



Figure 6.82 Schematic diagrams of offshore rock structures

6.4.1.1 Pipelines and cables

It is often necessary to protect offshore pipelines and cables because an incident might result in:

- the release of the pipeline's contents, causing serious environmental damage
- high repair costs
- a loss of income in the period between the accident and the final repair
- reduced life expectancy for the structure.

During operation offshore pipelines can be subject to the following hazards:

- hydrodynamic forces from the action of waves and currents
- geotechnical instability of the berm or subsoil
- morphological changes (sandwaves)
- dropping or hooking by ship anchors
- hitting or hooking by fishing gear.

Additionally, pipelines can be at risk from the following hazards:

- dropped objects (containers, tools), especially near platforms
- overstressing and vibration of pipelines caused by freespan development. These freespans can be caused by scour of the sea bed or rapid morphological changes of the sea bed (sandwaves)
- buckling, caused by thermal expansion of pipelines
- waxing within pipelines as a result of a temperature drop along the pipeline
- increasing viscosity of the transported substances, caused by, among other factors, a temperature drop along a pipeline.