

## EXPERT CONTRACTORS IN LAND AND GROUNDWATER REMEDIATION

- ◆ TRM prides itself on a proven track record of delivering successful solutions to the problems of brownfield contamination
- ◆ TRM work with clients to ensure that projects are completed on time and to budget by utilising conventional and novel technologies

### Mission

To provide cost effective, site specific solutions to the problems of brownfield land management and redevelopment



From derelict to "ready for development"



### Approach

- Adopt an integrated approach, allying good engineering practice with applied science
- Using engineering and scientific knowledge gained from over 25 years of contracting in the contaminated land sector
- Managing projects in accordance with the agreed Remediation Strategy, utilising Environmental Permit EAWML 30248 issued by the UK Environment Agency and an appropriate quality assurance and control programme

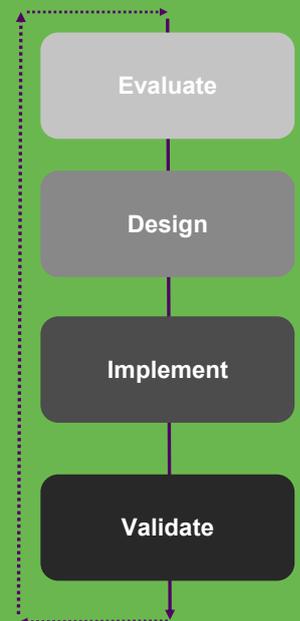


Remediating our environment by conventional means and alternative technologies



Specialising in contaminated land and groundwater remediation, TRM has now delivered over one thousand projects to customers

Integrated approach



### Ex-Situ Treatments

- ◆ TRM undertakes a range of *ex-situ* treatment techniques
- ◆ TRM offers physical processing methods with traditional excavation and disposal, biological treatment, solidification and stabilisation technology (SST), chemical treatments and soil washing

### Ex-Situ Bioremediation

- Involves excavation, screening and often pre-treatment
- Soils may be formed into biopiles, windrows or treatment beds
- Specialist plant is used to de-compact and aerate soils to maintain optimum treatment conditions
- Treated soils may be used as backfill saving the importation of material.



### Physical Processing

- Off-site disposal can be very expensive. TRM remediates contaminated soils using physical sorting and separation processes including crushing and screening to minimise disposal costs and maximise recycling of clean backfill material



### Solidification/Stabilisation Technology (SST) and Chemical Treatment

- SST uses specially designed mixtures of cement and binders to lock in contaminants
- Good for difficult to treat contaminants, sometimes as a pre-treatment method
- May result in engineered material that is suitable to use as backfill
- Controlled application of specialist chemicals provides treatment to a variety of contaminants

### Derelict Site



### Contamination



### TRM designed solution



### Clean site

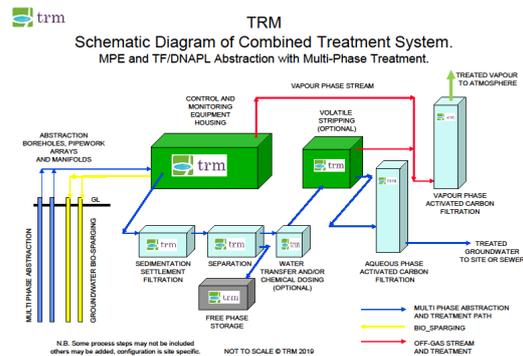


### *In-Situ* Treatments

- ◆ TRM undertakes a range of *in-situ* treatment techniques
- ◆ TRM offers chemical injection methods, soil vapour extraction, multi-phase extraction, air sparging, stripping, pump and treat and combined treatments

### *In-Situ* Bioremediation

- May be undertaken on active and occupied sites
- Injection of nutrients and bio-support media may be implemented with aeration and vapour extraction
- Integrated systems allow the whole volume of soil/groundwater to be treated as a bioreactor to degrade organic contaminants



### Enhanced *In-Situ* Chemical Treatments

- TRM undertakes *in-situ* treatments to degrade a range of contaminants by using chemical injection methods
- Chemical oxidation or reduction can be used for different contaminants by injection of specialist remediation chemicals
- These methods are often used to augment other physical separation and treatment techniques

### Enhanced *In-Situ* Physical Treatments

- Free product removal by ground water pumps in extraction boreholes is routinely undertaken and augmented with vapour extraction and often total fluids abstraction to form dual and multi-phase extraction treatment systems
- Soil Vapour Extraction (SVE) reduces volatile organic compounds in the unsaturated zone by applying a negative pressure through a network of boreholes
- Air sparging and stripping are undertaken to reduce volatile organic compounds in groundwater



### Available technologies

- Chemical
- Biological
- Physical
- Thermal
- Traditional
- Innovative
- *In-Situ*
- *Ex-Situ*

### Treatable contaminants

- Organic
- Inorganic
- Metals
- Complex Mixtures
- Asbestos
- PFAS

### *In-situ* treatments

- Chemical
- SVE
- Dual Phase Extraction
- Multi Phase Extraction
- Air Sparging
- Air Stripping



### Waste Services, Investigations, Pilot Trials and Specialist Equipment

- ◆ TRM can assist in identifying and dealing with hazardous waste
- ◆ Provides site appraisal and trialling services
- ◆ Hire specialist equipment for remediation and groundwater handling



### Specialist Waste Identification and Disposal Services

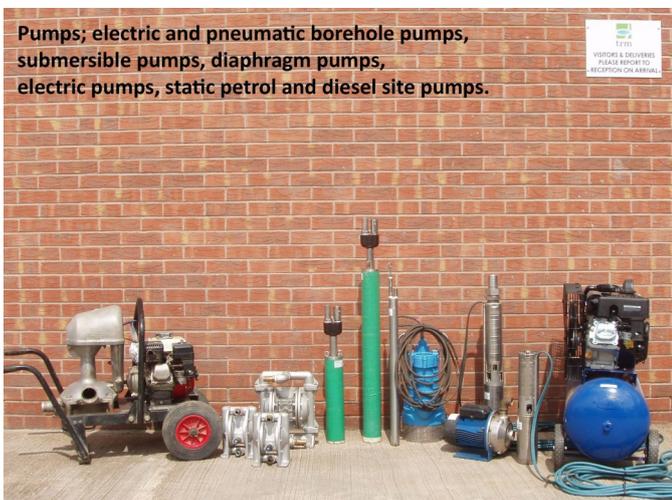
- Many establishments store unidentified chemicals and substances
- TRM can analyse and identify these and advise on the legal implications of storing such substances
- Arrange for disposal of these in line with current legislation and good practice

### Investigation and Pilot Trials

- TRM provide site appraisals and budget costings for remediation work
- Offer site characterisation services including bench and pilot scale treatability studies
- Provide remediation cost assessments
- Trials and test equipment to assist in site investigation works and characterisation



**Pumps; electric and pneumatic borehole pumps, submersible pumps, diaphragm pumps, electric pumps, static petrol and diesel site pumps.**



### Specialist Equipment Hire

- TRM can provide specialist remediation equipment from our extensive hire fleet
- These range from single pumps to fully integrated systems
- Equipment, and if required trained operatives, are available for site trials and testing works.

### Contact details

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