

A large, decorative graphic on the left side of the page. It consists of a solid teal vertical rectangle. Overlapping this rectangle and extending to the right are several large, concentric, semi-circular arcs in various shades of teal and light blue, creating a sense of depth and movement.

# **Code of Practice**

## **Companion Paper CP-02-001**

### **Competency**

**Rev 1**

**June 2025**

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# Acknowledgements

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# 1. 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 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 (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 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 be:

- a) 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.).

## 2. Scope

The scope of this Companion Paper is the definition of available competencies for the various types of practitioners using the APGA Code of Practice Upstream PE Gathering Networks - CSG Industry referred to simply as the Code of Practice in this document.

The Code of Practice has incorporated risk-based design in lieu of a fixed 'risk' design factor based on the use of physical and procedural measures for risk mitigation in accordance with the location or sub-location class. Effective and safe application of risk-based design is dependent on the competency of the personnel performing, reviewing and approving the design hence the importance of the competencies required in this Companion Paper.

The CSG industry is innovating and adapting quickly in the current market and the Code of Practice allows flexibility to adopt innovative practices provided that there is appropriate justification and third party review to confirm that safety and compliance is maintained and enhanced. Appropriate justification and third party review is somewhat reliant on competent people reviewing and approving the innovative practices hence the importance of a documented competency system able to demonstrate that the people involved at all phases are competent to perform their roles.

As detailed in this paper, CSG Gathering Networks involve a wider range of operating variables throughout their lifetime, and are often subject to various changes in comparison to conventional gas and water transmission pipelines, or gas distribution systems. The networks also primarily handle untreated gas and water, with various impurities rather than sales quality gas or treated potable water. The APGA Code of Practice specifically requires approval of many documents therefore a broad understanding of PE gathering systems is required by managers approving the various stages of CSG gathering systems including the design, construction, commissioning, testing, operations and maintenance phases.

Each individual Operating Company has the responsibility to structure their management systems to meet their risk management policies within legislative requirements. The management system should identify key staff and their required core competencies covering engineers, technicians, approvers and operators as detailed in this Companion Paper.

Using competent people for the engineering, construction, operation and approval roles of coal seam gas gathering networks is important in order to achieve a safe and cost effective operations. The scope of this Companion Paper includes the competencies available for application in all phases of the asset lifecycle which aligns with the scope of the Code of Practice.

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### 3. Introduction

Competency is defined as the capability that a person has in order to perform an activity or function effectively and reliably. It is expressed in terms of:

- the desired outcomes;
- the scope of the task or function;
- the main elements which enable competency, such as knowledge, skill, expertise and experience; and
- the capabilities and roles and functions that can be performed.

There are numerous references throughout the Code of Practice to the requirement to use competent personnel to perform various functions. This companion paper aims to assist in defining the competencies recommended. This Companion Paper is intended to be used:

- To provide guidance in developing training programs;
- To provide guidance in assessment of competency
- To provide a framework for assurance that competent people are performing the various functions described in the Code of Practice;
- To assist in recruitment of the right people to perform the right functions; and
- To provide guidance to individuals and companies to create career development plans.

Section 4 of the Code of Practice lists the personnel and competencies required to determine each of the design factors using the Fit for Purpose methodology. It requires this process to be subject to a third-party review by a competent designer or assessor.

Section 2 of the Code of Practice covers training and competency for the operations phase of the asset lifecycle. It requires that personnel shall be competent to perform the specific tasks and functions they are responsible for conducting. It also requires the Operator to establish and maintain procedures for identifying and providing the training needs of all personnel. To be able to demonstrate that personnel are competent to perform the specific tasks and functions they are responsible for conducting, it is recommended that the required competencies for each role be defined so that personnel can be assessed against the required competency and training needs established.

There has been significant work done by various organizations to define the some of the competencies required for designing, approving, constructing and operating PE gathering networks, however, not all required competencies have been defined to date.

In general, personnel competency can be split into four main categories being Engineers, Technicians, Operators and Approvers.

