Ireland’s rehabilitation policy: eliminating risk and providing benefits

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Presentation outline

- Ireland’s mining history
- Mine closure in the early 1980s
  - Examples Avoca and Silvermines
- Policy development for mine closure
- Mine closure cradle to grave from late 1980s
  - Examples Galmoy and Lisheen
- Directive for the management of waste from the extractive industries
Irish mineral deposits

Mineral deposits and occurrences
- Deposit (significant base metal – Pb, Zn, Cu)
- Deposit (minor base metal – Pb, Zn, Cu)
- Deposit (significant gold)
- Gold occurrence
- Deposit (industrial mineral or coal)

Data source: Map View from OPALS Viewer
http://spatial.dcenr.gov.ie/ExplorationAndMining/SpatialViewer/
Mine remediation history

- Various commodities mined from 18\textsuperscript{th} to early 20\textsuperscript{th} century - focus on employment and minor amounts of waste material
- ‘Modern’ mining from 1960s – focus on employment but significant amounts waste material generated
- A number of mines closed in the early 1980s – lack of closure planning and funding
- New remediation policy for mines late 1980s – plan to close from the start with ring fenced funding
Mining at Avoca

Mining periods
1720 – 1816    E & W Avoca
1826 – 1880s    Ballymurtagh
1958 – 1962    W Avoca
1969 – 1982    E & W Avoca

West Avoca

Ores Mined
Copper
Pyrite
Avoca

Important employers
Mine site after closure
Avoca Mine Heritage

The companies had no closure plan and no funding to remediate

Current remediation taking place (by the State)
Mining at Silvermines

- Mining in Silvermines area for over 1000 years.
- Zinc lead operation closed in 1982 and barite in 1993
- Metal of most concern has been lead – 3 cattle deaths attributed to lead in 1999 (close to TMF)
- This coupled with ‘dust-blows’ from TMF in the 1980s compounded concerns about human and animal health
- Interagency report
- Six sites identified for remediation
Silvermines
Silvermines TMF

Capping System

- Soil layer
- Geotextile
- Stone layer
- Oxidised tailings
- Wet tailings
- Topsoil
- Limestone
- Oxidised tailings
- Wet tailings

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Silvermines heritage
New remediation policy 1990

• New policy in relation to remediation was developed in late 1980s – clear and transparent
• Design the mine with a plan (CRAMP) to close - reduce risks
• Robust remediation plan = exit strategy
• Dynamic document, reviewed regularly
• Financial provisions put in place up front (including early closure)
• Legal agreement– three authorities and company for the release of funds
• Top up of funding if required
Galmoy

- Discovered 1986
- Commenced production in 1997, closed in 2012
- Remediation plan in place from start
- Currently entering aftercare stage
Lisheen

- Discovered 1990
- Commenced production in 2000, closed in 2015
- Remediation plan in place from start
- Currently remediation well advanced
Remediation at Galmoy and Lisheen

Galmoy
- Designed for dry end point from the start
- Progressive remediation – 3 cell TMF design
- Double HDPE liner facility
- Agricultural and wetland
- Business on plant site

Lisheen
- Originally designed for a wet end point
- Company requested change to dry end point
- Single LDPE lined facility
- Agricultural end point
- Seeking business for plant site
Mine closure

Galmoy

Lisheen
European context

Aznalcóllar - 25<sup>th</sup> April 1998
- 4-5M cubic meters of tailings released into Rio Agrio
- Clean up costs $100-200M

Baia Mare - 30<sup>th</sup> January 2000
- 100,000 tons of cyanide tailings into region
- Impacted other jurisdictions
Directive on the management of waste from the extractive industries

- EU Directive (2006/21/EC)
- Closure Restoration and Aftercare Management Plans – CRAMP
- BREF (Best available technique REFerence Document) 2009 and currently being updated by JRC (Joint Research Centre)
Thank you