D) • Front End Loader Skid Steer (RIIMP0318A) • Hydraulic Excavator Operations (RIIMPO301D) • Tracked Dozer Operations (RIIMPO323D)
Dogging	<ul style="list-style-type: none"> • Ref: Safer Together Common Industry Competencies Specification
Rigging	<ul style="list-style-type: none"> • Ref: Safer Together Common Industry Competencies Specification
Non-slewing Mobile Crane (Telehandler)	<ul style="list-style-type: none"> • Ref: Safer Together Common Industry Competencies Specification

Work activity	Relevant training and competency units
Loading / unloading heavy vehicles	<ul style="list-style-type: none"> Ref: Safer Together Common Industry Competencies Specification
Towing trailers	<ul style="list-style-type: none"> AURTGA3001 – Drive and manoeuvre trailers
PE welding (small and medium diameters)	<ul style="list-style-type: none"> Butt Weld Polyethylene Plastic Pipeline – PMBWELD301 Electrofusion Weld Polyethylene Plastic Pipes- PMBWELD302 Cut Materials with a hand-held chainsaw- FPICTO223B Welder qualification testing. <p>Note: Refresher courses can and should be completed when the operator has not welded for more than 12 months.</p>
PE welding large diameters (630,710,800, 900,1000,1200)	<ul style="list-style-type: none"> Competencies required for small medium diameters as well as: <ul style="list-style-type: none"> Individual VOCs must be undertaken for large diameter pipes 630, 710, 800, 900, 1000, 1200.
Service Identification	<ul style="list-style-type: none"> Cert III Underground Services (RII30913) Identify, Locate and Protect Underground Services (RIICCM202D)
Pressure Testing and Nitrogen Purging	<ul style="list-style-type: none"> Pneumatic pressure testing training course Hydrostatic pressure testing training course Nitrogen awareness training Verification of competency and records of completed pressure tests to maintain competency.
Flow Stopping / Squeeze Off	<ul style="list-style-type: none"> Procedure qualification to AGPA CoP Section 11 requirements and personnel VOC assessment.
Hot Tapping	<ul style="list-style-type: none"> Procedure qualification to AGPA CoP Section 11 requirements and personnel VOC assessment.
Electrical Work Low Voltage	<ul style="list-style-type: none"> Electrical work licence.
EEHA	<ul style="list-style-type: none"> Electrical work licence Installation and maintenance of electrical equipment in hazardous areas Cert IV Hazardous Area – Electrical.

Note: the training course numbers referenced in Table 2 are current at the time of writing but may change from time to time.

6.4 Recommended VOC requirements for welding large diameter pipes

The installation of large diameter PE exceeding 630mm (DN630) presents a unique set of safety hazards due to the weight and size of the pipe.

Any person carrying out work on large diameter pipe must be deemed suitably qualified competent by both the operating company and contractor. Competencies must be witnessed by a person classified as a subject matter expert.

It is highly recommended that individual VOCs be undertaken for the following pipe sizes 630, 710, 800, 900, 1000, 1200.

Due to the size and cost incurred by testing it is advisable to carry out the required VOC at the time of welder qualification.

Note: This section is applicable for both the butt welding and electrofusion welding process, and where Fast Fusion machines are to be used, a separate VOC must be undertaken to confirm competence of the operation of the tracked machine.

7 References

The following Companion Papers should be referenced, as required, to optimise the use of this paper.

APGA Guideline	Onshore Pipelines: Construction Safety
CP-02-001	Competency
CP-04-001	Design Factors and Risk Based Design
CP-04-006	System Design Considerations
CP-04-007	Water Management Aspects
CP-05-002	Ploughing Specification and Procedures
CP-05-003	Trenchless Technologies
CP-05-004	Safety in Operations
CP-08-001	Alternatives for exclusion zone reduction
CP-11-003	Guidelines for Maintenance and Modifications

External References:

1. Queensland WHS Act and regulation <https://www.legislation.qld.gov.au>
2. Petroleum and Gas (Safety) Regulation 2018
<https://www.legislation.qld.gov.au/view/pdf/asmade/sl-2018-0135>
3. Safer Together <https://www.safertogether.com.au/>

Safer Together is a not-for-profit, member-led organisation of Oil and Gas Exploration and Production Industry Operating Companies and Contract Partner Companies committed to creating the leadership and collaboration needed to build a strong and consistent safety culture in our rapidly evolving industry.

4. Safe Work Australia <https://www.safeworkaustralia.gov.au/>

Safe Work Australia is an Australian government statutory body established in 2008 to develop national policy relating to WHS and workers' compensation.

5. Workplace Health and Safety Queensland <https://www.worksafe.qld.gov.au/> - eSafe Newsletter
6. Gas Fields Commission Queensland <https://gasfieldscommissionqld.org.au/>

An independent statutory body established 1 July 2013 to facilitate sustainable coexistence through being a vital reference source for landholders, regional communities and the onshore gas industry in Queensland.

7. Mates in Construction - <http://matesinconstruction.org.au/>

Mates in Construction is a charity established in 2008 to reduce the high level of suicide among Australian construction workers.

Note: The Code and this Companion Paper scope covers both conventional gas and water transfer PE pipelines, in addition to PE gathering systems. While the basic principles of construction safety for pipelines are similar to those covered by the APGA Guideline, most specific construction aspects differ significantly; such differences include pipe manufacture, storage, handling, transport, stringing, welding, installation, pressure testing, purging and commissioning. Gathering systems are even more complex, with varying pipe dimensions and wall thicknesses. All staff need to ensure that procedures adopted are appropriate and applied by competent staff and contractors.