Low-input naturalistic ecological restoration

CRONTON COLLIERY

Phil Putwain and David Evans
• Cronton Colliery closed in 1984
• Partial restoration in 1997
• New Masterplan agreed in 2006
• The Land Trust as client
• Key aim to encourage a community-led, ecologically-informed approach to site restoration, development and management
• Cronton as an exemplar
STARTING POINT - SLOW COLONIZATION

Southern plateau 1998

Southern plateau 2006
CRONTON COLLIERY
THE OPPORTUNITY

- 2006 Masterplan agreed for informal country park
- LRT identified as lead body to:
  - Take ownership of site from NWDA
  - Progress final restoration and open site to public
  - Manage the site through the Forestry Commission
- Funding available through:
  - National Coalfields Programme
  - WRAP Brownfield trailblazer programme
CRONTON GREEN COMPOST TRIALS
- THE RATIONALE

• To develop an ecologically-informed approach to the restoration of plateau areas in order to:
  - Maximise biodiversity benefits
  - Create an attractive landscape
  - Reduce unnecessary capital and future maintenance costs
  - Maximise the use of recycled materials
  - Demonstrate the use of green compost to inform the restoration of Cronton and other former colliery sites
BROAD AIMS

- to retain semi-natural character
- to use PAS 100 green compost incorporated into the spoil to ameliorate chemical and physical properties sufficiently to establish permanent wildflower vegetation
- to add sufficient green compost to allow only the establishment of indigenous and sown plants but not vigorous weedy competitors
INITIAL SOIL CONDITIONS

- Baseline soil chemical analysis
  - Spoil acidity: low or very low pH (pH 2.7-3.2)
  - Major nutrients: low phosphorus, nitrogen, and potassium
  - Higher potassium within patches of established vegetation
  - Organic matter: generally low
DESIGN OF THE TRIAL
LOW IMPACT TREATMENTS USING GREEN COMPOST

1. Establishing grassland left for comparison
2. Establishing grassland top-dressed with 10mm green compost
3. Scarified to 50mm and seeded with acid grassland mix
4. Cultivated to 120mm and seeded with acid grassland mix
5. Scarified to 50mm and seeded with acid wetland mix
6. Cultivated to 120mm and seeded with acid wetland mix
7. Cultivated to 120mm, 30mm layer of green compost incorporated, seeded with acid grassland mix
8. Cultivated to 120mm, 30mm layer of green compost incorporated, seeded with acid wetland mix
PHOSPHORUS CONCENTRATION IN COMPOST AREA 7 VERSUS CONTROL

Mean soil concentration of P
Compost added

Jan-07  May-07  Sept-07  untreated  Sept-08  untreated

0  5  10  15  20  25  30  35  40
POTASSIUM CONCENTRATION IN COMPOST AREA 7 VERSUS CONTROL

Mean soil concentration of K

Compost added

Jan-07
May-07
Sept-07
Sept-08
untreated
untreated
PERCENTAGE ORGANIC MATTER
May 2007 to November 2010 in trial areas 4, 5, 7 and 8
IMPACT OF COMPOST TREATMENTS INCORPORATED IN TOP 120CM VERSUS NONE
SUSTAINABLE VEGETATION
LONG-TERM (trial area 7 plus compost)
OCTOBER 2010
Development of extensive reed beds and colonisation by silver birch and alder
CONCLUSIONS 1

- The ecologically-informed approach to the restoration of plateau areas at Cronton Colliery has;
  - Maximised biodiversity benefits
  - Created an attractive landscape
  - Reduced unnecessary capital and future maintenance costs
  - Maximised the use of recycled materials
  - Demonstrated the use of PAS 100 green compost to inform the restoration of Cronton and other similar former colliery sites
CONCLUSIONS 2

- Plan ahead and allow time for solutions to evolve
- Understand the site; the soils, the hydrology and ecology
- Undertake appropriate consultation; identify future uses
- Clarify the resources available for future management
- Be clear about your objectives / set a clear brief
- Ensure that you have the right areas of expertise and that consultants are managed
- Get the specification right and ensure that it is applied
FURTHER INFORMATION AVAILABLE FROM

• philp@liverpool.ac.uk

• david.evans@deconsultants.co.uk