CAPEX
PAYMENT REGIME WORKSHOP
LONDON, UK
1-2 DECEMBER 2016
Capital Expenditures

**ASSUMPTIONS**

- 3 MT dry polymetallic nodules year at 5 kg/m² cut-off abundance
- 20 year duration of production
- Four (4) metal processing
- Mining system includes Collectors, Riser and Lift System and Mining Platform
- Ore Transfer includes 3 transport/bulkers
- Processing includes power requirements
- Pre-feasibility cost not denoted

**UNKNOWNNS**

- ISA regulatory impacts to contractor CAPEX
  - Sensors
  - On board Ship Berths and space requirements
  - Processing Plant Nodule Inspection Teams
  - Home Office Space Requirements

# Typical CAPEX Subcomponents

<table>
<thead>
<tr>
<th>Mining System Category</th>
<th>Ore Transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsea Mining Equipment (Collectors)</td>
<td>Ore Transfer Vessel(s) if owned</td>
</tr>
<tr>
<td>Riser and Lift System (RALS)</td>
<td>At Sea and On-board Material Handling</td>
</tr>
<tr>
<td>Mining Ship</td>
<td>Shore Based Material Transfer Systems if Owned</td>
</tr>
<tr>
<td>Support and Survey Vessel</td>
<td>Detailed Engineering</td>
</tr>
<tr>
<td>High Speed Vessel</td>
<td>Project Management</td>
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<tr>
<td>Detailed Engineering</td>
<td>At Sea Transfer System Trials</td>
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<tr>
<td>Project Management</td>
<td>On Board Spares</td>
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<tr>
<td>Prototype Development</td>
<td><strong>Processing</strong></td>
</tr>
<tr>
<td>Prototype Collector/RALS @ Sea Trials</td>
<td>Processing Plant(s)</td>
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<tr>
<td>Spares Collector/RALS</td>
<td>Power Plant</td>
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<tr>
<td></td>
<td><strong>Detailed Engineering</strong> (Pilot Processing &amp; Power Plants)</td>
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<td></td>
<td>Project Management (Including Permits)</td>
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Capital Cost Estimating

The following is a list of estimate classes which are prepared during the project definition/pre-implementation and implementation phases

### Definition of Estimates

1. **Order of Magnitude** - These estimates are expected to be +/- 35% accurate with an 85% probability of achieving the reported capital cost after the application of project contingency.  
   **Intent**: To provide an early assessment of capital cost with a minimum effort, so that the economic evaluations can be produced to assess project viability.

2. **Pre-Feasibility - Accuracy** - These estimates are expected to be +/- 25% accurate with a 85% probability.  
   **Intent**: May be used to provide the first indications of economic viability. Commonly used as a cost effective method of evaluating alternative concepts. Also used in making bid and/or acquisition decisions and to justify additional drilling or other project investigations.

3. **Feasibility** - These estimates are expected to be +/- 15% accurate with a probability of 85% probability.  
   **Intent**: To provide a high level of accuracy with defined and managed risks. These estimates can be used to support the final economic viability assessment and decision and secure project funding.

4. **Detailed** - These estimates may be known as “budget” or “control” and are expected to be +/- 10% with an 85% probability of achieving the reported capital cost.  
   **Intent**: Usually there not enough detail in certain areas (piping, low voltage electrical estimation) at feasibility level, as detailed engineering progresses, estimates may be developed to fill in those gaps.