



**Roinn Cumarsáide, Gníomhaithe
ar son na hAeráide & Comhshaoil**

Department of Communications,
Climate Action & Environment

Ireland's Mine Rehabilitation Policy and Practice Eliminating Risk and Providing Benefits

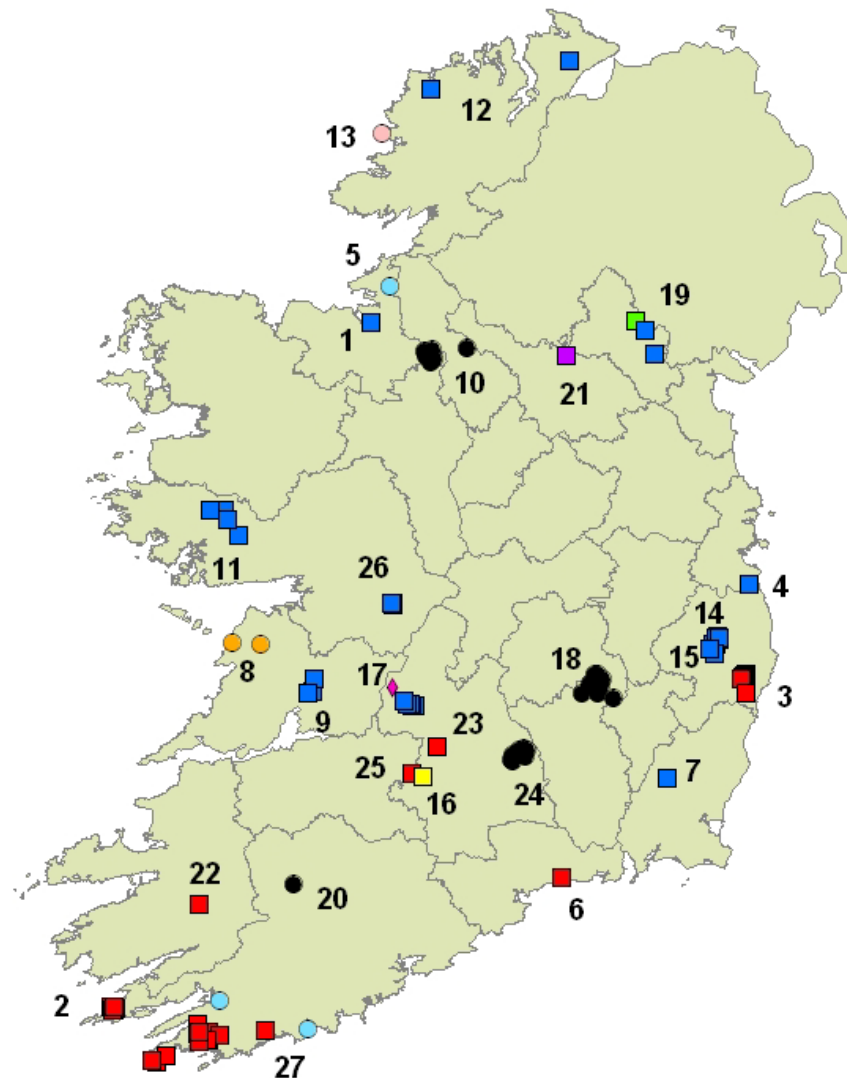
Dr. Eibhlín Doyle PGeo

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Ireland's Mining History



HMS-IRC Project Mine Districts and Sites Investigated



- | | |
|--------------------------|----------------------------|
| 1 Abbeytown | 15 Glenmalure |
| 2 Allihies | 16 Gortdrum |
| 3 Avoca | 17 Killaloe Slate |
| 4 Ballycorus | 18 Leinster Coalfield |
| 5 Benbulbin | 19 Monaghan Pb |
| 6 Bunmahon | 20 Munster Coalfield |
| 7 Caim | 21 Redhills |
| 8 Clare Phosphate | 22 Ross Island |
| 9 Clare Pb | 23 Silvermines |
| 10 Connacht Coalfield | 24 Slieve Ardagh Coalfield |
| 11 Connemara | 25 Tipperary Minor Cu |
| 12 Donegal Pb | 26 Tynagh |
| 13 Donegal Talc | 27 West Cork Cu-Ba |
| 14 Glendalough-Glendasan | |

