A buckle initiator is loaded from the Orontide facility in Henderson, ready for transport to the Gorgon project.

Buckle initiators designed for Gorgon

A SERIES of Western Australian-built buckle initiator structures, used to control the movement of a subsea pipeline, have been safely placed on the sea floor as part of the Gorgon project's offshore operations and subsea pipeline buckle mitigation methodology.

Subsea pipelines are increasingly being required to operate at higher temperatures and pressures, putting the pipeline, particularly high pressure, high temperature production pipelines operating underwater, under axial stress.

The natural tendency of a pipeline under that kind of stress is to bend, flex or buckle under the pressure – a habit which has serious consequences for future pipeline integrity.

"For this reason, the set of 11 buckle initiators were used to control the resultant movement of the pipeline. This provided a lower cost solution to the problem than burying the pipeline in a trench, or dumping a pile of rocks over it", Orontide group manager for Oil and Gas Ankur Barua said.

"As temperatures and pressures increase this is proving to be an effective solution in controlling the formation of lateral buckles along the pipeline," he said.

Orontide was one of a few Western Australian companies to work on the project, in this instance providing material processing, fabrication, machining, surface treatment and assembly services and factory acceptance testing for the skids.

Manufactured and assembled in Orontide's Bunbury workshop, the Pipeline Buckle Initiator comprised 11 permanent restraint tools (PRTs) weighing 3 tonnes each, which were fixed to bases positioned on the sea bed.

The company also manufactured the two displacement tools used to force the PRTs against the pipe as a means of initiating the displacement, the deployment frames used to lower the PRTs to the seabed and the transport skids used to transfer all components to site.

The design phase of the contract allowed for the buckle initiators to be rated for 1,500 metres of sea water or greater, the company said. . Orontide also conducted NDT and load testing prior to surface treatment to extend the life of the structures to 40 years on the seabed.

The initiators are currently in position on the sea floor, where they will remain in preparation for the installation of the in-field pipelines, to take place later this year.

It is far from the only work the company has done for the Gorgon project, with Mr Barua saying a series of workshop-based asset services, had been delivered by the company over the past 24 months.

"Orontide has also undertaken corrosion protection for large diameter pipelines and induction bends as well as two sets of mooring frames and slipway fabrication for the Gorgon project through subcontracts," he said.

The company employs over 400 skilled workers at its bases in Henderson, Bunbury, Port Hedland and Sydney

Orontide chief executive Graeme Morrison said the company's large workforce enabled it to consistently deliver complex high quality scopes of work in very short timeframes.

"Orontide routinely mobilises resources and equipment out of Karratha on behalf of its growing oil and gas customer base and are currently in negotiations to establish an additional operations base in Karratha," he said.

"Orontide was very pleased to win this contract as it represents a key stepping stone in the scale and complexity of work we have been able to deliver to this rapidly growing market," Mr Morrison said.