The gas industry and the mechanisms covering its operation in Queensland have spawned a range of terms and acronyms. This is a quick guide to some of the terms a landholder might themselves using far more often than they thought possible.

ACCESS AGREEMENT
A negotiated agreement between a resource company and private landholder relating to the rights over designated ‘access land’ (see below).

ACCESS LAND
This is land outside a declared resource authority area, over which it is reasonably necessary for a resource company to travel in order to access land subject to their resource authority.

ACCESS RIGHT
A resource company’s right to cross access land (where reasonably necessary) or carry out activities on the access land that are reasonably necessary to allow the crossing of that land.

ADVANCED ACTIVITY
An authorised activity for the resource authority that is not a preliminary activity.

AUTHORISED ACTIVITY
An activity permitted for the resource authority by the particular Act under which it is granted.

BCF – Billion cubic feet (of gas).

BOE – BARRELS OF OIL EQUIVALENT
A unit of energy approximating the energy released by burning one barrel (158 litres) of crude oil.

CONDUCT AND COMPENSATION AGREEMENT
A legal agreement between a landholder and a resource company relating to proposed activities or conduct and, where there is impact on the landholder, compensation arrangements for those activities.

CSG
Natural gas contained in coal seams.

Deferral Agreement – a legal agreement in which a landholder and resource company agrees to defer the negotiation of Conduct and Compensation Agreement until a later date and after the resource company has accessed the land to undertake advanced activities.

FRACKING
See Hydraulic Fracturing (below)

HYDRAULIC FRACTURING
(aka fraccing, fracking) a safe and established method used by the petroleum and gas industry since the late 1940s to increase the rate and total amount of petroleum and gas extracted from reservoirs. Water, sand (99%) and household chemicals (1%) are pressure pumped into steel-encased wells to stimulate the opening of cracks in gas-bearing formations. In Australia, the technique is used in approximately 20–40% of wells.

HYDROCARBONS
Are organic compounds comprising hydrogen and carbon. Hydrocarbons are the principal constituents of oil and gas.

LANDHOLDER
– owner and/or occupier (e.g. rental tenant) of private land.

LNG
Liquefied natural gas.

METHANE
– molecules comprised of hydrogen and carbon (CH4)
– the primary constituent of natural gas.

NATURAL GAS
Primarily methane extracted from gas-bearing underground reservoirs.

OPT-OUT AGREEMENT
A legal agreement in which the landholder chooses to ‘opt-out’ of the requirement to enter into a Conduct and Compensation Agreement or Deferral Agreement.
Glossary

Petroleum
Liquid, gaseous and solid hydrocarbons including oil, natural gas, gas condensate, ethane, propane, butane and pentane.

Permanent Impact
A continuing effect on land, its use, or a permanent or long-term adverse effect on its current use by the land’s occupier.

Permeability
The degree to which gas or fluids can move through a porous material, such as rocks.

Preliminary Activity
An activity that will have no impact or only a minor impact on the business or land use activities of a landholder on which the activity is to be carried out.

(N.B. These activities are not considered preliminary activities if they are carried out on land that is being used for intensive farming or broadacre agriculture that is less than 100ha in size or if they affect organic or bioorganic farming.)

Private Land
Is freehold land or an interest in land less than fee simple held from the State under another Act. However, land is not private land to the extent of an interest in a resource authority under a resource Act.

Proven Reserves (1P)
Petroleum that can be estimated with reasonable certainty (at least 90%) to be commercially recoverable. Also known as 1P/P90 reserves.

Proven, Probable and Possible Reserves (3P)
Proven and probable reserves plus reserves deemed possible (at least 10%) to be commercially recoverable. Also known as 3P/P10 reserves.

Resource Act

Resource Authority
An authorisation from the Queensland Government for a resource company to carry out specified activities over an area of land, including privately owned land.

Resource Company
A resource authority holder or their agents or representatives.

Restricted Land
Land around particular buildings and areas that a resource company cannot enter without written permission from the landholder(s).

