Seismic Survey

August 2023

Seismic survey

A seismic survey is used to gather detailed images of the rock formations below the earth's surface.

Sound waves are created by a vibrating pad that is mounted on a truck or buggy. The pad vibrates along the ground and the sound waves reflect off underground rock formations.

Sound waves are picked up by small, highly receptive microphones, called geophones, for analysis.

Seismic surveys:

- gather information on coal depth and any physical features that may have altered coal seam depths and physical structure in the area
- assist in developing a regional and local geological computer model
- assist in defining viable reserves and coal seam boundaries for further exploration.

Small wireless geophones are spiked into the ground every 5-20m along the survey line.

Impact

Arrow's seismic surveys are carried out in a way that causes minimum impact to the land and environment.

What to expect

Arrow's seismic survey process includes:

- **pegging and surveying**
  - pre-site inspections
  - placing small wooden pegs and biodegradable paint markers at set interval to ensure the correct path is followed when preparing the site and acquiring the seismic data
  - placing a peg in the ground at set intervals to ensure the correct path is followed when preparing the site and acquiring seismic data.
- **line preparation**
  - slashing long grass, woody herbage, small shrubs and saplings for technical, safety and visibility reasons. All alternative options including practical rerouting will be considered to minimise or mitigate the impact of slashing
  - stick raking to remove logs and large sticks that could create a hazard or barrier
  - please note, all activities along public roads will be supported by traffic management plans, including possible reduction of speed limits and/or a stop and go, in some cases.

Surveying is taken alongside the seismic line

- **seismic data collection**
  - a wireless receiver system with 'nodal' self-contained geophones will be used. These do not require any additional cables and will be located five to 50 metres along receiver lines
  - the geophones will be buried in small auger holes approximately 15cm deep and 12cm in diameter
  - trucks travel along a path and vibrate over a period of seconds every five- 50 metres, depending on geophone spacing
  - once the recording is complete for the area, the geophone will be removed and soil placed back in the hole.

Once work is completed, all pegs are collected and equipment removed. The site is then assessed by an environmental scientist and rehabilitated, if necessary. This process takes approximately one week after completion of the seismic survey.

Example of surveying path cut with a slasher. Blue pin flags mark the path for seismic data collection

About Arrow Energy

Arrow Energy's origins date back to 1997, when it was formed to explore for hydrocarbons in the Northern Territory. More than two decades ago, Arrow switched focus to Queensland and became one of the pioneers of the state's coal seam gas industry.

Today, Arrow owns and operates Braemar 2, a 450-megawatt gas-fired power station south-west of Dalby and is developing the Surat Gas Project in western Queensland. Sanctioned in 2020, the Surat Gas Project's first phase comprises more than 600 coal seam gas wells and will bring 5 trillion cubic feet of gas to market over 27 years.

We employ around 600 people and support our host communities with sponsorships, donations and grants under our Brighter Futures social investment program.

Arrow is a 50/50 joint venture between Shell and PetroChina.

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