For Engineers, a selection of relevant competency standards are published by the Australian Pipelines and Gas Association and can be found at <https://www.apga.org.au/about-pipeline-engineering-competency-system>.

As a pre-requisite for being assessed against these competency standards, engineers practicing in Queensland or designing assets located in Queensland are required by legislation to be Registered Professional Engineers in Queensland (RPEQ) and it is recommended that engineers designing assets in all locations be registered on the National Engineering Register (NER) in the specific area of practice of Oil and Gas Pipeline Engineering.

For Technicians, no specific set of competencies has been developed for PE pipe in the coal seam gas industry. The most relevant competencies are contained in the national Gas Industry Training Package UEG11 which can be found at <https://training.gov.au/Training/Details/UEG>.

For Operators, the UEG training package and the PMA Chemical, Hydrocarbons and Refining Training Package defines the most relevant competencies which are in widespread use within the CSG industry. Skill Sets in PMA are defined as single units of competency, or combinations of units of competency from an endorsed Training Package, which link to a licence or regulatory requirement, or defined industry need. Industry has supported the creation of a range of Skill Sets, mainly in safety and incident preparedness/response areas. The PMA Units of Competency and Skill Sets can be found at [PMA Units of Competency and Skill Sets](#).

In general, managers responsible for approving the various stages of PE gathering systems in the coal seam gas industry should understand the properties of CSG gas and produced formation water (PFW), and their influence on CSG system design. Approvers should also have basic 'CSG competencies' including familiarization with the legal aspects under which CSG development shall occur, the relevant Acts, Codes of Practice, Standards, Companion Papers and how these are utilised to deliver and operate CSG developments.

Section 3 of this Companion Paper lists the relevant competencies that are detailed on these web sites. Whilst it is recognised that not all competencies required for all tasks and functions related to PE pipe for coal seam gas applications have been addressed, due to the risk-based nature of the Code, it is recommended that design teams possess the required CSG competencies either from experience, internal training courses or that available from recognised industry training providers. Further competencies are expected to be defined over time and added to the web site references.

## 4. Plastic pipe competency standards

### 4.1 Engineering

The documented competency standards directly applicable to PE pipe are shown in Table 3-1 below.

Table 3-1 - List of APGA Plastics Pipe Competency Standards

Category	ID	Competency	DES	CON	OPS
onshore	GE013	<u>Flexible pipe design</u>	X		
onshore	IB004	<u>Legal and regulatory frameworks for pipeline engineers</u>	X	X	X
onshore	IB005	Introduction to plastics pipe and water and gas industry standards	X	X	X
onshore	RA001	<u>Risk assessment fundamentals</u>	X	X	X
onshore	RA005	<u>Safety management studies</u>	X		X
onshore	HC002	<u>Hydrotest design and planning</u>	X		
onshore	HC005	<u>Hydrotest execution</u>	X	X	
onshore	EH001	<u>Environment and heritage fundamental</u>	X	X	X



Category	ID	Competency	DES	CON	OPS
onshore	EA001	<u>ROW acquisition and management</u>	X	X	X
onshore	DP006	<u>Wall thickness and design pressure</u>	X		
onshore	DP009	<u>Alignment sheet engineering</u>	X		
onshore	DP010	<u>Crossings and typical designs</u>	X		
onshore	DP011	<u>External interference protection</u>	X		
onshore	DP013	<u>Stress analysis</u>	X		
onshore	DP018	<u>Design for pipeline installation</u>	X		
onshore	DP021	<u>Soils mechanics for pipeline design</u>	X		
onshore	DP025		X		
onshore	RE001	<u>Route Engineering fundamentals</u>	X	X	
onshore	CE001	<u>Construction engineering and management fundamentals</u>		X	

