The operator required an ALR to be carried out to identify the risks to future operations, focussed at an asset item (equipment) level, in order that business decisions could be made on the future modes of operation of the terminal.

The purpose of the ALR was to develop an action plan to determine the investment required to ensure the terminal’s optimum operation, aligned to fitness for purpose and maintaining integrity, for the remaining contractual years of operation and to consider potential extension to the operating life of the various assets.

The ALR focused on what needed to be done, when it needed to be done and how much investment was required. Due to the contractual nature of the business, there was a requirement to consider these concepts for 3 different timescales which were 10, 20 and 25 years.

ABB were selected to perform the work due to their track record of similar studies, experienced technical experts and their proven processes using the pRIME methodology and software.

A major Liquified Natural Gas (LNG) import terminal operates assets of varying capacities and ages, ranging from 5 to 30 years old, against different contracted commitments.

Solution
ABB’s ALR process provides an overview in which the design parameters, construction, operating history and current condition based on inspection and maintenance records of a large number of items of plant equipment are examined. The ethos and practices of the organisation which operates and manages the equipment are also reviewed.

The study focused on the physical condition of the assets and considered the role of asset care in sustaining asset life, to determine the vulnerability of the equipment and systems to ageing and life limiting issues, such as deterioration and obsolescence. The review identified any recommendations and associated investment over and above day to day operating and maintenance expenditure, which will be required to continue operating to the various timescales.

The methodology considers the impact of equipment sustainability on operations and issues including long-term maintainability, reliability, supportability and obsolescence. Equipment assessments are determined on a balanced view of the anticipated actions and costs required to keep the equipment operational, at approximately the present level of integrity and reliability for stated periods into the future.
The study provided a summary assessment of all assets and management systems. Detailed reports were provided covering all the findings for each equipment item along with a list of actions required to keep the assets operating for each timescale.

The recommendations included additional maintenance provisions and other activities which should be implemented as ‘best practice’, to improve business efficiency. These were then used to develop an expected expenditure profile for each timescale.

The expenditure profiles were used by the customer to determine the optimum modes of operation of the terminal, based on present and future gas supply contracts and the requirements and cost for maintaining the older asset items in serviceable condition.

**Benefits**

- Enable informed business decisions on rejuvenation and re-investment requirements for the 3 timescales
- Optimisation of time and money in order to recognise the real issues and focus on the real needs
- Improved understanding of asset integrity and safe operation
- Embed good practices and performance improvements
- Maintaining LNG supply and avoiding unscheduled outages
- Knowledge transfer to allow the client to progress actions long after ABB’s engagement had ceased