



# Open cut and trenchless road crossings

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Arrow Energy's existing Surat Basin operations are supported by an underground network of low-pressure pipelines (the gathering system) that connect natural gas wells to Arrow's water and gas networks.



Auger bore crossing

## Area Wide Planning

Area Wide Planning (AWP) is Arrow's process of working with neighbouring landholders (or groups of landholders) as we plan a development, to identify property constraints and future land uses.

Where possible, we position our infrastructure where it least affects a landholder's activities.

AWP allows Arrow to incorporate local knowledge into our field designs. It is a process that supports our coexistence with established agricultural operations.

## Designing gathering pipelines

The path of the gathering system, including where it intersects with the road network, is influenced by our AWP process. The location of this pipeline considers impacts to the property, the property's land use and the landholder's day-to-day activities. We also consider future land use.



Open cut crossing

## Constructing gathering pipelines

Three methods are traditionally used to install a gathering system across an existing road: open cut crossings, Horizontal Directional Drilling and Auger boring. A range of factors inform the construction methods including traffic volumes, disturbance to community, profile of the road and the authority that manages the road.

## Open cut crossing method

In the Surat Basin, Arrow typically uses the open cut crossing method to install gas and water gathering pipelines as they intersect a road.

This method digs a trench across the existing road corridor to lay the gathering system and then replaces the road surface. This process is typically used for local roads, with low traffic volumes.

### The open cut process:

- Implement on the traffic management plan authorised by the local authority, to ensure works are carried out safely with reduced impact to local communities
- Ensures the road remains **open at all times**, although delays might be experienced
- Enables construction works to take place typically between **6am – 6pm**
- **Requires minimal** earthworks and construction infrastructure.



Auger bore

## Horizontal Directional Drilling/ Auger bore methods

Horizontal Directional Drilling (HDD) and Auger boring are trenchless methods of installing a gathering system as it intersects a road.

These methods allow gathering system pipelines to be installed by directional drilling/ Auger boring between an entry and exit point, without any disturbance to the road surface. The HDD/ Auger bore methods are predominately used when crossing an arterial or heavily trafficked road.

### The HDD/ Auger process:

- Delivers on the traffic management plan authorised by the local authority
- Does not impact the road surface or road corridor
- Enables the road to remain **open at all times**, with no delays experienced due to construction works
- Enables construction works to take place typically between **6am – 6pm**
- Sees entry and exit pits are installed either side of the road and **requires** earthworks and construction infrastructure
- Is considerably longer in construction duration than open cut methods.

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