

Renare Mark Seminar The Consultant Perspective

Investigation & Remediation in the UK - Sept. 2005

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Scope

- Overview
- Driving Forces & Funding
- The Legislative & Regulatory Regime
- Investigation Methods
- Process Based Remediation
- The Role of Soil Treatment Centres
- Future Developments – what needs fixing!

Overview

- Government policy to develop brownfield sites
- EU & UK policies to adopt sustainable principles
- Landfill Directive requires:
 - end to co-disposal
 - pretreatment of all wastes prior to landfill
 - reduce mass, hazards, enhance recovery and handling

Driving Forces & Funding

- Planning Policy (PPS 23) – investigation and clean-up driven by planning conditions – funded by private development
- EU & UK Government *Gap* funding for unviable sites
- Part IIA Environmental Protection Act (EPA)1990 – duty of Local Authorities to inspect. Now subject to Government audit to ensure progress
- Voluntary clean-up

Legislation & Regulatory Regime

- EU Waste Framework Directive
- EPA 1990 creates permitting system > > Waste Management Licensing (WML)
- Site Licence or PPC
- Mobile Plant Licence (ends soon)
- Mobile Treatment Licence
- Exemptions & Enforcement Positions

Legislation & Regulations (cont.)

- **Definition of *Waste*** is still unclear

EA Position: *fully recovered* only when in the ground, as determined by precedents & case law

- **Industry View :** where soil is *fit for purpose*, under risk based framework, with planned and agreed end use then it should **not** be considered as waste
- **WML Exemptions:** inadequate for recovery & recycling of treated soils

Site Investigation & Assessment

- Risk Based system
- CLEA – risk assessment framework
- Soil Guideline Values (SGV)
- Model procedures CLR 11

Physical Remediation



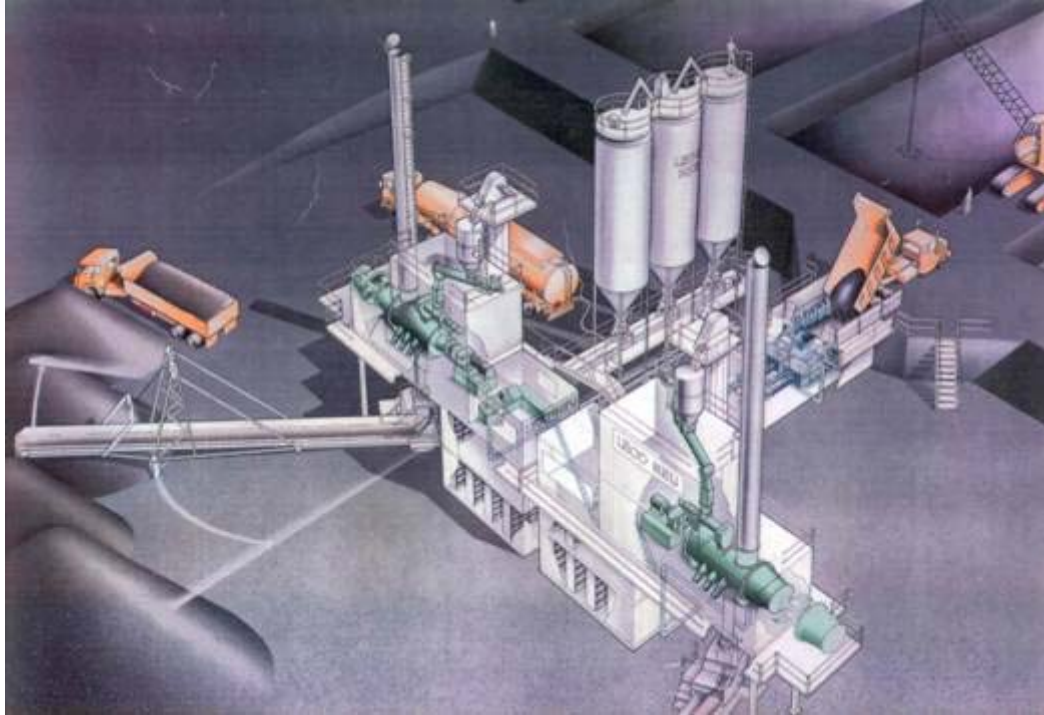
Photo courtesy of VHE

- Dry soil processing - screening, crushing, separation
- Wet soil washing - lots of components based on mineral processing

