

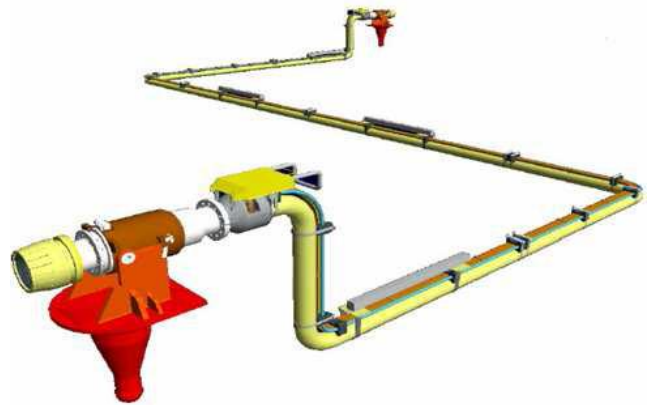
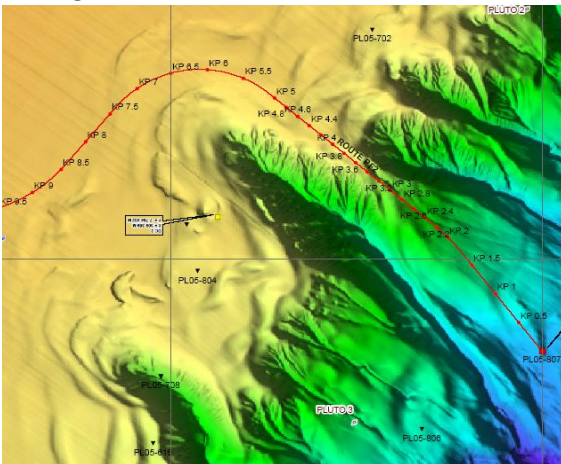


Bombora-ESP offers a comprehensive range of services for subsea pipelines, spools and riser including: design, procurement and construction management.

Pipelines

Bombora-ESP supports its clients by offering the following services in relation to pipeline design:

- Geological and geotechnical assessments.
- Metocean assessments.
- Design basis definition.
- Pipeline route selection.
- Pipeline mechanical design.
- Material selection.
- Pipeline stabilisation design.
- Pipeline protection design.
- Freespan assessments.
- Global buckling analysis.
- Pipeline crossing design.
- Shore approach/crossing design.
- Cathodic protection design.
- Pipeline intervention design (hot-taps, subsea tie-ins and repair).
- Pipeline system philosophy development (pigging, pre-commissioning, isolation, protection, operations, etc).
- Pipeline specialist studies (DEH, PPS, leak detection, etc).
- Design verification.



Spools and Risers

Bombora-ESP can analyse and design a range of spools and riser systems including: expansion spools, diver/ diverless spools, rigid risers, flexible risers, top-tensioned risers, hybrid risers and retrofit risers. Bombora-ESP can help select, benchmark and define riser configuration concepts. Bombora-ESP supports its clients by offering the following services in relation to spool and riser system design:

- Spool design.
- Riser and J-tube design.
- Materials and insulation selection.
- Riser design modification.
- Dynamic analysis of riser systems.
- Riser, hose and umbilical integrity management.
- Riser and umbilical ancillary selection.
- Riser fatigue assessments.
- Mid-water arch design.
- VIV analysis and suppression.
- Mooring/ riser clash analysis.

Bombora ESP provides support beyond the design phases, including:

- Installation management:
- Procurement management:
- Operations / IMMR support

Please contact us to discuss your needs and requirements in more detail.