Shale Gas
Natural gas that is contained within shale formations.

TCF
Trillion cubic feet (of gas)

Tight Gas
A natural gas field that can be made economic with a combination of horizontal wells and fracture stimulation (see hydraulic fracturing).
Understanding resource authorities

Before the Queensland Government considers issuing a resource authority permitting specified activities on private land, it must be satisfied that the applicant (resource company) has the financial and technical capability to ensure planned activities are sufficiently funded.

The applicant must also pay a security deposit and financial assurance (rehabilitation bond) and may be liable for 12 months’ land rent in advance.

Before a resource authority is issued, the resource company must also have:
- An appropriate Environmental Authority (EA) issued by the Department of Environment and Science
- Fulfilled all legal obligations under national Native Title Protection conditions
- Regional interests development approval if the resource authority application area contains high-value living, agricultural or environment areas under the Regional Planning Interests Act (2014).

A resource authority holder must comply with the following reporting obligations, as well as with specific conditions attached to the authority.

**REPORTING OBLIGATIONS**
- Water
- Development plans and work programs
- Permit administration and authority renewal
- Rent and royalties
- Collecting and maintaining drill core and drill samples
- Land access requirements
- Native title protection conditions/native title agreement
- Indigenous cultural heritage
- Environmental authorities
- Restricted areas, reserve land
- Overlapping authorities
- Safety and health

**TECHNICAL NOTE: EXPLORATION**

The Geological Survey of Queensland collates and distributes geoscience data and information on the State’s resource potential. This information can highlight areas in Queensland that are made up of certain geological formations that can potentially contain gas reserves.

The government releases potentially viable areas of land and provides authority for companies to further explore these areas and confirm if/how much gas can be produced.

Once given the required authority, explorers further examine the local geology and undertake activities such as seismic surveys and drilling.

**SEISMIC SURVEYS**

Trucks emit sound vibrations from the earth’s surface and measure the time taken for the sound waves to reflect signals back from geological formations underground.

These measurements produce an image of what’s underground, indicating rock density and the likely presence of gases.

**DRILLING**

Informed by seismic images, exploration and appraisal wells are drilled to further confirm what’s underground. Core samples and rock cuttings that are brought to the surface from drilling are examined to determine the physical properties of the underground reservoirs.

Explorers also lower specialized logging equipment into the well for more information. Exploration wells confirm the presence of gas. Appraisal wells assess the flow rates to confirm the gas can be extracted in commercial quantities.
Petroleum & gas resource authorities

AUTHORITY TO PROSPECT (ATP)

To explore for petroleum, oil, or gas in Queensland, a resource company must hold a current authority to prospect (ATP). The Queensland Government provides an annual offering of exploration tenure and a resource company must submit a tender to be awarded an ATP.

Under an ATP, a resource company commits financial and physical resources to undertaking verifiable exploration activities. An ATP lasts 12 years and the resource company must hand back 33% of the ATP area every four (4) years. The government can also withdraw component ‘blocks’ if agreed activities are not conducted. A company may apply for relief from ‘use it or lose it’ provisions because of circumstances beyond their control.

An ATP allows the resource company to:
- Explore for petroleum and gas
- Test for petroleum and gas production
- Evaluate production feasibility
- Evaluate or test natural underground reservoirs for the storage of petroleum and gas.

Under an ATP, preliminary activities are undertaken followed by seismic investigations and the drilling of core samples to investigate whether resource deposits exist, and if so, their size and depth. An exploration well may be drilled to obtain further data by examining rock cuttings and using specialised ‘down hole’ logging tools.

If these activities indicate there is a potential resource warranting further investigation the resource company may drill a small number of appraisal wells to understand whether the resource is technically and financially feasible to develop. This is also known as ‘production testing’ or a ‘pilot test’.

In general, the installation of underground pipelines for either water or gas is not included on an ATP. If a pilot test is conducted government regulation requires that any gas produced is flared (rather than vented) and water and other fluids are contained, treated and/or removed from site.

A resource company has an obligation under its EA to rehabilitate the land on completion of the exploration activities.