Category	ID	Competency	DES	CON	OPS
onshore	CE002	<u>Construction equipment</u>		X	
onshore	CE005	<u>Quality assurance and quality control</u>		X	
onshore	CE006	<u>Pipeline crossing construction</u>		X	
onshore	CE009	<u>Horizontal directional drilling – construction</u>		X	
onshore	CE018	<u>Soil mechanics for pipeline construction</u>		X	
onshore	PP001	<u>Key concepts in standards for design, construction and operation of plastic pipe</u>	X	X	X
onshore	PP002	<u>Fundamental of plastic pipe design</u>	X		
onshore	PP003	<u>Elevated temperature design for plastic pipe</u>	X		
onshore	PP004	<u>Cyclic loading design</u>	X		
onshore	PP005	<u>Low temperature plastic pipe design</u>	X		
onshore	PP006	<u>Design and planning for hydrotest and pneumatic testing for plastic pipe</u>	X	X	

Category	ID	Competency	DES	CON	OPS
onshore	PP007	<u>Execution of hydrotest and pneumatic testing for plastic pipe</u>	X	X	
onshore	PP008	<u>Fundamentals of plastic pipe construction</u>	X	X	
onshore	PP009	<u>Quality assurance and quality control in plastic pipe construction</u>		X	
onshore	PP010	<u>Construction – trenchless technology for plastic pipe</u>	X	X	
onshore	PP011	<u>Construction – curving of plastic pipe</u>	X	X	
onshore	PP012	<u>Welding and jointing fundamentals for plastic pipe</u>	X	X	X
onshore	PP013	<u>Construction – welding and joining installation and inspection / NDT for plastic pipe</u>		X	
onshore	PP014	<u>Asset management for plastic pipe</u>		X	X
onshore	PP015	<u>Fundamentals of operations of plastic pipe</u>	X		X
onshore	PP016	<u>Operations – control for plastic pipe</u>			X
onshore	PP017	<u>Operations – repair for plastic pipe</u>		X	X

Category	ID	Competency	DES	CON	OPS
onshore	PP018	<u>Operations – hot tapping for plastic pipe</u>	X	X	X
onshore	PP019	<u>Plough in – design and construction</u>	X	X	

Note: As many of these competency standards do not currently address large diameter (DN 500+) PE pipelines, and remain primarily focused on gas service, additional competency standards are expected to be developed over time.

## 4.2 Technicians & Operators

The documented competency standards for Technicians and Operators directly applicable to PE pipe are shown in Table 3-2 and Table 3-3 below.

Table 3-2 - List of Relevant Units of Competency in UEG11

Code	Title
<a href="#">UEGNSG004A</a>	Locate, prove and protect utility assets
<a href="#">UEGNSG006A</a>	Use a portable gas detector to locate escape
<a href="#">UEGNSG108B</a>	Operate and monitor pipeline control systems
<a href="#">UEGNSG109B</a>	Control field pipeline operations
<a href="#">UEGNSG141A</a>	Apply Workplace Health and Safety regulations, codes and practices in the gas supply industry
<a href="#">UEGNSG142A</a>	Conduct isolations under the permit to work system for gas industry work sites
<a href="#">UEGNSG219A</a>	Conduct excavations in the utilities industry
<a href="#">UEGNSG512A</a>	Control centre communication with gas industry stakeholders
<a href="#">UEGNSG513A</a>	Manage emergencies and critical incidents for gas infrastructure
<a href="#">UEGNSG514A</a>	Managing and Controlling Field Activities
<a href="#">UEGNSG515A</a>	Use control centre systems to monitor and control gas infrastructure

