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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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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: http://www.apga.org.au/news-room/apga-code-of-practice-pe-gathering-networks-feedback-form-companion-papers/

If there are problems with the feedback form, please contact:

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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 Scope
The scope of this Companion Paper is related to the issue of overall CSG field network generally as defined in Figures 1.2a (gas) and 1.2b and 1.2c (water) in the Code.

Additionally, provision shall be included for gas lines operating up to 16 bar and the use of the water gathering network for the transfer of drilling water is included.

Discussion related to the surface components aspects of the gas/water gathering system shall be included, despite the primary purpose of the Code being related to the PE gathering networks. Additionally, the influence of the proposed means of power supply to the facilities is discussed, as it specifically relates to field optimisation and flexibility.

2 Introduction
While the CSG industry has operated in Queensland for almost three (3) decades, during recent years the rate and intensity of field development has resulted in challenges to the industry’s obligations to operate, with significant challenges to various aspects related to the engineering design, including noise impacts; visual amenity; traffic and overall intrusion into community lifestyle.

The risk-based design advances in the latest Version 4 of the Code, with the parallel concepts of fully integrated, optimised whole-of-life design has resulted in a significant re-evaluation of system design considerations from those previously addressed in the (Informative) Appendix A of earlier versions of the Code.

Section 4.1 of the Code mandates that the design should use risk mitigation controls from industry (not just individual company) experience. Gathering network design should not be considered in isolation from overall whole-of-life operational and maintenance safety aspects. Integrated whole-of-life design can often be considered to commence in the pre-drilling stage, including optimisation of drilling water provision to wellsites.

Additionally, based on current operating experience clear evidence has emerged that a principal impediment to safe and efficient field operations has, in some instances, been attributed to previous design conditions. While these have been primarily in associated equipment, nevertheless the route selection aspects which have placed facilities close to community infrastructure—roads, tracks, etc.—may now require further consideration.

Integrated design may require the identification and optimisation/maximisation of manifold or nodal locations, with orphan wells reduced to a minimum (normally < 10% even in ‘challenging’ topographic situations). These nodes can often provide the location of new water bores and the initial produced water aggregation and boost pump transfer (often with associated de-gassing and solids removal) in addition to later-life gas boost compression; such activities may involve noise generation and maintenance activity, and accordingly their location in relation to community infrastructure, especially residences, must be optimised. Electrical power supply to/at these locations should be considered due mainly to the ability to reduce noise levels, as on a whole-of-life basis this could be seen to represent a coordinated ALARP approach to noise mitigation from a total field perspective. Electrical power also provides flexibility for the operation of high power usage downhole pumps such as beam or rod pumps.

It has been long recognised within the industry; simplicity in facilities normally provides the safest, least-cost and least intrusive long-term outcome.
Additionally, Section 4.3.1 requires that the principles and philosophies to be applied shall be documented as such is recognised as prime determinants in satisfactory safety performance in both operations and maintenance, but specifically in design. Implicitly, this also highlights the need for such key system design decisions to be taken in-house within the asset/operations team, or equivalent, with primary field operations input. Third parties who may possess the critical operating or technical (e.g., resins technology) expertise can assist.

In summary, there will always be variances between individual wells and fields. Hence, fit-for-purpose designs should be based on the same principles.

One size fits all for any aspect or component is generally considered as contradictory to such optimised fit-for-purpose (FFP) design.

Technical review Each engineer/manager involved in CSG design or approval should have the knowledge, experience and expertise required to achieve competency as outlined in the Competency Companion Paper, CP-02-001.

3

3.1 Layout design

CSG field development is based on the determination by the operator’s asset technical (sub-surface) personnel concerning the optimum layout and spacing of wells required to maximise gas recovery in a specific field or block, within a petroleum lease area. Generally captured in a field development plan (FDP), the initial location and spacing of these wells are dictated by sub-surface characteristics and the intended drilling methods used to extract the CSG. The FDP will also define the proposed surface facilities concept which includes the location and type of gas compression for the life of the development within the gas gathering network, water transfer/treatment facilities, proposed beneficial use(s) type and location and links to the water gathering network, HV power and communication infrastructure, source of drilling and construction water and the access tracks necessary to drill, complete and operate the wells effectively over the field’s lifetime (normally 15-20 years).

The gas compression and water treatment philosophy is the key to the layout of the gas and water gathering network. This shall dictate design pressures and the acceptable pressure loss from the wellhead to the main compression facilities. Wells shall be connected through a network of increasing-sized pipelines (flow lines, laterals, spinelines, headers, trunklines). The FDP shall define the commissioning schedule to achieve the de-watering processes to achieve the gas forecast, generally radiating from the compression facilities.

