Construction phase

Chapter 07

In this chapter we cover:

- Pre-construction meeting opportunity
- Construction phase (what to expect)

Current as of April 2019
Before work begins

In many cases the highly focused nature of a CCA negotiation gives way to a period of relative inactivity as the resource company confirms its work program.

The resource company may arrange a pre-construction meeting on your property to brief workers, not only on the agreed access rules and conditions that you have negotiated, but also the company’s proposed scope of works.

The landholder’s attendance at this and other impromptu meetings is a sound investment in reinforcing the rules and expectations surrounding construction on your land.

Sharing your expert knowledge and getting to know the people and their roles helps build a respectful atmosphere.

“LANDHOLDER TIP:
The construction phase is the source of the most disruptive activity associated with petroleum and gas development.

As a general rule, it can take 5-7 months from the start of a well pad to operational handover.

The industry has developed new techniques to reduce time and property impacts but it is also the subject of adaptive monitoring and regulation.”

“A good land access officer knows our property, knows our business and can communicate our issues through the right channels in the company in order to try and resolve problems.”

– Wandon grazier
Construction phase

The resource company will canvass with you a range of subsequent activities that might include:

**Access tracks**

Access tracks give resource company employees and contractors the means of getting to and from work.

Where practical, a resource company will use existing tracks, which in some cases may require upgrading (at their expense) to accommodate large equipment including truck-mounted drilling rigs.

If new tracks are needed, the company should consult the landholder to determine their best location to minimise disturbance. As a general rule, most new tracks are located along previously cleared markers such as property boundaries and fence lines.

Access tracks may need berms (or contours) constructed to reduce roadway and shoulder erosion. These are a project efficiency investment if done properly. Done badly or with short cuts, they can add to road maintenance and delays.

The resource company is expected to maintain all tracks required for access to their infrastructure during its operational life. In many cases, landholders see these tracks as a property improvement that they might like to maintain after gas operations are concluded. It’s worth discussing this possibility with the company and relevant local authorities at the earliest opportunity.

**LANDHOLDER TIP:**

Resource companies place great store in establishing and maintaining good working relationships with landholders. Staff and contractors work to strict guidelines and standards of behaviour but your best insurance is always effective and regular communication with your assigned land access/liaison officer.
Gas wells

The site chosen for a gas well is generally cleared and levelled. Because of the equipment in play and for the safety of workers initiating construction, the pad area is noticeably larger than that required when the well is commissioned.

Drilling rigs construct the well from which petroleum and gas is extracted. Several rigs may be used as wells are installed in multiple stages.

As each section is drilled, casing is installed and secured before the next stage.

There will be a significant amount of activity on the well pad during the drilling phase.

Once the well becomes operational, the well pad is reduced in size to minimise its footprint and previously disturbed land is rehabilitated however the lease area needs to remain large enough to accommodate a workover rig for future maintenance.
The conclusion of drilling construction leads to the installation of aboveground production facilities and fencing. This may happen immediately after drilling or be delayed to coincide with broader engineering requirements.

These facilities ensure the safe and controlled production of gas and water, and typically include:

- **Wellhead facility** – a mounted unit that safely separates gas and water and controls the flow into the below ground pipe system
- **Power unit** – powers a pump at the bottom of the well
- **Remote terminal unit** – links the well to a control system for remote monitoring and operation and
- **Solids disposal tank** – a collection vessel for sediment that collects in the separator

**How it works**

- **Gas gathering line** leads from the well to the gas separator.
- **Water gathering line** leads from the well to the water separator.
- **Well casing** is typically 200m to 1000m deep.
- **Coal seam** is the layer of rock or sediment that contains the gas and water.
- **Gas flows up casing**.
- **Water is pumped up tubing**.
- **Gas to processing plant**.
- **Water to treatment plant**.
Santos has developed a number of ways to reduce the time it spends and the disturbance it causes during the construction phase.

1. DRILLING DAYS
Since 2015, the average number of days taken to drill a well has fallen to around 3 days, a reduction of more than 70 percent. New drilling technology has resulted in a reduction in the time Santos needs to spend on a landholder’s property.

2. WELL PAD CONSTRUCTION
Santos has also introduced the concept of ‘minimal disturbance’ well pads that significantly reduce the physical work and disturbance to ground cover when constructing a well pad.

In most scenarios the well pad no longer needs to be exactly level – previous cut-and-fill activity is now replaced by simply mowing the grass.

These changes further reduce the time work crews spend on the property as well as the time needed to rehabilitate the site.

3. DEVELOPMENT ACTIVITY
Standardisation of infrastructure such as fences and grids has improved the efficiency and quality of installation and reduced the amount of rework required.

Improved up-front planning, involving experts from land access, engineering, cultural heritage and environment teams among others, means Santos now makes less visits to a landholder’s property before construction and there are less people involved on the ground, minimising disturbance to landholder’s activities.

Co-locating buried infrastructure (running multiple lines in one trench) where possible has also reduced the width of right of ways and minimised disturbance.
Gas gathering

A production well is connected to an underground pipe system, commonly known as gathering that transports gas and associated water to processing and treatment facilities.

A trench is dug for the gathering pipes to be lowered into the ground. The trench is filled with excavated material and the area where the gathering is buried (aka ‘right of way’) is covered with topsoil and reseeded.

Where possible, gathering is located alongside access tracks or cleared areas such as property boundaries to minimise impact and allow for regular property activities on the surface.

In some developments, high point vents (HPVs) and low point drains (LPDs) may be necessary to optimise the movement of gas and water through the gathering lines.

HPVs are installed in water lines typically at higher points in the typography to allow any remaining gas dissolved in the water to escape.

LPDs are typically installed in gas lines at lower lying areas to allow for the removal of any condensed water.

Both HPVs and LPDs occupy relatively small areas of land.

Additional infrastructure

This may include but is not limited to:

- Large pipelines that connect field compression stations to central processing plants
- Dams that store water produced from wells to be ultimately transported via pipeline to a water treatment plant for beneficial use
- Temporary camp(s) for gas company staff and contractors
- Gravel pits to supply gravel used to build access tracks and well pads
- Aboveground infrastructure associated with gas gathering such as high point vents or low point drains
- Laydown areas for storing materials associated with activities in the area
Commissioning & startup

After system compliance checks and strength testing of all aboveground facilities and the gathering network, the well is ready to be turned on to start producing gas.

Petroleum wells, gathering systems and processing facilities are constructed to Australian or international standards or codes of practices where applicable.

Pressure testing occurs prior to commissioning to verify the integrity of the plant and the operators conduct routine monitoring to ensure ongoing safe operation.

Source: Petroleum and Gas Inspectorate (Pipeline) Code of Practice (DNRME September 2018)

“Communication goes a long way. Lack of communication can then breed a bit of doubt, a bit of trouble, that sort of thing. But by talking, then everyone knows what page you’re on and it’ll go a long way.”

– Wallumbilla landholder.