Producing Ammonia Nitrate Based Explosives (Moranbah Process)

1. **Bowen Basin Gas mining**
   - Very high energy (Natural Gas)
   - Piped very short distance

2. **Natural Gas (CH\textsubscript{4})**
   - High energy (Natural Gas)

3. **Ammonia Plant**
   - CH\textsubscript{4} + N\textsubscript{2} = NH\textsubscript{3}
   - Atmospheric Nitrogen (N\textsubscript{2})

4. **Nitrate Acid Plant**
   - NH\textsubscript{3} + CO\textsubscript{2} (e) = Nitric Acid
   - N\textsubscript{2}O abatement in place

5. **Ammonium Nitrate Plant**
   - Ammonia + Nitric Acid = Ammonium Nitrate Solution

6. **Granulation Plant**
   - Soil AN prill

7. **Emulsion Plant**
   - Diesel added to liquid ANSOL

8. **Storage**
   - (shipping containers)
   - (ISO containers)
   - (Trucked)

9. **Processing**
   - Ore

10. **Detonation**
    - Products mixed to become explosive in Blast Hole

11. **Mobile Processing Units**
    - (3 tanks)

12. **Fuel oil (diesel)**

**Energy use and emissions**
- Very high
- Medium
- Low

**Energy and emissions**
- CO\textsubscript{2}e (fugitive emissions and compressors)
- Dust
- S\textsubscript{0x}
- Noise
- CO\textsubscript{2}