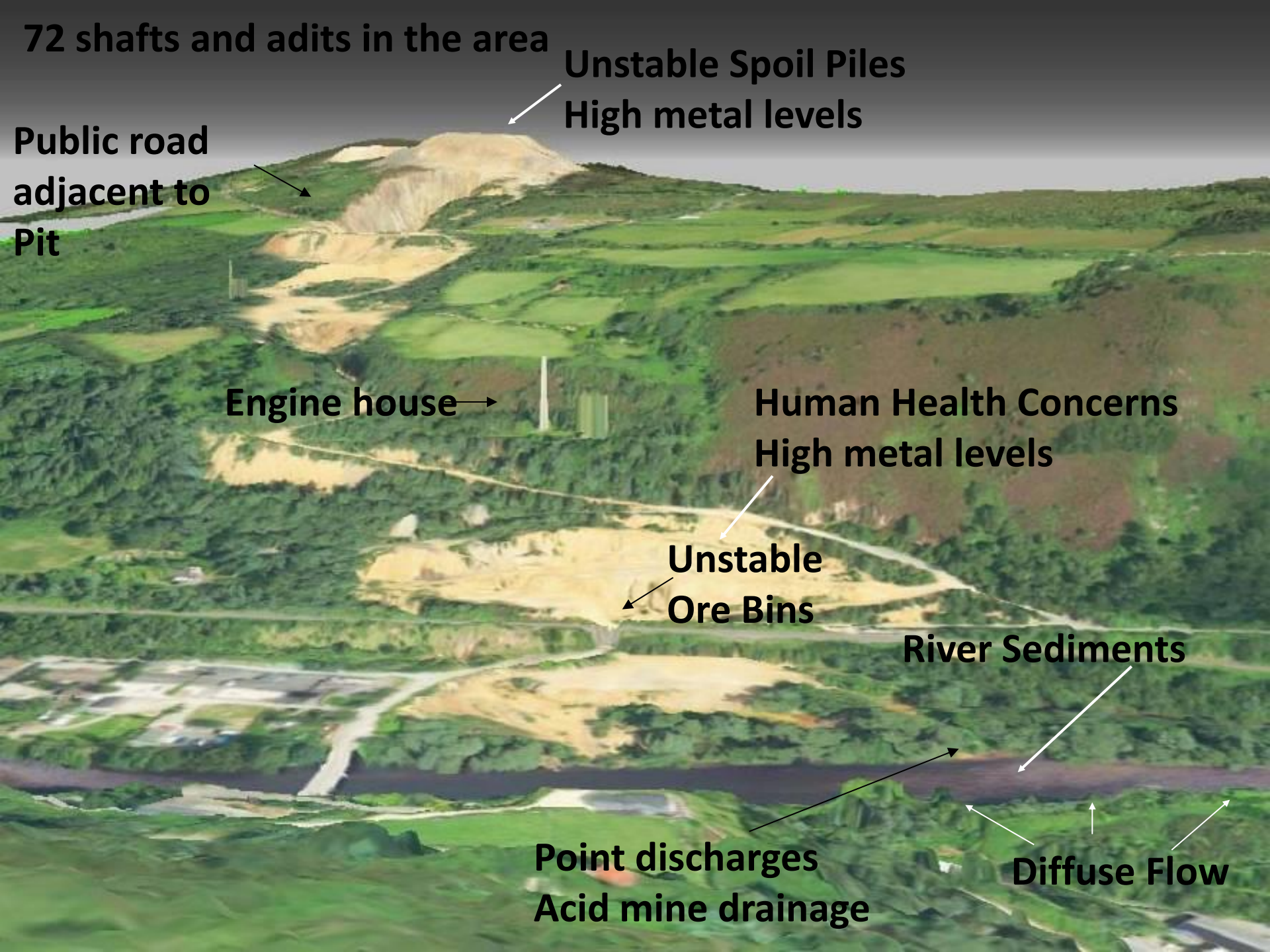
Commodity Produced

- | | |
|---|---|
| ■ Pb-(Zn-Ba-Ag) | ● Ba |
| ■ Cu(-S) | ● Coal |
| ■ Cu-Ag-Hg | ● Phosphate |
| ■ Sb | ● Talc |
| ■ Fe | ◆ Slate |









