Remediating Landfills. Why a partnered approach is best.
Presented by Steve Edgar
01 May 2019
Introduction

Contents

- Remediation, reclamation or landfill mining.
- Our Experience
- What do I mean by Partnered?
- Why are they different to other sites?
- What are the options
- What are the potential pitfalls
  - Permitting
  - Collecting Information
  - Developing the Brief/development
  - Pricing and understanding risks
  - Execution of works
- Partnering Re-cap
Remediation, reclamation or landfill mining.

- Value of materials: £
- Value of Land: ££££££
- Cost of works: ££££
- Costs of disposal: £££££££
- Value of Liability: £££
- Cost of environmental protection: £££
Historical Landfill Sites

Historic landfill = site where waste has been buried but there is no permit or license in force

Environment Agency historic landfill dataset identifies ~20,000 sites in England; over 1,200 are coastal

Many of these sites were operated by controlled tipping into former quarries or depressions in natural topography

Typically “dilute & disperse” (no engineering to manage leachate and ground gas) although often has a soil cap
“State of the Art 1955”

Figure 2.6. “Controlled tipping” at Tweedle Hill, Manchester, 1955. The original caption for this official picture in an annual report emphasized how controlled tipping could be carried on in close proximity to houses “without causing offence.” Photograph courtesy of Manchester City Council.
Our Experience

- **Westfield School**
  - 2005
  - Combination

- **Bodmin A30**
  - 2006/2007
  - Ex-situ

- **Ffos-Y-Fran Landfill, South Wales**
  - Ex-situ

- **Prior Deram**
  - 2009-2010
  - Combination

- **Sandford Farm Landfill, Reading**
  - (2013 – 2016)
  - Ex-situ

- **Calver Park**
  - 2016
  - Combination

- **Verity Crescent**
  - 2014-2016
  - In-situ

- **Castleford Landfill**
  - 2016-2017
  - In-situ

- **Emersons Green**
  - 2018-2019
  - Ex-situ
What do I mean by Partnered? And why?

**partner**

/ˈpaːtnər/  

**noun**

**noun: partner**

1. either of a pair of people engaged together in the same activity.  
"arrange the children in pairs so that each person has a partner"

- a person or group that takes part with another or others in doing something.  
"he began to call potential coalition partners about forming a new government"

- any of a number of individuals with interests and investments in a business or enterprise, among whom expenses, profits, and losses are shared.

**plural noun:** partners  
"a partner in a prosperous legal practice"

**synonyms:** colleague, associate, co-worker, fellow worker, co-partner, collaborator, ally, comrade, companion, teammate; More
Why are they different to other sites?
Typical Materials

- SOILS FROM CAP
- AGGREGATE FORMING MATERIALS
- SOIL/FINES DISPOSED WASTE
- SOILS/FINES DAILY COVER
- PLASTICS
- TYRES ETC.
- WOOD AND PAPER

Typical Materials

- Plastic
- Wood
- Aggregate
- Soil
- Metal
- Other

- 49%
- 23%
- 14%
- 8%
- 4%
- 2%
What are the options

- FULL EXCAVATION
- PARTIAL EXCAVATION
- NO EXCAVATION
The challenges

- Cost Certainty
- Ground gas
- Hard to characterise
- Geotechnics
- Con Land
- Failed before?
What Can an experienced Partner Help with?

- **Pitfalls**
  - What to avoid

- **Efficiency**
  - Time = money

- **Technical**
  - Help Identify or clarify the challenges

- **Landfills**
  - Different from other brownfield sites?
What are the potential pitfalls

Permitting

• Remediation is primarily driven by the planning process. Reclamation of old landfills is/should be no different

• Remediation assessment & design of contaminated land is undertaken in accordance with the principles of CLR11. The EA appear to be viewing old landfills as .... old landfills and not contaminated land.................

• This manifests itself as assessing environmental risk differently namely, making hazard based assessment rather than risk based

• Remediation (treatment) falls under Environmental Permitting Regulations. This would be a deployment for a Mobile Treatment Permit whilst reuse would normally be under DoWCoP. Alas, the EA see it differently although their approach is still lacking in consistency

• There is not a current standard rules or bespoke mobile treatment permit suitable for use for old landfill reclamation
The EA do not consider waste in old landfills as contaminated land. They consider it is waste in a landfill irrespective of its age, composition or if a license or permit for the original landfill is in force or not.

So if we cannot use fully the principles of CLR11 for assessment, MTP for treatment or DoWCoP for reuse, how is the reclamation of old landfills to be permitted by the EA?
Permitting

WASTE RECOVERY PLAN

ACCREDITED EMS

WAP & WAC

GAS AND WATER VERIFICATION

WASTE RECOVERY PERMIT

SURRENDER??
Collecting Information

Con Land Risks
- Asbestos presence and quant
- Chemical testing
- TOC and gassing potential
- Geotechnical properties
- Leachate head and quality
- Vertical and Lateral Extents
- Waste proportions
- Cell layout etc.

Volume, Programme, Cost Risks
- Site and development Constraints
- Waste composition

Development Risks
- Con Land Risks
- Waste proportions
- Vertical and Lateral Extents
- Cell layout etc.

Operational Risks
- Development Risks
- Operational Risks

Your Sustainable Solutions Partner
Collecting Information

- Undertake a site trial
- Barrel Tests
- Gas modelling
- Leachate management
- Masterplan appraisal
- Design concept test
- Prepare documentation

**Input**
- Site Screening and processing trial
- Gas prediction data collection

**Understanding**
- Soils content
- Recoverable
- Un-useables
- Future Gas regime
- Leachate management strategy
- Odour profile

**Output**
- Programme
- Costs
- Full Feasibility
- Remediation Method Statement
- Gas management Plan/protection design
- Verification Plan
Developing the brief
Minimise off site Disposal
Maximise Developable area
Minimise onward abnormals
Incorporate green space
Off-set all risks to the contractor

@Last minute took phased approach
What’s missing in the tendered Approach?

- Brief
- Investigate
- Understand
- Refine
- Optimise
Pricing & Risks

Reward

Risk
Some examples of sites
Excavating waste
Excavating waste
Recovering leachate
Phased approach
A Different Approach
Gas Management before we start
Installing Virtual Gas Curtain
Surcharging
Installing gas protection
Partnering

- Pros and Cons
  - Minimise/optimise scope
  - Delivery

- Fears
  - Control risks
  - Expectations

- Enables better design
  - Common purpose

- Costs should be controllable
  - Permitting

- Fears
  - Control risks
  - Minimise/optimise scope

- Enables better design
  - Common purpose

- Costs should be controllable
  - Permitting

- Minimise/optimise scope
  - Delivery

- Control risks
  - Expectations

- Common purpose
  - Permitting

- Permitting

- Delivery

- Expectations
As we speak...
Thank You!

Steve Edgar
sedgar@vertasefli.co.uk
07973 981780