With the ‘ideal’ well layout identified, constraints other than technical sub-surface are applied to the field, with an appropriate recognition of stakeholder requirements, including but not limited to:

- Land usage (current/future) and ownership;
- Environmentally sensitive areas;
- Location of (active) residences;
- Topography;
- Existing infrastructure-roads, railways, pipelines, fences, etc.;
• Location of proposed future infrastructure-mining activities; electrical power corridors, etc.;
• Source of water for drilling (drilling, completion, workovers) and construction;
• Environmental Licence obligations;
• Legislative requirements (e.g. Environmental Protection Act, Regional Planning Act, Strategic Agricultural Land Usage Regulations, etc.).

Environmental Licence obligations. Large developments require an EIS which nominates controls to be put in place. These can vary between fields, subject to land use and other factors.

Key undertaking. The CSG industry has collectively undertaken discussions with the Queensland Gasfields Commissioner representing numerous community stakeholders, to minimise the footprint of wells and associated infrastructure-tracks, roads, etc.

Route selection. At the commencement of the gathering network routing process, there is a considerable level of uncertainty due to a number of variables such as land holder, environmental and cultural heritage constraints. Accordingly, the routing should be performed by experienced competent personnel with an understanding of the project obligations, and input from the various stakeholders. Each project has its own unique characteristics that require interactive coordination of potential routes. Participation in the desk-top scouting process should include all key operating company [OPCO] stakeholders, including asset, operations, environmental, drilling, cultural heritage, health and safety, etc.

Primary considerations are whole-of-life safety, both implicit and explicit; topography; geology; environmental impact, noise, visual amenity; existing infrastructure and minimising major crossings. The corridors are initially selected to avoid key constraints, and the gathering infrastructure route alignment is supplemented by a preliminary safety management study (SMS) and discrete survey work (crossings) and should normally be submitted for preliminary asset/wellheads and gathering operations approval prior to proceeding to detailed design.

As the design matures, an initial corridor of interest (100 metres wide) is positioned to allow for deviations and constraints. This corridor is then narrowed to an approved ROW width considering all landowner, environment, construction and operations considerations. A consistent narrowing of the area of interest/ROW should be expected and is encouraged to reduce visual impact and disturbance. A wider corridor as a commencement point allows for greater flexibility and is considered standard routing practice.

A desktop route selection approach should be formulated per a primary set of rules and guidelines that can include, but is not limited to the following:

• Nodal/manifold locations optimised;
• Shortest point-to-point routing and optimised headings;
• Safety, including driving tasks;
• Hydraulic considerations;
• Align common interest infrastructure;
• Interface considerations;
• Optimise crossings and avoid overlapping tenure;
• Environmental Licence commitments;
• Elevation and land cover;
• Reduce impact to landowners and co-locate with existing tracks and roads.
• Additional area requirements along the ROW;
• Allow for cross-connects to adjoining fields.

New technology is available in drones [UAVs], LIDAR and ‘imagery capture’ that allows for the project team to perform a virtual site visit from the office, which can increase the accuracy of desktop routing (and certainty of cost estimates) and defer or minimise the need for detailed field site surveys until detailed design. The above constraints can therefore be accurately identified from a detailed assessment assuming adequate LIDAR, imagery and GIS data sets have been acquired.

NOTE: A comprehensive and efficient GIS system (including adequate data storage) shall likely be required to analyse and display the vast amount of data now available.

The gathering system layout and design should give consideration for the whole-of-life operational requirement, including asset monitoring, 4WD vehicle access to facilitate both network patrolling purposes and maintenance access to isolation valves, high point vents, air release valves and low point drains.

For both gas and water systems, the holistic design for each CSG field should incorporate the following:

• Operations and maintenance philosophy and principles;
• Isolation philosophy;
• Commissioning plans and processes;
• Segregation plans (3D where appropriate) for constructability;
• Inter-connects between compression facilities, with redundant systems to allow low-pressure gas to migrate between gas plants;
• Cross-connects between adjoining blocks (only for fields or blocks with satellite compression);
• Nomination of exclusion zones for pressure testing;
• Drilling water sources.
3.2 Design considerations

CSG gathering systems generally comprise separate CSG and produced formation water (PFW) gathering systems. CSG producers have various methods for well completions and for separating gas and liquid phases at the wellhead, beyond which there are a number of aspects that need to be considered in the design of the gathering system network.

Note: Refer Section 3.5.1 for specialised gathering system commentary.

The design of such gas and water gathering systems need to be considered separately due to differing aspects of their design. However, the two systems are normally run in parallel in the same trench adjacent to the wellsite access tracks until diverging to separate gas and water processing facilities.