Table 3-3 - List of Relevant Units of Competency in PMA

Code	Title
<a href="#">PMASUP540</a>	Analyse equipment performance
<a href="#">PMAOMIR346</a>	Assess and secure an incident site
<a href="#">PMAOMIR407</a>	Audit incident preparedness and established response systems
<a href="#">PMAOMIR622</a>	Build partnerships to improve incident response capacity
<a href="#">PMAOPS434</a>	Commission wells and gathering systems
<a href="#">PMAOPS330</a>	Communicate and monitor pipeline activities
<a href="#">PMAOMIR430</a>	Conduct and assess incident exercises
<a href="#">PMAWHS502</a>	Contribute to safety case
<a href="#">PMAOMIR210</a>	Control evacuation to muster point
<a href="#">PMAOMIR418</a>	Coordinate incident response
<a href="#">PMASUP432</a>	Coordinate pipeline projects
<a href="#">PMAOMIR424</a>	Develop and maintain community relationships
<a href="#">PMAOMIR444</a>	Develop incident containment tactics
<a href="#">PMAOMIR512</a>	Establish incident response preparedness and response systems
<a href="#">PMAWHS310</a>	Investigate incidents
<a href="#">PMAWHS311</a>	Lead emergency teams
<a href="#">PMAWHS221</a>	Maintain first aid resources and records
<a href="#">PMASUP241</a>	Maintain pipeline easements
<a href="#">PMAOMIR650</a>	Manage a crisis
<a href="#">PMAOMIR321</a>	Manage communication systems during an incident
<a href="#">PMAWHS511</a>	Manage emergency incidents

Code	Title
<a href="#">PMASUP620</a>	Manage environmental management system
<a href="#">PMAOMIR320</a>	Manage incident response information
<a href="#">PMAOPS433</a>	Manage wells and gathering systems
<a href="#">PMASUP344</a>	Monitor and control repairs and modifications on operational pipe
<a href="#">PMASUP343</a>	Monitor and maintain cathodic protection systems
<a href="#">PMASUP342</a>	Monitor and maintain electrical systems
<a href="#">PMASUP341</a>	Monitor and maintain instrument and control systems
<a href="#">PMAOMIR449</a>	Monitor legal compliance obligations during incidents
<a href="#">PMASUP242</a>	Monitor pipeline civil works
<a href="#">PMAOPS233</a>	Monitor wells and gathering systems
<a href="#">PMAOPS230</a>	Monitor, operate and maintain pipeline stations and equipment
<a href="#">PMAOPS222</a>	Operate and monitor pumping systems and equipment
<a href="#">PMAOPS223</a>	Operate and monitor valve systems
<a href="#">PMAOPS232</a>	Operate filtration equipment
<a href="#">PMAOPS201</a>	Operate fluid flow equipment
<a href="#">PMAOPS216</a>	Operate local control system
<a href="#">PMAOPS410</a>	Operate remote production facilities
<a href="#">PMAOPS246</a>	Operate separation equipment
<a href="#">PMASUP236</a>	Operate vehicles in the field
<a href="#">PMAOPS333</a>	Operate wells and gathering systems
<a href="#">PMASUP445</a>	Participate in HAZOP studies
<a href="#">PMASUP444</a>	Plan plant preparation and isolation

Code	Title
<a href="#">PMAOPS521</a>	Plan plant shutdown
<a href="#">PMASUP244</a>	Prepare and isolate plant
<a href="#">PMAWHS211</a>	Prepare equipment for emergency response
<a href="#">PMAWHS320</a>	Provide advanced first aid response
<a href="#">PMAWHS321</a>	Provide first aid response in remote and/or isolated area
<a href="#">PMAOPS501</a>	Provide operational expertise to a project team
<a href="#">PMAOPS101</a>	Read dials and indicators
<a href="#">PMASUP347</a>	Undertake corrosion inspection on process plant
<a href="#">PMAWHS213</a>	Undertake fire control and emergency rescue

## 5. Competency assessment

### 5.1 General

Competency assessment is the process of determining whether personnel are competent. Effective competency assessment requires being clear about the objectives of competency assessment, the principles and tools available for effective application, and the process to be used.

The principal objective of competency assessment is to enable an employer to determine whether personnel are competent, both generally and in particular competencies.

The secondary objective is to enable personnel and their company to plan career development and training to raise levels of competency to the level required for each role with corresponding responsibilities.

Competency can result from a mix of inputs. Any assessment of competency should consider the inputs (training, knowledge and experience) as well as outputs of demonstrated expertise and capability.

