Gas transmission pipelines have a good safety record. This is due to a combination of good design, materials and operating practices. However, like any engineering structure, pipelines do occasionally fail. The major causes of pipeline failures around the world are external interference and corrosion; therefore, assessment methods are needed to determine the severity of such defects when they are detected in pipelines.

Defects occurring during the fabrication of a pipeline are usually assessed against recognised and proven quality control (workmanship) limits. These workmanship limits are somewhat arbitrary, but they have been proven over time. However, larger fabrication defects may be found at some stage during its life, defects may be caused by corrosion, impact, or ground movement, and these will require a ‘fitness-for-purpose’ assessment to determine whether or not to repair the pipeline. Consequently, the past 40 years has seen a large number of full scale tests of defects in pipelines, and the development of a number of methods for assessing the significance of defects. Some of these methods have been incorporated into industry guidance, others are to be found in the published literature. However, until recently there has been no definitive guidance that draws together all of the assessment techniques, or assesses each method against the published test data, or recommends best practice in their application.

To address this industry need, a Joint Industry Project was sponsored by twenty international oil and gas companies to develop the ‘Pipeline Defect Assessment Manual’ (PDAM). PDAM documents the best available techniques currently available for the assessment of pipeline defects (such as corrosion, dents, gouges, weld defects, etc.) in a detailed manual, and gives guidance in their use. PDAM is based on an extensive critical review of pipeline fitness-for-purpose methods and published test data. It is intended to be another tool to help pipeline engineers maintain the high level of pipeline safety. In addition to defining best practice, PDAM has served to identify a number of limitations in the current understanding of the behaviour of defects in pipelines, and the empirical limits in the application of existing methods. This paper discusses the ongoing PDAM project, in the context of both the current best practice available for defect assessment, the limitations of current knowledge, and the plans of the sponsors for future development.