Using single phase assumptions for the whole gathering network is not advisable.

3.2.1 Gas spur/flow line design

Gas networks are likely to contain water in the form of vapour or free liquid. This is subject to the well completion design and wellhead separator efficiency. As detailed in 3.3 below, the main consideration in flowline design is to provide an appropriately sized line to support the whole-of-life production flow. Provision for flexibility should be provided by appropriately located isolation valves, preferably buried PE valves.

Experience has shown that gas from several field across the main producing basins in Queensland contain bacteria, either/both acid-producing or sulphate-reducing. Whilst this can be addressed by dosing, from an engineering design approach, the maximum use of inert PE 100 valves, fittings, couplings and replaceable riser pipes (sacrificial) should be considered.

3.2.2 Water spur/flow line design

Water networks contain entrained gas in many situations, while solids and other contaminants are carried into the water gathering network from the well borehole. Water flowlines are recommended to be designed for high velocity to carry any impurities downstream into nodal ponds (where used) or other collection points. Each PFW flowline design should include at least one high point vent, appropriately located. Specialised Australian-manufactured valves are available which assist in the de-gassing of the PFW without leaks.

Some CSG fields produce PFW which tends to cause internal scale lining the pipe walls, while other water can on occasion produce algae if stored in open tanks or ponds. While chemical dosing options exist as remedies, the design engineer needs to be always aware that the primary objective is to facilitate the beneficial use of the PFW once de-gassed, which is discussed further in Clause 3.4.

3.3 Gas system

Gas flows from the well as it is de-watered. If water is not removed from a gas gathering system, it has the potential to form slugs which may inhibit the flow of gas and may require additional/larger equipment [inlet separator/‘slug catcher’] to ensure that the compression facilities work optimally and are not damaged. Accordingly, it is important that any significant quantities of water are
removed from low points. Water from wellhead carry-over can collect in the gas gathering system in addition to water condensation as the gas stream cools.

To remove water from gas gathering systems, a series of low point drains (LPDs) is generally used throughout the CSG network. Designs for LPDs should be as simple as possible (and in-line with operating philosophies), and vary depending on the volume of water anticipated to be collected, the design pressure and velocity of the gas network and the quality of water to be collected. Separation of the water from the gas may occur by the installation of a larger diameter pipe section with a sump to collect the water. Designs then vary per the operating philosophy to discharge to a local tank for later collection, simple facilities with (very) occasional re-injection into the adjoining water line (which is normally at a higher working pressure) using a boutique solution. Other options, including siphons, exist.

### 3.4 Water system

**Produced formation water (PFW)** associated with CSG can have significant quantities of entrained gas which should mainly be removed by separation at the wellhead but remaining entrained gas can be evolved during flow or transportation through the pipeline network.

Commentary in notes related to Code Section 4.5 should be referenced if significant additional gas is present.

Any solids may be removed from the base of the separator, either by regular (~weekly) dumping to an on-site collection trough or at irregular direct collection (3-6 month) collection by or a phased transition between these options.

In an optimised design, water spur/flow lines (normally all DN 110/125) are collected into an in-line in-field storage system (IFS), either a pond or a tank, which allows the release of most entrained gas and solids. Thereafter, the de-gassed PFW can be pumped/transfered through the water gathering system to a centralised pond in a less-turbulent flow status, with vent (ARV/HPV) locations accordingly being less critically sensitive longitudinally (although preferably at/just downstream of high points), which can alleviate community concerns in rural-residential locations or near residences.

**NOTE 1:** The IFS can often use an adapted pond or tank from earlier E&A activities—either a turkey’s nest or a prefabricated tank. The location should also act as a future gas boost compression station.

**NOTE 2:** Water handling facilities at IFS normally comprise an open pond or tank into which the node flowlines (normally from 6-10 wells in number) free flow, at which time impurities—solids, fines and gas are removed. A small fit-for-purpose water pumping manifold comprising two pumps suitable for single phase flow transfer the de-gassed PFW to the main water handling and treatment infrastructure using larger DN [250/315/450] PE 100 water lines to major ponds and centralised water treatment facilities (RO plant or similar). Pumps may be powered by electrical cable or dual fuel gas/diesel generator sets. These IFS facilities, if installed at project commencement i.e. prior to drilling preliminaries team mobilisation, can often provide a safer, lower net cost means of transferring drilling water to each well lease, thus minimising or eliminating water delivery by trucks.

