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# **QUARRY RECLAMATION: A review of techniques**

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# Quarrying and its Impacts

- ▶ Quarrying and environmental impacts
  - ▶ Sources of impact
    - ▶ Land degradation
    - ▶ Waste piles
    - ▶ Waste water storage
    - ▶ Interference with biodiversity
    - ▶ Soil erosion
    - ▶ Plant (rock storage structure, conveyor belt, machinery)
    - ▶ Quarry wall (contrast and line)
  - ▶ Affects landscape visual

# Reclamation

- ▶ Abandonment of decommissioned quarries (legacy)
- ▶ Legislation (1948)
- ▶ “Licence to Mine”
- ▶ Development of reclamation techniques
  - ▶ Rollover slopes
  - ▶ Bench planting
  - ▶ Backfilling
  - ▶ Restoration blasting

# Reclamation

- ▶ Can enhance environmental quality
  - ▶ Restore chemical, physical and chemical properties of soils
  - ▶ Biodiversity
  - ▶ Human activity
  - ▶ Visual quality
  - ▶ Create, preserve habitats for fauna and flora
  - ▶ Industrial archeology

## Dirt Low Rake quarry



# Reclamation

- ▶ Two major landscape elements
  - ▶ Quarry landform
    - ▶ Quarry wall
      - ▶ Quarry face (provide the most reclamation challenge; safety, visual quality, form and color contrast).
      - ▶ Bench
  - ▶ Floor

# Reclamation

- ▶ Several techniques developed to reclaim quarries
  - ▶ Rollover slopes (Hope Cement Works quarry)



# Reclamation

## ► Bench planting (Dene quarry)





# Reclamation

## ► Backfilling (Holme Hall quarry)



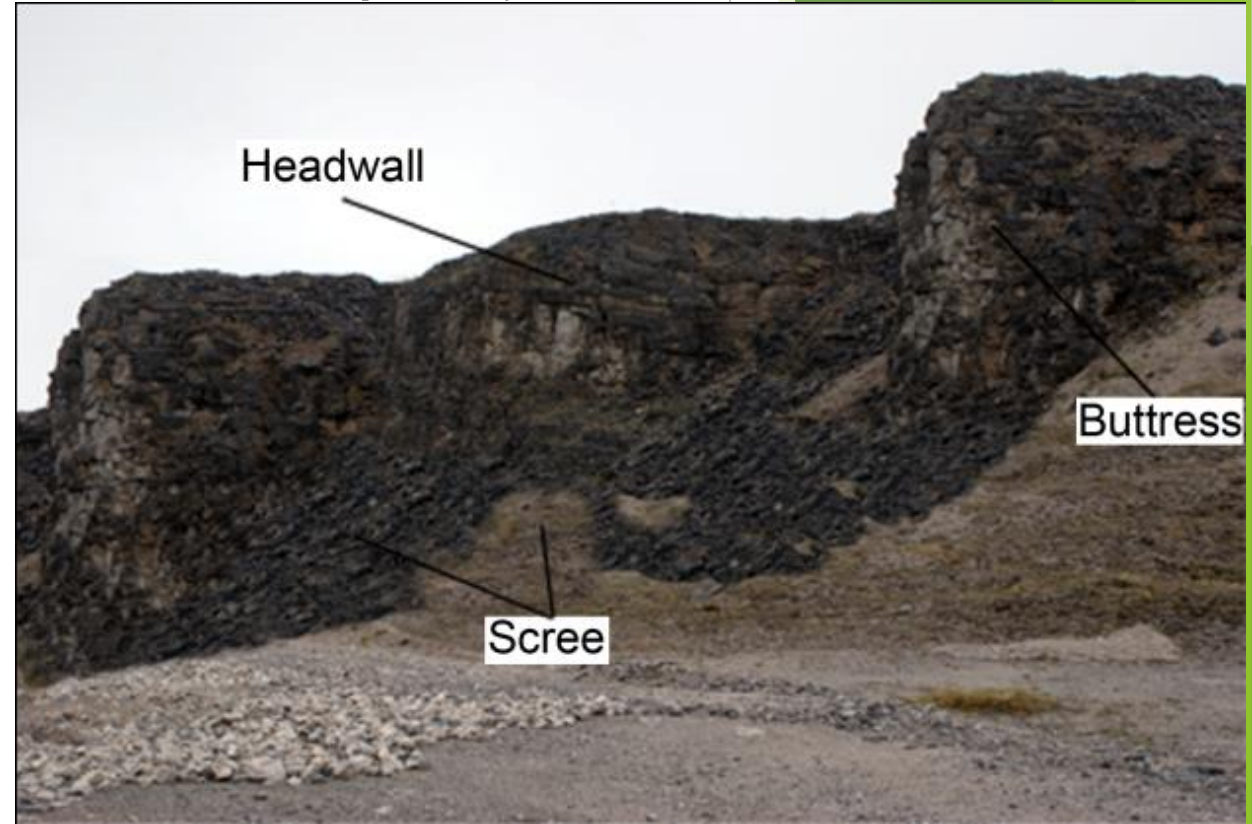
# Reclamation

## ► Restoration blasting

### Great Rock Dale



### Tunstead quarry



# Reclamation

- ▶ Choice of technique;
  - ▶ Intended after-use
  - ▶ Intended final grade
  - ▶ Character of the surrounding landscape
  - ▶ Availability of suitable topsoil
  - ▶ Availability of fill material
  - ▶ Cost
  - ▶ Significance and character of the regional landscape
  - ▶ Availability of technical expertise

# Conclusion

- ▶ Challenges in reclamation
  - ▶ Establishment of vegetation
  - ▶ Availability of topsoil
  - ▶ Accessibility to parts of a quarry
- ▶ Selective treatment
- ▶ Industrial archeology



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*Thank you*

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