Competency assessment requires evidence of knowledge, practical experience and expertise. While objective measures, such as completion of courses or having had particular experience are essential, it is not possible, nor wise, to rely solely on them and assessment will involve use of judgement. This will require a range of information about the person being assessed. Information required typically includes:

- Courses successfully completed, including specialised CSG-specific courses;
- Achievements as part of a track record;
- Roles held and organisations worked for;
- Experiences obtained; and
- References from people who worked with the candidate.

### 5.2 Engineers

Engineers practicing in Queensland or designing assets located in Queensland are required to be Registered Professional Engineers in Queensland (RPEQ) in accordance with the [Professional Engineers Act 2002](#) and the [Professional Engineers Regulation 2003](#) or be working under the direction of an RPEQ engineer. The registration of engineers in Queensland is administered by the [Board of Professional Engineers of Queensland \(BPEQ\)](#). It is recommended that engineers working in the coal seam gas industry related to PE pipe be registered on Engineers Australia's National Engineering Register (NER) in an appropriate area of engineering covered by Engineers Australia's list of areas of engineering or attain Charter in the area of practice of that is recognised by the BPEQ as an area of engineering.

It is also desirable - although not required by the BPEQ - to achieve Engineers Australia's chartered status in the area of practice of Oil and Gas Pipeline Engineering.



The process for achieving charter in Oil & Gas Pipeline Engineering involves a qualified engineer to completing their personal Competency Portfolio providing the input information for each competency claimed. A typical format for such a Competency Portfolio can be downloaded from: <https://www.apga.org.au/about-pipeline-engineering-competency-system>.

Each competency claimed in the Competency Portfolio may be graded as to the level of competency achieved in accordance with Table 4-1 providing either a “competent” or “not yet competent” rating or a proficiency rating in the range 0 to 5.

Table 4-1 -Competency Grades

Competent?	Progressive Rating Scale	The book test
No	0: No knowledge or experience in field	Is there a book on this?
No	1: Meets few competency requirements (some knowledge, minor experience)	Has the book and is reading it
No	2: Meets a substantial proportion of competency requirements (substantial knowledge, useful experience and puts into practice)	Has read the book and applying it
Yes	3: Meets all knowledge and experience requirements	Knows the book and applies it without help
Yes	4: Exceeds competency requirements (Knowledge and experience requirements materially exceeded, recognised by peers)	Teaches on what is in the book
Yes	5: Greatly exceeds competency requirements (Knowledge and experience greatly exceed requirements, recognised by the industry as an expert)	Writes the book providing practical examples

For registration on the NER or as an RPEQ, the assessor is assigned by the registering authority. Outside of this formal process, the assessor can be the manager of the individual being assessed. The assessor reviews the Competency Portfolio against the requirements in the appropriate Competency Standard then meets the candidate to confirm that the competencies claimed have been obtained by the candidate and adjusts the level of competency obtained in accordance with Table 4-1.

The questions typically asked during assessments include:

- Show us what you have been able to achieve in practice of your role;

- Show us how you have achieved what you did, and why you chose to act in particular ways; and
- Show us how you acquired the knowledge to enable you to do these things.

If it is found that the candidate does not have the appropriate competencies required for the role, a plan to develop the required competencies should be established. The plan will usually include a combination of training and experience working under the direction of a competent person. Section 5 describes external training options either already available or being developed.

### 5.3 Technicians and Operators

Assessment of competencies in the Nationally Recognised Training System is performed by a Registered Training Organisation (RTO) in accordance with the Australian Qualifications Framework (AQF) after completion of the requirements defined in the Training Package.

A Statement of Attainment is issued by a Registered Training Organisation when an individual has completed one or more units of competency from nationally recognised qualification(s)/courses(s). Issuance of Statements of Attainment must comply with the advice provided in the current AQF Implementation Handbook and the AQTF [2010,13] Essential Standards for Initial and Continuing Registration or the Standards for NVR Registered Training Organisations 2012.