Such practices have been used in the past decade in the U. S. shale oil and shale gas field development for the transfer of the considerable quantities of water required for well stimulation operations over distances up to/exceeding 20 kilometres. This is often achieved by using re-usable
on-ground PE 100 pipe. Locally, similar transfer methodology may require the consideration and adaption of such processes, for full or partial lengths.

In a non-nodalised system, by contrast, the entrained gas will likely accumulate at high points and, if not removed can increase the operating pressure of the water gathering system and potentially both form a gas lock or eventually impact the operation of the wellsite equipment. Therefore, the water gathering system will need to have sufficient number of HPV’s to vacate gas from these locations. Design of HPVs are quite simple and at least two models of effective vents designed and manufactured in Australia are available.

### 3.5 Optimisation considerations

As stated previously, the gathering network design is defined by the FDP which is based on predicted performance of the wells in operation; and on standardised calculations and sensitivity checks. Once in regular operation, the field may perform at less than predicted flows. Proven options include wellhead or nodal boost compression or blowers, possibly twinning/looping pipelines. The initial design should always make provision for such brownfield plant changes or modification to the gas system.

#### 3.5.1 Emerging alternate gathering design options.

After the MAOP rating has been established for the gas or water service, design opportunities exist for single dual phase (gas/water) PE pipeline concept usage under several circumstances, including:

- Minimal water-producing CSG fields which may adapt beam or rod pump wellhead technology.
- CSG fields where downhole separation [using ESG pumps and separator systems] is used e.g. for ‘tight gas’ CSG fields.

Optimised design in such situations may possibly require the involvement of specialised third parties (e.g. PE material consultants) or adopt a risk-based fit-for-purpose approach, potentially involving a reduced life span.

### 3.6 Power supply considerations

Almost all CSG developments have had HV power supply, either overhead or buried cable, to all major compression or water transfer facilities for the following reasons:

- whole-of-life economic savings
- noise mitigation/ alleviation
- reliability.

However, while most wells have electrical power, and related data collection by buried fibre optic cable, several projects have adopted alternate wellsite power options: generators, micro turbines or (hydraulic power units (HPUs). Collected data over recent years indicates that these wells have lower reliability and availability. For such developments, electrical power supply to identified nodal locations (and nearby pods) warrants detailed assessment (this should include noise mitigation).

### 3.6 Process safety considerations

Both design approaches require a detailed understanding of the thermoplastic (visco-elastic) properties of polyethylene. PE 100 and associated resins continue to evolve, in particular its inert,
non-corrosive nature and (at normal operating temperatures) its resilience and ability to withstand short-term over-pressure excursion events.

CSG networks normally operate (for most their working life) at lower flows and pressures when compared to both conventional gas distribution networks and natural gas pipelines constructed from other materials, for example:

<table>
<thead>
<tr>
<th>Gas</th>
<th>3 bar reducing to 0.5 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>6 bar reducing to atmospheric at the ponds.</td>
</tr>
</tbody>
</table>

Similarly, CSG fields possess inherent pressure in the coal seams; once initial production wells are drilled, this retained pressure (shut-in wellhead pressure(SIWHP)) progressively reduces over the initial 1200-1500 days of operation. Any overpressure protection requirements for above ground upstream wellsite and downstream compression facilities are generally more than adequate for the protection of the gathering system, but need to be verified on a project by project basis.

Most CSG networks operate in locations where there is a low likelihood/low consequence risk associated with pipeline leaks, which enables ALARP to be readily attained, as has been demonstrated by the gathering networks associated with 5000 wells currently being successfully operated.

These operating envelopes and industry experience permit the use of risk-based fit-for-purpose design (as advocated in Section 4.5) to produce safer, more cost-effective (whole of life) and efficient gas and water networks, supporting the objective of maximising gas recovery from each CSG field.

4 ‘Best practice engineering’ example

The example below demonstrates but one application of the risk-based design methodology presented in this companion paper, and is provided as a ‘thought starter’ process for engineers unfamiliar with the complexity of integrated design.

Further commentary on the example is presented in table in section 4.1.

<table>
<thead>
<tr>
<th>Commentary</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>A ‘standard’ 100 well CSG field, based on an integrated optimised field development.</td>
<td>1</td>
</tr>
<tr>
<td>Assume 90 wells gathered through 8-10 nodes, with 10 ‘orphan’ wells.</td>
<td>2</td>
</tr>
<tr>
<td>Water flowline design: Small [DN110 or 125] PE, equivalent to gas flowline size (where practical).</td>
<td>3</td>
</tr>
<tr>
<td>Pre-fabricated water riser; optionally with a gas release valve (GRV), to direct gas to gas line. Objective, as for separator and spur / flow line high point vent (HPV) is to ‘de-gas’ PFW to ‘dirty water’ status.</td>
<td>4</td>
</tr>
<tr>
<td>Flowing to a nodal in field station (IFS), (using former exploration and appraisal ponds where available). Flowline tested to a SDR level above designated SDR; over pressure protection (OPP) set to operate at the higher SDR level.</td>
<td>5</td>
</tr>
</tbody>
</table>
IFS removes the gas and most contaminants (solids). Buried PE manifold is located at the node pond, fitted with a small bank of standardised water pumps.