72 shafts and adits in the area

Unstable Spoil Piles
High metal levels

Public road
adjacent to
Pit

Engine house

Human Health Concerns
High metal levels

Unstable
Ore Bins

River Sediments

Point discharges
Acid mine drainage

Diffuse Flow



Silvermines, Co. Tipperary



Wicklow Pb veins





Today's society adds to the problems of old mine sites



Past mining

- Provided much needed employment
- Helped the local economy
- We build and learn from the past
- Environmental considerations are part of our world and not necessarily in the past



Society's current needs

- Greater range of commodities required
- Increased amounts of raw material
- Consumer society
- Green energy
- Transport
- ICT



Environmental awareness

- Society's environmental awareness has improved in the last few decades.
- Society needs to balance its requirement for raw materials and its desire for a clean environment
- Important to say: there was no malice or intention by our predecessors to compromise or damage the environment
- Mining companies are rising to the environmental challenge



Ireland's early approach to Mine Closure

- The site to be left in “a clean and tidy state”
- Main issue - end of mine life - money is scarce or non-existent
- 1980s: A number of mines closed - some attempts to leave the sites “a clean and tidy state” but no operator funding mechanism

Resulting in poor or no remediation



New Discoveries

- The discovery of Galmoy in 1986 and Lisheen in 1990
- Expansions at Navan
- The key failures of previous mine closures
 - Lack of funds for closure
 - Lack of a comprehensive plan

Requiring a new approach to mine closure



Ireland's new policy

- A detailed Mine Closure, Remediation and Aftercare plan (CRAMP) is developed as part of the permitting process.
- Agreed financial instruments are put in place at the outset
- The CRAMP is a dynamic document
- Funding and CRAMP for planned closure but also for unplanned closure



The Practice

Galmoy

- Discovered in 1986
- Planning 1990
- Construction 1995
- Production 1997
- Closure 2012
- Aftercare 2017

Lisheen

- Discovered in 1990
- Planning 1994
- Construction 1998
- Production 2000
- Closure 2015

- Detailed closure plan developed
- Financial provision
- Role of EPA (1992)
- Three authorities involved
 - Exploration and Mining Division, Local Authority, EPA



Mines

Kingscourt Gypsum



Galmoy



Navan Mine



Lisheen Mine



Galmoy Mine Closure plan

- Discovered 1986
- Operated from 1997 – 2012
- TMF – double HDPE lined facility
- TMF – dry end point, agriculture and wetland
- Three cell design to facilitate progressive rehabilitation



- CRAMP developed as part of initial licence
- Fund €14m









- CRAMP – dynamic document
 - Seek other industry if possible for plant site
- Proper sealing and making safe of all openings