Exploration is not necessarily a pre-cursor to production. As geology varies over relatively short distances, so do resources, and their prospectivity. Adjacent wells can also perform differently, confirming that the earth can play as many tricks as the weather.

LANDHOLDER TIP:
ATPs can cover a maximum of 100 blocks on a linear grid of Queensland and measure up to 75 square kilometres (7,500 hectares) each, depending on location.
Petroleum Lease (PL)

With evidence of a commercially viable discovery, a petroleum lease (PL) can be issued over the area of an ATP. If a PL is granted, that area is excised from the ATP. A PL lasts up to 30 years and a resource company can apply to the government to have the tenure renewed.

The resource company has an obligation to rehabilitate the land when production ceases. This is staged for projects where wells cease production at different times.

A PL allows exploration, construction and commercial production. ATP-related activities can continue under a PL, particularly if a resource company is trying to understand how rocks perform in different areas of the tenure.

Types of infrastructure associated with development on a PL includes access tracks, production wells, gathering lines and associated above ground infrastructure, temporary camps, compression facilities, dams, water treatment facilities, gravel pits and laydown areas. The larger facilities are small in number and are often located on land owned by the resource company.

Potential Commercial Area (PCA)

If a resource company with an ATP makes a discovery that is not feasible to develop at that time owing to a lack of market infrastructure or potential to roll into a larger development project, the company can request a potential commercial area (PCA) declaration for evaluation purposes.

This is a means of retaining the area beyond the maximum 12-year ATP term, with a PCA current for up to 15 years. A commercial viability report and an evaluation program confirming how the company would overcome challenges to the project’s commercial viability must accompany a PCA application.

Pipeline Licences (PPL)

Pipelines are required to transport petroleum, gas and/or water to processing facilities and then into larger pipelines for distribution. It is increasingly common for a number of lines to be co-located including optic fibre and electricity. If a resource company wishes to construct a petroleum pipeline outside the area of their PL, they need a petroleum pipeline licence (PPL). A PPL confirms the right to construct and operate a pipeline on designated ‘pipeline land’, defined as land that the resource company either owns or over which it has:

- An easement (see note immediately below)
- A written agreement with the landowner to enter to construct and operate the pipeline
- Part 5 permission

NOTE: To excise an easement from a petroleum tenure the same operating entity needs to be involved i.e. XYZ Pty Ltd is the holder of the tenure and the pipeline. This is at the discretion of the company also noting that upstream (production) and downstream (distribution/wholesale/retail) resource companies are separate entities.

While it seems logical to run pipelines along the most convenient easement, there is always complexity negotiating with a third party such as a rail or power company, also noting specific separation distances. In most cases, a resource company will approach the landholder first to negotiate an easement before examining other options. Bottom line – the shortest distance between two points is a straight line.

Should easement negotiations fail and as a last resort, a resource company can apply for what is known as a Part 5 permission (see later section).

PIPELINE LICENCE TYPES:

- **AREA PPL** – covering a system of pipes within the licence area rather than individual licences for each pipeline. An area PPL can extend over several adjacent petroleum leases
- **POINT-TO-POINT PPL** - granted from one point, or points, to another point, or points
Petroleum facility licence (PFL)

This is required for a processing, refining, storage or transport facility on private land that is not already covered by a PL or PPL. A PFL allows construction of a facility on ‘petroleum facility land’ – land either owned by the resource company or land over which there is:

- An easement
- A written agreement with a landholder to enter to construct and operate the facility on their land
- Part 5 permission (section below)

A petroleum facility built on private land must following negotiations with the landholder, usually resulting in the creation of an easement in return for some form of compensation.

Information gathering authorities

These are authorities to conduct authorised activities off tenure. They are not tenures in their own right.


INFORMATION GATHERING AUTHORITIES INCLUDE:

Petroleum survey licence (PSL) – grants a right to enter land to survey the proposed route of a pipeline or the suitability of land for a petroleum facility licence. Can be granted for a maximum of two (2) years, only allowing activities with minimal land impact. There are no area limitations.

