



Remediation & Reuse of Materials

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Remediation & Reuse

Key Drivers of Reuse Potential

- **Site Proposals** and **Sensitivity of End Use**;
- **Site Setting** and **Sensitivity of Environment**;
- **Site Reuse Criteria** – Various **Reuse Scenarios**;
- **Materials Type** – e.g. Ability to Segregate, Scale of Segregation;
- **Nature of Asbestos Present** – Fibres, “Bulk” Materials, Cement Sheets;
- **Client Issues** – Client position on ACMs ;
- **Regulator Position** – EA (Regional, Waste), Local Authority (Local) and HSE (Regional/National);
- **Stakeholder Issues**



Case Studies



Hinkley Point



- Major energy project driven by UK Infrastructure Policy & Market Need
- Enabling Land for a new Power Station being developed by NNB Generation Co (a subsidiary of EDF)
- Works in Several Phases
 - Phase 1 focused on a Mound (98,000m³ of Construction & Demolition Waste) from Hinkley Point A;
 - Phase 2 on the Made Ground Present Across the Wider Site



Phase 1 Works

- Focused on a Mound of 98,000m³ of Material
- Processing of Materials to a tight reuse specification :
- Geotechnical Performance;
- Chemical Criteria;
- Asbestos at <0.1% and No loose or Friable Materials, Fragments of Cement Bound to be <8cm²



Backfilling of Turbine Hall

- Detailed acceptance criteria and strict monitoring regime to ensure compliance
- Over 48,000m³ of acceptable material transported into Hinkley A.
- Balance retained on wider BDAE site
- Over 4,000 25T dumper loads.
- Saved the equivalent of 12,000 lorry movements on local roads.



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Phase 2 Works

- Focused on Wider Site
- Processing of Materials to meet reuse specification for wider site;
- End Point was Materials which meet criteria for reuse across site;
- Site to be Suitable for Main Earthworks Contract to take place without constraint.



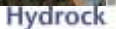
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Asbestos Remediation at Hinkley

- Site investigations indicated that asbestos contamination was more widespread than expected.
- Close liaison with HSE over remediation methodology.
- **Controlled and Uncontrolled Areas**, known areas of ACM Impact were set out and fenced off;
- Only authorised, trained and qualified staff were allowed in Asbestos Controlled Zones
- Hydrock operatives were trained and insured to work under license holder
- Ensured right operatives were in control of the plant



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Phase 2 Works

Materials Management Plan with site sub-divided into "Blocks" and Further Sub-Division

Processing of Materials within the Source Blocks to ensure all materials exceeding reuse target were removed from site and all remaining met reuse specification for wider site;

Site Waste Management Plan was the key document for off site disposal



APRIL 2012



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Materials Segregation Process

- Excavate into Stockpiles;
 - Likely to be Suitable
 - Likely to be Unsuitable
 (Visual assessment by Licensed Operative)
- Tested by Sampling of 500m3 stockpiles to site specific validation criteria



Difficult Access

- Included works on beach and in the cliffs
- All Works under Licensed Conditions (ASB5 Notification)

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Placement of clean loose gravel



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Visual inspection to ensure basal coverage



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ACM loading from a spoil mound in quarantine
Misting is ongoing at all times



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Visual inspection to ensure load is evenly spread and not too full



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Placement of cover (1 1/2 tonnes of clean material)



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Load is covered and sheeted



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Wheelwash for general cleaning



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Powerwash and visual inspection



Radiological Issues

- All samples were tested for beta-gamma on site and issued to approved laboratory off site for screening;
- Random loads tested;
- All Stockpiles ;
- Site Compound

At no time was control limit exceeded outside of Controlled Zones

All Personnel Tests in Controlled Zones were less than the Assigned Protection Factor for the RPE

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Air Monitoring

- Working Faces and in Breathing Zones;
- Reassurance Monitoring Outside Controlled Zones
- Monitoring at Landfill Disposal



London Gateway



- Major UK Port Development
- Former Shellhaven Oil Refinery
- Works are focused on Hydrocarbons
- Hydrock Operate a Soil Treatment Centre focused on;
 - BioRemediation
 - Zero CO₂ Stabilisation

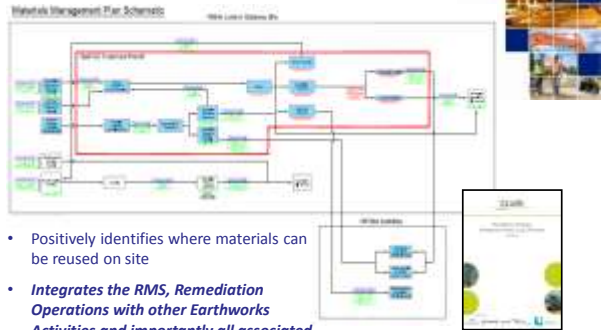


London Gateway 2012



London Gateway 2020

Materials Management Planning



- Positively identifies where materials can be reused on site
- *Integrates the RMS, Remediation Operations with other Earthworks Activities and importantly all associated Permits and accounts for ACMs*



Remediation Compound:



- Batches managed using *Materials Tracking System* defined in;
 - Hydrock *Environmental Permit* Deployment;
 - London Gateway *Earthworks Permits*;
 - Each Material Batch has a *Unique Identification Code*.

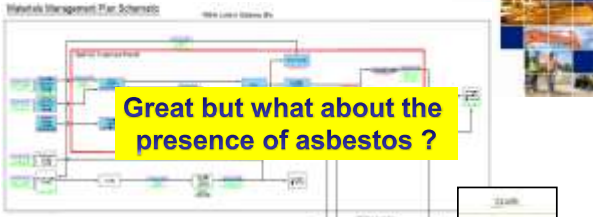


Remediation Compound:

- Materials 'Imported' and Recorded by Weighbridge



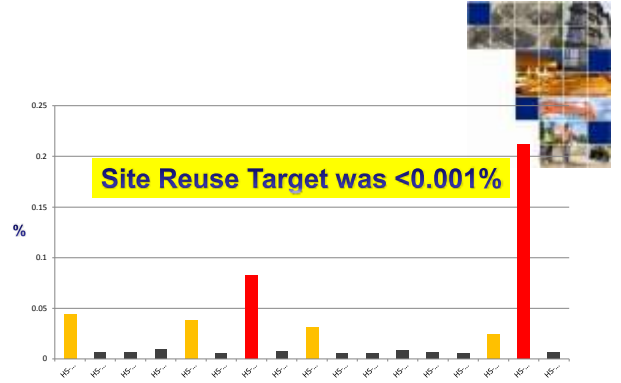
Materials Management Planning



Great but what about the presence of asbestos ?

Lab Analysis was showing ACMs in 45% to 55% of samples and quantification was showing 0.005%

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London Gateway
2012

Remediation Solutions



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