

# WELL INTEGRITY FOR WATER MONITORING WELLS

## CASE STUDY

Arrow Energy  
Surat and Bowen Basins, Australia

### AWT DISCIPLINES

Well Integrity  
Project Management



### PROJECT BACKGROUND

Arrow Energy was a small CBM exploration and development company focused on the Surat and Bowen Basins which was acquired by Shell and CNPC in 2010 to enable a large scale gas development.

Arrow was one of the four large CBM development companies in Australia with two domestic gas fields currently under operations and plans for a large scale CBM to LNG program with a final investment decision planned for early 2016.

After the acquisition of Arrow, both parent companies began to provide secondees and introduce various systems and standards to what was a low cost and relatively low risk business.

As part of a legislative requirement, Arrow Energy (Arrow) had drilled 32 water monitoring wells which were yet to be commissioned. As these were water wells, they did not meet any one specific standard, therefore Arrow's operational department was unwilling to accept the wells and start collecting the required data.

AWT was contracted by Arrow to assist in developing well handover and integrity check sheets for a series of recently drilled water monitoring wells.

**Location:**  
Australia

For more information contact:  
Tel: (+603) 2162 3127 or visit our  
website at: [www.awtinternational.com](http://www.awtinternational.com)

### AWT WORKSCOPE

AWT was tasked with developing well acceptance criteria to allow Arrow to evaluate compliance with internal and external standards and facilitate well hand over to Operations. This entailed:

- Developing well acceptance criteria
- Designing and developing a well handover pack template
- Collecting data and reports for each of the 32 existing wells as required in the handover packs
- Completing handover packs for compliant wells
- Reviewing well integrity data
- Assessing compliance of well integrity against internal and external standards
- Providing a summary of non-conformances.

### THE CHALLENGES

- Stakeholder management was a challenge given the level of secondees in the organisation and their desire to operate under international oil and gas standards, rather than local risk based fit for purpose standards
- The water monitoring program was not a standard gas well development, therefore there was a lack of awareness of risk and the objectives of the program which needed to be communicated
- Conflicting and varying set of objectives coming from various functions or departments needed to be navigated



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## AWT ADDED VALUE

AWT worked with Arrow's water team, drilling and completions department and operations department to develop fit-for-purpose well acceptance criteria which would allow Arrow to effectively evaluate whether their wells are compliant to internal and external standards, and ready to be handed over to Operations.

AWT's technical team took the lead in implementing the process by collecting the required well data, conducting a full well integrity review of all wells, and completing the handover packs for each of the 32 wells. Any discrepancies with documentation or highlighted integrity issues were risk assessed, with remedial work carried out if required

- Designed and developed well acceptance criteria for existing and future wells
- Prepared a handover process map for existing and future wells
- Designed and developed well handover templates, requirements and packages, including a single page well integrity summary
- Collected data, prepared and completed full and summary versions of handover packs for each of the 32 existing wells
- Conducted technical review of well integrity for each of the 32 existing wells
- Prepared a summary of non-conformances and provided recommended actions
- Assisted in the development of a hazardous area dossier for 4 wells by collecting and reviewing well data
- Provided project management services including planning, coordination with the client, and facilitating and attending workshops

At the end of the project all 32 wells were successfully handed over to Operations and Arrow now has a framework to develop other local fit-for-purpose standards. The following outcomes were delivered.

- A structured well integrity review process integrating Arrow's robust standards with local requirements
- Improved transparency on status of wells, making informed decisions easier
- Demonstrated compliance with internal and external standards