Transfer de-gassed PFW to a centralised water treatment plant storage via DN 315/450 PE pipeline fitted with GRV at appropriate intervals (1000-2000 metres or as required).

Gas flowline design: Small [i.e. DN 110/125] PE, equivalent to gas flowline size (where practical).

Prefabricated riser with a buried PE ball valve for isolation at the base. Use coiled PE pipe if available in the required line size. LPD only if required (based on topography and flow).

Flowlines join/link at designated node, with buried PE manifold/spools [prefabricated] blanked to link to future nodal gas compression.

DN 315/450 lateral, connecting to the header/trunk line supplying the field or main compressor station.

Wellhead design: Outside of CoP Scope

Main requirement is an effective and efficient separator; optimum height for access – ease of maintenance/modification/plant change.

Solids/contaminants drainage line from separator base. If warranted, connect to a solids trough, otherwise evacuate by occasional collection by ‘vacuum sucker truck’.

### 4.1 Criteria and commentary

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>‘Integrated design’ typically only considers sub-surface coal seam gas feeding compression facilities. An example of ‘optimised design’ is a gas system design which has nodal / field compression outlet pressures of approximately 12.5 bar and 50 Celsius to permit PE pipe to be used downstream.</td>
</tr>
<tr>
<td>2</td>
<td>‘Nodes’. Node locations for a cluster/pod of wells to be selected on a topographic basis so that PFW flow can be managed by wellhead back pressure control valve (BPCV).</td>
</tr>
<tr>
<td>3</td>
<td>Flowlines ‘equal sized’ would lower overall cost and facilitate standardisation of emergency equipment and operations.</td>
</tr>
<tr>
<td>4</td>
<td>HPV - only install if required by elevation. Prefabricated and pressure-tested risers would lower fabrication and installation and facilitate standardisation of emergency equipment and operations.</td>
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<td></td>
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<td>---</td>
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</tr>
<tr>
<td>5</td>
<td>Flowline ‘higher SDR’ pressure test (for both gas and water) and facilitates higher OPP settings would enable wider effective range of BPCV operation; reduces incidental OPP relief events and associated loss of containment (LOCs).</td>
</tr>
<tr>
<td>6</td>
<td>IFS type depends on forecast life (turkey’s nest/prefabricated types are preferred designs). Pond role is to remove contaminants, especially solids, and entrained gas. This ‘normalises’ water quantities, provides some evaporation, and ensures predominately downstream single-phase laminar flow.</td>
</tr>
<tr>
<td>7.</td>
<td>The laminar flow is ensured by using appropriate water pumps. Availability is typically ([N/2 + 1]). N is normalised, based on ~ 85% wells operating at ~75% of peak flow rate, with (portable) pump redundancy. Where needed, powered by dual gas/diesel fuel generator sets, (if practical).</td>
</tr>
<tr>
<td>8. / 9.</td>
<td>Flowline LPD only if required by topography/elevation or flow volumes.</td>
</tr>
<tr>
<td>11.</td>
<td>LPDs as required. Simplify design. Drop to grade, except where automated design requirements mandate for environmental reasons.</td>
</tr>
<tr>
<td>12.</td>
<td>Wellheads - spooled design to expedite conversions between free flow and pumped during life. Measure pressure /temperature/ flow ((P/T/Q)) once-only (for both gas and water). Isolating valve in gathering scope.</td>
</tr>
</tbody>
</table>

### 5 Summary

No two wells, nor no two CSG fields, are the same. Each design should accordingly be fit-for – purpose, based on the same design principles.

One size fits all for any aspect or component is generally considered as fully contradictory to such optimised FFP design.

Competence is critical. Each engineer/manager involved in CSG design or approval should have the knowledge, experience and expertise required to achieve competency as outlined in the Competency Companion Paper, CP-02-001.
## 6 References

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>CP-02-001</td>
<td>Competency</td>
</tr>
<tr>
<td>CP-03-001</td>
<td>PE Material Selection and Quality</td>
</tr>
<tr>
<td>CP-05-001</td>
<td>Safety in Construction</td>
</tr>
<tr>
<td>CP-11-001</td>
<td>Safety in Operations</td>
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</tbody>
</table>