Data acquisition authority (DAA) – authorises a resource company to conduct limited geophysical survey activities and collect data from outside their ATP or PL. Only granted over land contiguous to the granted ATP/PL, and for activities directly relevant to authorised activities of the ATP/PL. A DAA can be granted for a maximum term of two (2) years and ends if the ATP/PL with which it is associated ends.

Water monitoring authority (WMA) – an ATP/PL holder has an obligation to monitor potential impacts to groundwater levels on a regional scale and ‘make good’ if private bores are impaired due to their activities. A water monitoring authority (WMA) over land outside the area of an ATP/PL is available to comply with those obligations. The WMA ends if the ATP/PL with which it is associated ends.
**Part 5 permission**

No-one aspires to end up here, as it signals a complete breakdown in negotiations between a resource company and landholder over land access for a pipeline or facility.

With a Part 5 permission, the Queensland Government can resume the land in question with compensation paid to the landholder.

It is only ever contemplated after strong supporting arguments and evidence of ongoing negotiations and consultation between the parties. If a Part 5 permission proceeds, land resumption can take place within nine (9) months.

**BOTTOM LINE**

This is a lengthy and ultimately frustrating process that should be avoided.

There are alternative dispute resolution (ADR) services available through DNRME, the Land Access Ombudsman, Land Court of Queensland and non-government providers (see Chapter 3 – Helping Hands).

---

**LANDHOLDER TIP:**

Further information about resource authorities is available on the Business Queensland website: https://www.business.qld.gov.au or by using the search terms: ‘APPLYING FOR A NEW PETROLEUM OR ENERGY RESOURCE AUTHORITY.’

The Queensland Land Access Code (2016) is another valuable source of information.
Well operation terms

To assist landholders, CSIRO’s Gas Industry Social and Environmental Research Alliance (GISERA) has compiled definitions for a range of industry terms linked to the petroleum and gas well lifecycle. Some terms are self-evident, while others have industry-specific meanings.

CEMENT
Cement is placed in the wellbore, filling the space between the outside of the casing pipe and surrounding rock, and is also used to ‘hold’ the casing in place. Cement is also used to plug the inside of the well when it is abandoned. The cement used in wells typically consists of Portland cement mixed with water and special additives to achieve desired performance. The cement mix is designed to suit the local geology and well-specific engineering requirements. Laboratory testing checks the cement design and performance against well conditions.

DRILLING
Drilling a well involves getting a drilling rig and associated equipment to the site, drilling the well, completion of the well and demobilisation of the drilling equipment. Drilling rigs used for CSG wells are typically smaller than those used for conventional petroleum wells as the target coal seams are at shallow depths compared to conventional petroleum resources. The rigs may be mounted on a single truck, with support vehicles, or be transported using several semi-trailers. The drilling stage occurs over several days to several weeks, depending on the depth and design of the well.

DRILL CUTTINGS
An 800-metre deep CSG well will produce around 50 cubic metres of drill cuttings, which are rocks removed from the hole. Drill cuttings have traditionally been captured in drilling sumps or pits. They are typically disposed of on-site, through the mix-bury-cover method. However, pitless drilling techniques may be used to manage the drilling fluid and cuttings.

PLUGGED AND ABANDONED
Once a well is no longer required, the well is plugged and abandoned. Abandonment aims to plug the well in perpetuity, preventing any movement of gas or water between rock layers in the subsurface or to the surface. Effective abandonment needs all potential fluid flow to be blocked, and relies on the integrity of the casing-cement-formation system as well as cement plugs placed inside the casing.

Cement
Cement is placed in the wellbore, filling the space between the outside of the casing pipe and surrounding rock, and is also used to ‘hold’ the casing in place. Cement is also used to plug the inside of the well when it is abandoned. The cement used in wells typically consists of Portland cement mixed with water and special additives to achieve desired performance. The cement mix is designed to suit the local geology and well-specific engineering requirements. Laboratory testing checks the cement design and performance against well conditions.