Bioremed.-Windrows or Biopiles



Stabilisation Processes



- Soil & Dredgings
- Cementitious, pozzolan, lime, silica additives
- Modifies leachable mass

Photos courtesy: Bilfinger and Berger

Stabilisation Processes



Ex-situ treatment:

licensing and disposal problem if hazardous waste

Thermal Soil Treatment: Fixed Facility

- Thermal desorption of organic compounds
- Operating temperature <math><500\text{ }^\circ\text{C}</math>
- Different to incineration, the soil structure remains intact



Photo courtesy: Bilfinger and Berger

Thermal Soil Treatment: Fixed Facility

- Mobile or fixed technology available for on-site or off-site treatment
- Air exhaustion and water cleansing is expensive but technically feasible



Photo courtesy: Bilfinger and Berger

Thermal Soil Treatment - Mobile



Photo courtesy EnviroKlean

Mobile Plant Licence obtained for Land Clean Ltd.
plant in London – gas works tarry wastes

In-situ processes

- Oxygen well delivery and gas transfer systems – electrolytic cells/diffusion – (Isogen, ISOC): ideal for dissolved phase organics
- Oxygen, Hydrogen and Metals Release Compounds (Regeneration)
- Vacuum extraction techniques

The Role of Soil Treatment Centres

- Replaces dig and dump
- Ideal for small/medium sized sites where there are development constraints preventing on-site treatment, e.g. Time, space, certainty
- Meets Landfill Directive for pre-treatment
- Avoids process based technology mobilisation and management costs - exports the problem!

Soil Treatment Centre

- Locate at permanent regional location
- Flexible treatment train
- Crush/screen - 35% clean
- Provide sufficient separate storage
- Ensure destination of treated soils

MARKET: landfill daily cover, restoration cap, or re-use elsewhere as engineering fill & landscaping.



Soil Treatment Centre

- Treated soil 10% to 30% disposed of to SNRHW cell in:
 - non-hazardous landfill,
 - hazardous landfill (must meet WAC)
- Treated soil 70% to 90% recovered for re-use

Future Development of STCs

- Landfill site is an ideal location
 - travel & sensitivity
 - planning and permit
 - ready demand (market certainty)

- Cluster of contaminated sites
- Large brownfield site
- High regeneration activity - Thames Gateway

Legislation & Regulations applied to treatment Hub)

- Planning and EIA
- stockpiling at Hub
- import/export of waste to/from Hub
- treatment/recovery operations at Hub
- transport (Duty of Care)
- receiving at development site
- stockpiling/handling at development site

What Needs Fixing?

- The use of WML for remediation of contaminated land is a bad fit!
- Causes delay, uncertainty and increased costs and thus affects viability – deters development
- A Waste Management Site Licence will blight a development and is avoided – at high cost!

What Needs Fixing?

- Recovered materials still **waste**
- Legislation and new regulations or new regulatory guidance **MUST** allow re-use
- Solutions:
 1. new Remediation Permit, or
 2. bespoke Exemption, or
 3. use Planning Permission (with Remediation Action Plan) to replace WML

What Needs Fixing (cont.)

Soil Treatment Centres – regulatory guidance and generic soil criteria are needed

Clean Soil

- generic values for specified end use?
- SGVs too conservative?

Treated (Grey) Soil

- residual contamination - what is acceptable?
- Part IIA implications?
- generic values for commercial/industrial only
- quantitative risk analysis for bespoke use