Land rehabilitation and handback

Chapter 09

In this chapter we cover:

- Rehabilitation responsibilities
- Governing rules for wells

Current as of April 2019
Rehabilitation responsibilities

TECHNICAL NOTE: RESTORATION VS REHABILITATION
Restoration can occur during the life of the resource project. For example, handing country back to the landholder with resource company infrastructure still in place. Rehabilitation is the final product – returned to its original condition pre-resource project.

The rehabilitation of gas production sites and facilities occurs at the end of operations, in consultation with the landholder and in line with current Queensland legislation. The government requires that rehabilitation commences within 6 months of infrastructure no longer being required.

At the end of a well’s operating life (usually 15-30 years), aboveground infrastructure is removed, the borehole is filled with cement or other suitable material, decommissioned, and a small dinner plate-sized cap or a stake with an identifier left behind to mark its location.

The conditions of the Environmental Authority state the standard and end use the land must be restored to. At a minimum, final rehabilitation ensures that:
- Affected areas are stable
- Surface drainage lines are re-established
- Topsoil is reinstated
- Vegetation is regenerated

The effective decommissioning of wells at end-of-life is crucial to avoid potential environmental legacy effects.

The ultimate authority to decide if decommissioning and rehabilitation has been properly completed lies with the state government, drawing on local and international experience.

Consultation with landholders is mandatory. Landholders must declare if they are satisfied with rehabilitation works, and may also negotiate to retain some of the infrastructure (e.g. fences, concrete slabs, dams) if that suits their future objectives.

The Queensland Government requires all resource companies to provide upfront financial assurance to cover the estimated costs of final land rehabilitation.
Case study

REHABILITATION PROTOCOL - SHELL

Shell’s QGC business has a policy of replacing subsoils, topsoils, any cleared woody vegetation or mulch and seeding an area after construction.

The company also installs drainage, erosion and sediment control devices such as berms and rock checks to minimise the risk of losing topsoil.

During operations the resource company maintains a footprint such as well pads, access tracks or areas cleared of woody vegetation across the top of pipelines to ensure access, safety and infrastructure integrity.

The ultimate aim is to rehabilitate any disturbance to background condition on completion of petroleum activities.

TECHNICAL NOTE: REMOVING AGREEMENT FROM LAND TITLE

Any valid CCAs or opt-out agreements are bound to the property and any future owners of the property, as well as any new holders of the resource authority.

These agreements remain attached to the property title until the resource company applies to remove it (when the agreement ends or no longer applies to land as a result of subdivision).

The resource company must apply to remove a valid agreement from the land title within 28 days of the agreement ending or being no longer applicable.
Governing rules for wells

Just as all gas wells must be drilled and completed in accordance with safety and other requirements of the Petroleum and Gas (Safety) Regulation 2018, all wells must be plugged and abandoned in accordance with that same regulation.

The Petroleum and Gas Inspectorate in the Department of Natural Resources Mines and Energy oversees a Code of Practice that ensures all petroleum and gas wells and associated bores are constructed, operated and abandoned to a consistent acceptable standard to ensure safety through long-term well integrity.

The code outlines industry standards and good practice for well design. It is designed to complement the resource company’s internal risk assessment processes, operating standards and procedures by outlining a recommended process to ensure:

• Risk to the public and workers is managed to a level as low as reasonably practicable
• Regulatory and applicable Australian and international standards/requirements, as well as the resource company’s standards, are understood and implemented where appropriate
• The life of a well or associated bore is managed effectively through appropriate design and construction techniques and ongoing well integrity monitoring
• The environment and groundwater resources are protected

AT THE END OF THE REHABILITATION PROCESS, THE STATE GOVERNMENT RESUMES ITS STEWARDSHIP OF RELINQUISHED RESOURCE TENURE ON BEHALF OF THE CITIZENS OF QUEENSLAND.
Case study
A NATURAL SOLUTION TO A BORED PROBLEM

Scientists at the University of Queensland believe they may have found a natural solution to the modern challenge of decommissioning old wells.

Led by Professor Brian Towler - who hails from Chinchilla - researchers are trialling the use of locally sourced bentonite clay formed into specialised plugs in place of cement.

Bentonite clay is already used to line dams and water storages and the principles apply to plugging wells.

The real advantage is that when they are hydrated they should be self-healing.

Once installed the plugs would be immune to seismic events, contortion and potentially even to corrosion of the well casing and may yet prove less expensive and easier to use than current methods.

To plug the wells, the bentonite is formed into cylindrical plugs a bit like an artillery shell in shape.

These plugs are then lowered or dropped down the well to cover over any exposed aquifers and then topped up with water.

The clay hydrates and expands, sealing the well by swelling out against the sides and remains in place indefinitely.

Bentonite is a stable geological material that has existed in the earth for millions of years. Field trials began in July 2016 on a water bore near Chinchilla and the effectiveness of the plug has been repeatedly tested to a pressure of 500 psi.

There are extensive deposits of bentonite in Queensland and the solution could help secure local employment to mine the bentonite as well as manufacture and insert the plugs.

The research trials are being completed at the University of Queensland’s Centre for Coal Seam Gas.
TECHNICAL NOTE: MAJOR PIPELINES
High pressure pipelines are buried at least 900mm underground and in some cases deeper.

They are generally constructed in sections with each section usually completed in under 12 months.

Disturbed areas are reinstated to match the existing landforms which often includes re-contouring and installation of permanent erosion control structures.

Topsoil conserved during the construction process is respread over the area.

The area is then rehabilitated in accordance with government requirements and landholder considerations such as cultivation areas, grazing and grass seed combinations.

Signs are erected at regular intervals with line-of-sight of one another to indicate the presence of the buried pipeline.