Completion
After a well has been drilled for production purposes it is ‘completed’. This involves installing a wellhead at the top of the well and completion hardware inside the well that allows the well to be operated as required. The completion will vary depending on the purpose of the well (production of gas, de-watering, monitoring).

Decommissioning and Rehabilitation
Decommissioning involves rehabilitating the surface around the well pad and plugging and abandoning the well. Rehabilitation can begin as soon as drilling is completed and includes removing or burying rock cuttings, and disposing any fluids. A small area around the wellhead is retained for surface infrastructure.

Delamination
Delamination is where pathways are created between the layers of cement, casings, or surrounding rock that could compromise the long-term integrity of a well.
**Well operation terms**

**DRILLING FLUIDS**
Drilling fluids are typically made up of water and additives that reduce the friction between the drill rods and the wellbore walls, increase density and thickness of the fluid to help remove rock cuttings, and decrease the reactivity of the drilling fluid with the rock layers being drilled. Additives may include:

- Clays (primarily bentonite) to increase the thickness of the drilling fluid and to reduce loss of drilling fluid into the geological layers being drilled
- Additives such as polymers to increase thickness and provide lubrication
- Salts (typically potassium chloride or potassium sulphate) to limit damage to the geological layers being drilled and increase the density of the drilling fluid.

The amount of drilling fluid required for a well will be around 50,000 litres, although this will vary depending on the diameter and depth of the well and the characteristics of the formations the well intersects.

**SUSPENDED WELL**
A well not currently operating (not producing or being used for monitoring), but that has not been plugged and abandoned permanently.

**WELL/WELLBORE**
Deep vertical holes drilled into the earth to extract oil and gas. They provide a pathway for the flow of gas and water to the surface. Once a well is drilled, steel casing, also known as a casing string, is run into the well hole and cemented into the ground.

**WELL CASING**
The well casing provides structural integrity and a channel for the flow of fluid. Casing is made of a series of hollow steel pipes, known as strings, which are connected as they are lowered into the well. Engineers select the casing based on the characteristics of the local geology, the well design and any anticipated treatments, such as hydraulic fracturing. The casing is cemented into the well, sealing the gap between the casing and the rock formations the well is drilled through.

**WELL INTEGRITY**
Well integrity prevents the unintended flow of gas or water into or out of a well. This includes at the surface or between rock layers in the subsurface, and is critical to maintain safe operation of the well and to protect the environment. Well integrity establishes barriers to control the flow of gas or water with elements including casing cemented into the well, a wellhead to control the flow of gas and water at the surface, and operational procedures to manage and maintain the well.
Seven tips for CCA success

01. TAKE TIME
   Commit time upfront to understand the gas company you are dealing with, their proposed timeline and program of activities on your property. Take time to work with the company to plan the layout and location of infrastructure on your property.

02. GET ADVICE
   Put together your own advisory team of experts across a wide range of disciplines and share experiences with your neighbours. Most reasonable costs for professional advice are required to be reimbursed by the gas company.

03. KEEP TALKING
   Maintain communication, even if negotiations hit roadblocks or get stressful or frustrating. This will help both sides better understand each other and find solutions to move forward.

04. THINK BUSINESS-TO-BUSINESS
   Treat negotiations with gas companies like any other business partnership. Focus on opportunities to diversify your business and positively align gas company activities with your business plans.

05. USE YOUR PROPERTY PLAN
   Have on hand a documented plan for the future development of your property and business when undertaking negotiations. Provide maps of your property detailing no-go zones, infrastructure, production cycles and any biosecurity risks.

06. MEASURE BASELINE IMPACTS
   Keep a simple record of the state of your land, soils, pastures, weeds, vegetation, roads and infrastructure before and after a resource company undertakes activities. This will help quantify and measure impacts and disturbance to your business over time.

07. KNOW KEY CONTACTS
   Seek details of key contacts for sources of information such as your local compliance officer. Phone 137 107 or email resources.info@dnrme.qld.gov.au.