Construction of water and wastewater pipelines

Logan Water Infrastructure Alliance is delivering new and improved water infrastructure throughout Logan City. This includes the construction of new water and wastewater pipelines using conventional and ‘trenchless’ construction methods.

Why are new pipelines needed?

Logan is one of Queensland’s fastest growing areas, with the City’s population forecast to reach approximately 434,000 people by 2031.

To support this growth, new pipelines are required to provide essential water services to residents, businesses and industry.

Existing pipelines also need to be upgraded in some areas to improve their capacity, reliability and environmental performance.

Who is installing the pipelines?

Logan City Council has appointed Logan Water Infrastructure Alliance to plan, design and manage the installation and / or upgrading of water and wastewater pipelines across the City.

Logan Water Infrastructure Alliance construction contractors install a new water pipeline using an open trench construction method.

A micro-tunnelling machine breaking through the ground.

These pipelines range from large diameter ‘trunk pipelines’ to smaller diameter water supply networks.

Logan Water Infrastructure Alliance is a public and private sector enterprise involving Logan City Council, and engineering service providers Downer, Cardno and WSP | Parsons Brinckerhoff.

The alliance was established in July 2015 to meet the demand for water services in Logan. It will deliver new and improved water and wastewater infrastructure across Logan until at least mid-2018.
How are new pipelines constructed?

Logan Water Infrastructure Alliance’s construction contractors use a variety of methods to install new pipelines. Sometimes, several methods can be used to lay sections of one interconnecting pipeline.

The choice of construction method is influenced by a number of factors including ground conditions; site constraints such as busy roads, waterways or significant vegetation; and available funding.

A traditional construction technique commonly used in Logan is ‘open trench’ pipe laying. This method involves the progressive excavation of an earth trench and laying of sections of pipeline on a bed of gravel or supports. Once a section of pipeline has been completed, the trench is backfilled and the area restored.

Less conventional methods, known as ‘trenchless construction’, have fewer impacts on the ground surface. Alliance construction contractors often use these technologies to install pipelines under main roads, waterways, significant vegetation or existing buildings.

Common trenchless construction methods include:

- **Auger boring**: A method whereby pipes are pushed into place underground while the earth inside them is removed using a rotating cutter head.
- **Horizontal directional drilling**: A method that uses a directional drill to dig an earth tunnel which is filled with bentonite slurry to maintain its stability. Sections of pipeline are assembled above ground and pulled or pushed into the tunnel, then anchored in place.
- **Micro-tunneling / pipe jacking**: A method that uses a remote-controlled tunnel boring machine to lay pipes underground. As the tunnel boring machine drills forward, pipes are lowered into place behind the machine and pushed into the tunnel using hydraulic rams.

How will pipeline construction affect me?

All pipeline construction methods have the potential to cause temporary construction noise, increased dust or vibration near work sites, and local traffic changes.

Even trenchless construction methods, which significantly minimise ground disturbance, involve the construction of earth or concrete pits or shafts at each end of a section of pipeline (eg every 200m).

What will the finished pipeline look like?

All pipeline construction sites are restored as closely as possible to their original condition.

Above ground, the only indication of a completed pipeline is a series of manhole covers located along the pipeline route. These covers are secured but can be accessed by Council personnel for pipeline maintenance purposes.