1996



2013



2016



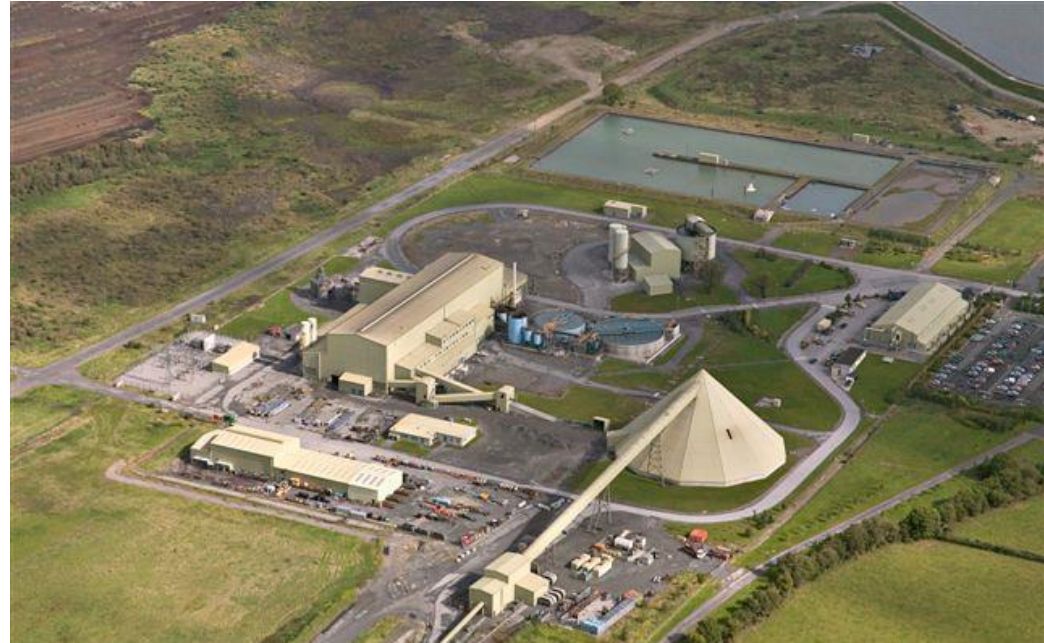
Shaft Sealing

- Backfilled
- Capped
- Monitored



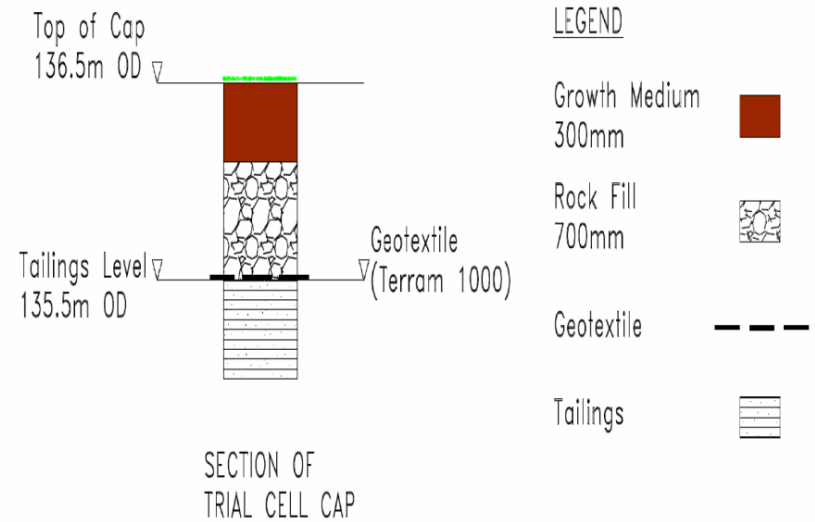
Lisheen

- Discovered 1990
- Operated from 2000 – 2015
- TMF – single LDPE lined facility
- TMF – wet end point
- CRAMP developed as part of initial licence
- Fund €22m



- Dynamic CRAMP allowed for alteration from wet end point for TMF to a dry end point – agreed by authorities





Note: The maximum elevation of the top of the rehab cap is to be no higher than the crest elevation of the outer dam walls. Refer for Figure 24 for general arrangement.







Drawdown document

- Drawdown agreements with authorities and company
- Authorities inspect
- Payment from the fund must be agreed by the authorities



Mine Closure

- Ireland has developed policy and practice to ensure orderly closure of mine sites
- Closure Restoration and Aftercare Management Plans – CRAMP and associated funding, dynamic documents
- Monitoring and oversight
- BREF (Best available technique REference Document) – currently being updated by JRC (Joint Research Centre) - EPA and EMD on the TAC



Conclusion

- All mines must submit a mine closure plan when applying for permissions to mine
- The plan must be agreed with the authorities
- Dynamic document
- Financial instruments put in place
- Drawdown agreement between authorities and company



Thank you for your attention

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