

## Land Remediation

Our specialist and industry focused teams understand the needs and requirements of our land development, construction or property refurbishment clients which range from small specialised firms to the larger corporates. We appreciate the costs incurred due to project delays, the sensitivity concerning road traffic caused by off-site soil remediation, the increasing cost of soil disposal and the frustration caused by poorly planned or executed remediation attempts.

### How We Work

Continuum takes a holistic approach to remediation. From the outset, we collaborate with our client, planners and other stakeholders to fully understand the context for each remediation project we are looking at. We specialize in on site remediation and design and ensure a tailored solution for each site achieving the agreed target remediation goals in the fastest possible timescales. You can expect us to work with you throughout the process, engaging with all necessary stakeholders to ensure that remediation is executed quickly and effectively.

### Getting Started

The first step in the process is normally a meeting to learn as much about the project requirements as is possible. We will review any soil analysis reports along with any historic information available. If a soil analysis has not been completed, we can arrange for this to be done. Once we have sufficient information on the site we will be able to offer a simple yes or no decision as to whether we would be able to offer appropriate remediation based on the targets set for the intended use of the site, e.g. housing, recreation or commercial usage.

We then engage with the client, his advisors and other interested parties to define the target remediation parameters. We also determine any particular factors or constraints that the remediation scheme will need to accommodate such as limited access, reduced noise tolerance or hours of operation. Once we have agreed the targets and any constraints we will design a fully specific and tailored remediation solution.

## Solution Design

The solution design process is unique, detailed and comprehensive. It has been developed over the past twenty years and achieves the following: (i) it allows us to deliver an optimised and rapid solution, and (ii) it will provide the evidence required to underwrite the after-sales warranty. It involves the following key steps.

1. A full environmental geospatial survey conducted by our technical staff. This will include mapping, soil measurements, historic and contemporary environmental analysis and intrusive analysis. Samples including soil core samples, water samples and potentially other fluid, chemical, plant and biomass samples will be taken from various points at the site and shipped to our laboratory.
2. Following independent chemical and biochemical analysis of each sample, the Chief Technical Officer and his team will formulate a remediation plan including the creation of tailored proprietary products and the determination of any necessary physical processes. This solution is then pre-tested in the laboratory and adjusted if necessary to achieve the agreed results in seven days or less. An initial remediation plan is then drafted for consideration.
3. The time lapse from the delivery of samples to our laboratory to the issuance of a draft remediation plan is normally three weeks depending on the complexity of the project.
4. We will then use the draft plan as a consultation document and engage the client, local government officers, and any regulatory entities and groups who might wish to understand how the implementation of the remediation solution will affect them and how we can address their concerns.
5. After such consultations, and when the overall scheme is agreed in principle by all stakeholders, Continuum will finalise the remediation plan, adjusting as necessary to meet any revision of the client's requirements or the results of the consultation process.

Throughout this process both national and international standards and practices are adhered to.

The result is a detailed conceptual model, a set of tested solutions for the range of contaminants discovered, an agreed plan, a clear price, and ***an unequivocal guarantee.***

## **Executing the Remediation Plan**

Once agreement to proceed is reached, the remediation plan is executed.

Throughout the process, our technical and delivery teams will ensure that the plan is implemented to completion. The project execution will involve the following steps in the beginning:-

- 1 The formulation and assembly of the tailored remediation materials.
- 2 Site preparation: the required plant will be mobilised; site access and other site preliminaries will be arranged.
- 3 Regulatory, statutory or institutional enablers will be involved to make sure there are no delays. All known stakeholders and decision makers (the environment agency, highways authority and local government) will be consulted.

When the remediation work is completed and the agreed targets have been met, they will be verified and once agreed, signed off by the client. The project is then deemed as completed and the six-month post-sales warranty period commences.

## **Timescales for Implementation and Completion**

The speed of implementation will depend on the size of the site, the terrain, depth and distribution of contamination, the techniques needed and the amount of resource available,

As a guide, a flat, uncomplicated site with contamination depths of around 1 metre can be treated at a rate of around 4 hectares per day while a deeply contaminated site requiring boreholes can generally be treated at a rate of 4 hectares per week.

Once the site is treated it will take time for the required remediation targets to be achieved.

In the case of a site with shallow contamination and ideal temperature and humidity conditions, and with minimal issues with ex-boundary contamination, remediation targets are normally achieved within 7–14 days after completion of the remediation process.

For deeper contamination, or where we need to employ bio-piles to break down hydrocarbons or other complex substances, the completion times may be up to 45 days.

## **POST-REMEDATION MONITORING SERVICE**

Following the six month warranty period, customers may wish to ensure that the site remains free of contamination, especially where there is a risk of further pollution from neighbouring areas.

We can apply a sophisticated real-time monitoring system which will enable us to continually monitor the soil or water. Clients will be able to view a dashboard showing the actual state of the ground and water being monitored.

This service is planned to be available as from mid-year 2016 and will also involve a post remediation warranty service.

## **STATUTORY AND REGULATORY REQUIREMENTS**

The operational teams employed to carry out the necessary works hold the appropriate licences to conduct or supervise all aspects of our remediation processes.

We will ensure that policies of safety, site management and environmental compliance as well as required insurance policies are fully implemented.

Full details of insurance coverage may be supplied as required.

We will also provide evidence of the appropriate licences, permits, insurances and appropriate health and safety coverage as part of the remediation plan.