A ROLE FOR COMPOST IN THE REGENERATION OF THE FORMER ROYAL ORDNANCE FACTORY BAE SYSTEMS CHORLEY

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BAE ROYAL ORDNANCE FACTORY

One of the largest regeneration projects in Northwest England

Re-use of brownfield land for an urban village

1500 houses

Business area

Community facilities

BUCKSHAW VILLAGE

A new community

- 265 Hectares of development
- 41% planned open space
- High quality environment integrating existing mature woodlands and wildlife habitats
- New amenity grasslands – recreation areas, creation of new wetland, grassland and woodland wildlife habitats

THE MASTERPLAN
Aerial perspective

DEMOLITION AND SOIL STRIPPING

To ensure that no residual munitions remained, topsoil was stripped from the entire site.

Strip depth was variable

min. 300mm up to 4 metres

REQUIREMENT FOR REPLACEMENT TOPSOIL

- Insufficient topsoil was available locally within economic haulage distance

SOLUTION

- To manufacture topsoil on site

- BS PAS 100 compost (1-28mm) was imported and mixed with subsoils on-site

OBJECTIVES OF PROJECT

- Demonstrate commercial advantage of using compost in a typical land restoration project
- Re-use subsoils *in-situ* and reduce potential disposal to landfill if not re-used
- Prove the economic feasibility of using manufactured soils incorporating compost

SOLUTION

- 7000t of PAS 100 compost
- 7000t of unsuitable geotechnical subsoil

Blended 2:1 by volume to produce economy grade topsoil

OUTCOME - MANUFACTURED ECONOMY GRADE TOPSOIL (BS 3882) pH = 8.0

Created from a Sandy Clay Loam subsoil with the following properties

pH 8.5 – 11.0

Sand 30 – 55%

Very low N,P,K

Silt 20 – 35%

available Nitrate ^{-}N < 1.0 mg/kg

Clay 25 – 35%

FINANCIAL CASE FOR USE OF COMPOST

Creation of soil using in-situ subsoils and compost

Activity	Cost
7,036t of PAS 100 compost	£49,252
7,036t of subsoil not to landfill	£0
Handling costs for receiving compost and mixing compost/subsoils	£36,909
Total costs for compost mixed with subsoil and ready for use	**£86,161**
Total cost per tonne of made soil (14,072t of made soil in total)	**£6.12**

FINANCIAL CASE FOR NOT IMPORTING 14,000t topsoil and landfilling subsoil

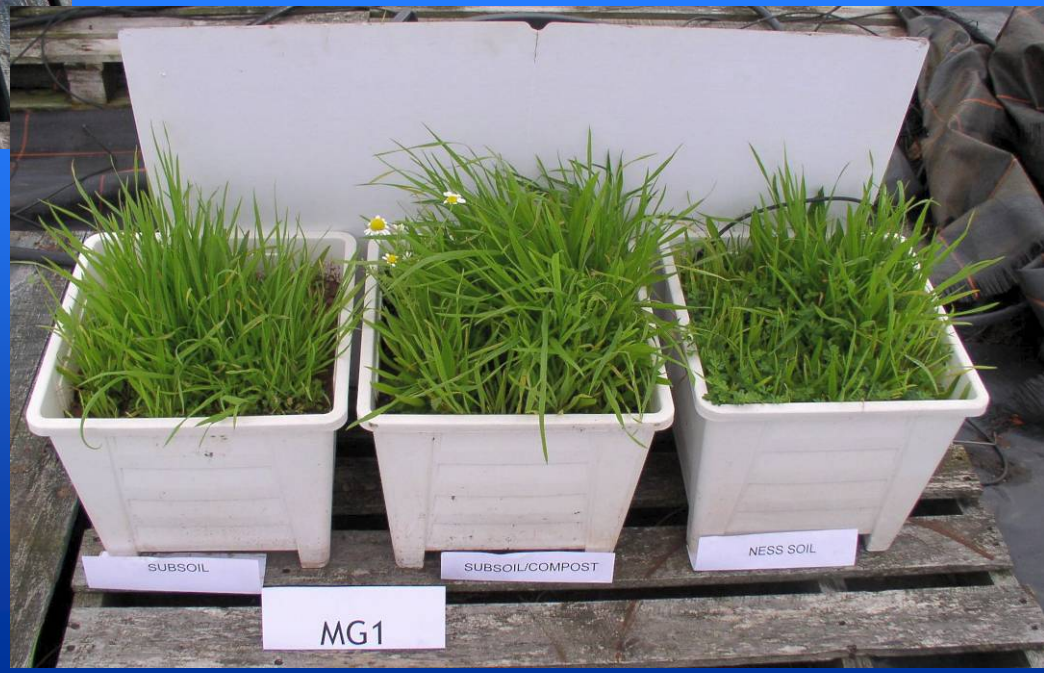
Activity	Cost
Landfill gate fee (guide price £6/t + £2 landfill tax)	£56,000
Subsoil (7,000t) Haulage to landfill (approx £3/t)	£21,000
Importation of 14,000t topsoil. This costing is based on 'made' economy grade topsoil at £8/t including haulage	£112,000
Total costs **Includes final topsoil importation and subsoil disposal** **Based on 14,000t of topsoil brought to site ready for use** Note handling costs not included	**£189,000**
Total cost per tonne	**£13.50**

SIMPLE TRIALS TO TEST THE EFFICACY OF THE MANUFACTURED TOPSOIL TO SUPPORT SPECIES-RICH WILDFLOWER GRASSLAND

Species-rich wildflower grassland

Undertaken at Ness Botanic Gardens

Productive amenity grassland



TRIAL GROWTH OF BROADLEAVED TREE SPECIES

Subsoil/Compost mix Subsoil

HAZEL

Undertaken at Ness Botanic Gardens

Subsoil Subsoil Loam

Compost mix

CONCLUSIONS
BENEFITS OF USING COMPOST

- Potential cost savings
- Creation of wildlife habitats often requires a soil producing a steady source of nutrients but not too fertile
- Soil can be manufactured for specific end-use (e.g. wildflower grassland or broadleaved woodland) to a consistent quality
- Positive environmental benefit – diverts unsuitable subsoils from landfill to profitable use within a development site

END-USE AND EXEMPLAR GREENSPACE NETWORK WITH WIDE RELEVANCE

The next step at Buckshaw Village will be the use of the manufactured soil for the following purposes:

- Public recreation areas
- Wildflower grasslands
- Extending woodland area
- Road verges and embankments
- Screen planting

COLLABORATORS AND ACKNOWLEDGEMENTS

WE ARE MOST GRATEFUL FOR THE SUPPORT AND ACTIVE INVOLVEMENT OF BAE SYSTEMS AND CASS ASSOCIATES