LNG plant layout and optimization has been quite a challenge for both onshore and offshore LNG design development, starting as early as the concept phase through the front end engineering design and detailed design development. As design develops, key decisions are made during design phases based on cost saving ideas and risk based approach, which impact the facility layout. Several factors are considered to optimize plant layout; such as past experience in designing similar LNG facilities, operability, logistics, geographical location, generic spacing criteria, constructability, risk assessments and ALARP demonstration.

This paper will provide examples of layout optimization for both onshore and offshore LNG projects where qualitative assessments were used based on past experience. In addition, a quantified approach using risk assessment methods such as QRA will also be discussed in the paper, thereby demonstrating ALARP for all the key design decision made during the layout optimization.

This paper will also demonstrate a systematic approach for layout optimization of onshore and offshore LNG developments to help make key decisions earlier in the design thereby saving cost while also delivering an inherently safer facility.