Under the AQTF [2010, 2013] or the Standards for NVR Registered Training Organisations 2012, RTOs must recognise the achievement of competencies as recorded on a qualification or Statement of Attainment issued by other RTOs. Given this, recognised competencies can progressively build towards a full AQF qualification.

Certificate III level qualifications either in UEG or PMA are recommended for Technicians and Operators and a higher level for supervisory staff.

### 5.4 Approvers

As noted in Section 2, people responsible for approving PE gathering systems, as required by the Code of Practice, should have a general knowledge of PE gathering systems and the various regulations and codes that govern their design, construction and operation. It is the responsibility of each company to define their own delegation of authority to ensure that decisions are approved by the appropriate person in their company. Assessing the competency of the approvers in such a delegation of authority is not common practice in the industry but should be considered by each company given the importance of the approving function. In general, a system of measuring competency similar to that described for Engineers in Section 4.2 could be utilised for approvers.

## 6. Training

### 6.1 General

### 6.2 Safer Together Induction

From 1 July 2016, all new starts into the Queensland natural gas exploration and production industry have been required to satisfactorily complete the Safer Together Industry Safety Induction prior to working in the industry. In 2018 this standard was extended to Western Australia and the Northern Territories. By the end of 2022 over 18,000 people had completed the course. In 2023 a major upgrade and updating of the course will be taken to align with the post-COVID industry. For more information visit: [safertogether.com.au/isi](https://safertogether.com.au/isi).

### 6.3 White Cards and Green Cards

The white card is a credit card sized ID received after completing the workplace health and safety course (**white card training**). It is required in order to work on a building site in NSW, Queensland, South Australia and Victoria and demonstrates necessary training in safe work place practices. The card used to be green in colour and hence was referred to as a green card. It is now white but is still commonly known as the green card.

### 6.4 Driver Training

The Safer Together Land Transport Working Group is involved with driver training requirements to help standardise them across the industry. Light vehicle driver training is defined by state regulations based on class of vehicle. Heavy vehicle driver training is defined by state laws and the National Heavy Vehicle Regulator (licensing competency) requirements. Specific training for heavy vehicle operations by type of equipment and activity is summarised in Table 1 of the Safer Together *Heavy Vehicle Specification Rev. 3*. The Safer Together *Common Industry Competency Specification Rev.6*, (pp 9-10) documents the competency requirements agreed to amongst operators and contractors for light vehicle and heavy vehicle operators. The Safer Together Land Transport Working Group provides subject matter experts (SME's) review of the CIC Specification when it requires revision due to changes in state legislation or by the National Heavy Vehicle Regulator.

### 6.5 Engineers

Specific coal seam gas training for engineers and managers responsible for approval are available to the industry. A list of training courses and providers mapped against the APGA competencies is available on the APGA web site at <https://www.apga.org.au/about-pipeline-engineering-competency-system>

As a minimum, an engineer should be able to demonstrate a Grade 3 level of competency as defined in Table 4-1 in the competencies that are specific to their role.

Assessors, for competency purposes, whether internal or external, should strive to possess a Grade 4 competency level in the relevant PE gathering competencies.

## 6.6 Technicians and Operators

Training Packages have been developed under the national system to meet the identified training needs of specific industries or industry sectors. The units of competency listed in Section 3 all have training packages developed to address the competency requirements. Participants are assessed as part of the training and are awarded progressive qualifications based on a point system. Details of the training packages available are provided at <http://training.gov.au/Home/Tga>.

Training and assessment using Training Packages must be conducted by an RTO that has the qualifications or specific units of competency on its scope of registration, or that works in partnership with another RTO as specified in the AQTF [2010, 2013] or the Standards for NVR Registered Training Organisations 2012.

## 6.7 PE Pipe Welding Training Providers

Specific PE pipe and fittings welding training is available to the industry. A list of training courses and providers who offer accreditation for welders is available on the Plastics Industry Pipe Association of Australia Limited (PIPA) web site at <https://pipa.com.au/welder-training/>

## 7. References

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

CP-05-001	Safety in Construction
CP-11-004	Safety in Operations