



NEW SOIL
SOIL RECYCLING

Your Sustainable Soil
Treatment Experts



Capability Statement

New Soil Cootamundra Soil Treatment Facility
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Your Sustainable Soil Treatment Experts

New Soil is an Australian business established in Cootamundra, with a proven track record in delivering excellence in soil recycling and land restoration for over a decade.

With expertise extending across residential and commercial construction and development, transport infrastructure development, retail service station upgrades, industrial facility demolition and redevelopment, we achieve results that cater to your needs, the environment and local communities.

On-Site and Off-Site Solutions

As a world leader in bioremediation technology, New Soil treats contaminated soils in Australia and internationally, both on client site and off-site at our own EPA licensed bioremediation facility in NSW.

10+

Years of
Industry
Experience



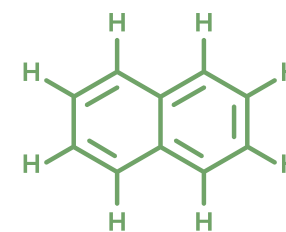
Australian
Owned
Company



International
Project
Experience



In Australia's contamination sector, New Soil was the first to introduce commercially viable off-site bioremediation solutions, and was the only company worldwide to bioremediate gas works, tar and tar products, such as creosote and emulsion.



Additional remediation methods include chemical oxidation, chemical immobilisation, chemical reduction and cement stabilisation, currently exclusively on client sites.



Besides offering state-of-the-art biological, chemical and physical soil contamination remediation, our experienced team offers demolition, civil works and excavation services.

Treating contaminated soil and reintroducing it to the natural environment.

Our goal is to maximise contaminated soil's potential for beneficial reuse. Using scientifically-backed biological, physical and chemical processes, New Soil transforms contaminated soils into reusable soil materials, saving landfill space and disposal costs, while restoring the natural environment and helping you meet your sustainability targets.

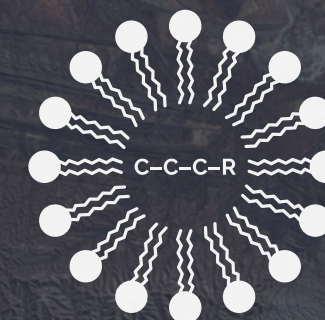
Wherever possible, we apply sustainable *green chemistry* techniques that maintain soil function, including the microbial biome which are low in energy inputs and mitigate scope 1, 2 and 3 emissions.

As part of our commitment to protecting the environment for future generations, New Soil does not use thermal desorption or other burning or heating technologies, which emit high levels of carbon dioxide into the atmosphere and destroy soil functions.



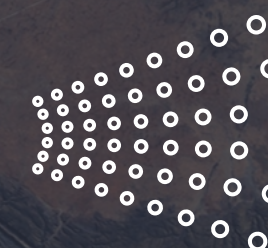
Our Cootamundra Soil Treatment Facility (STF) is the only EPA licensed bioremediation facility in NSW and is a dedicated supporter of the NSW EPA's Circular Economy Policy.

In order to improve the bioremediation process, the New Soil team developed two proprietary products for hydrocarbons:



EESISolv-18

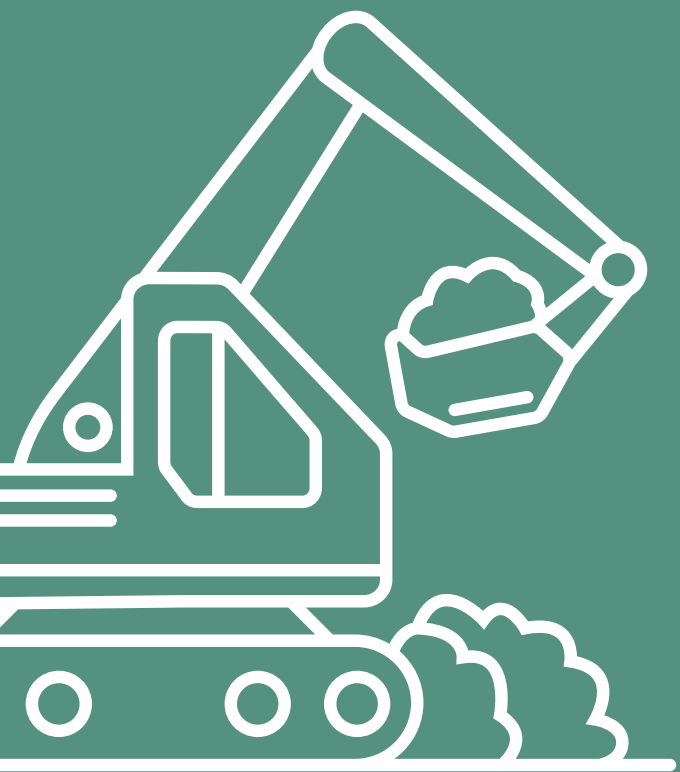
An organic and biodegradable solvent which enables contaminants to be released from soil matrixes, exposing them to bacterial consumption



EESISolv-6

An organic and biodegradable odour-neutralising spray that can be applied in more built-up areas, in order to minimise impact on nearby receptors.

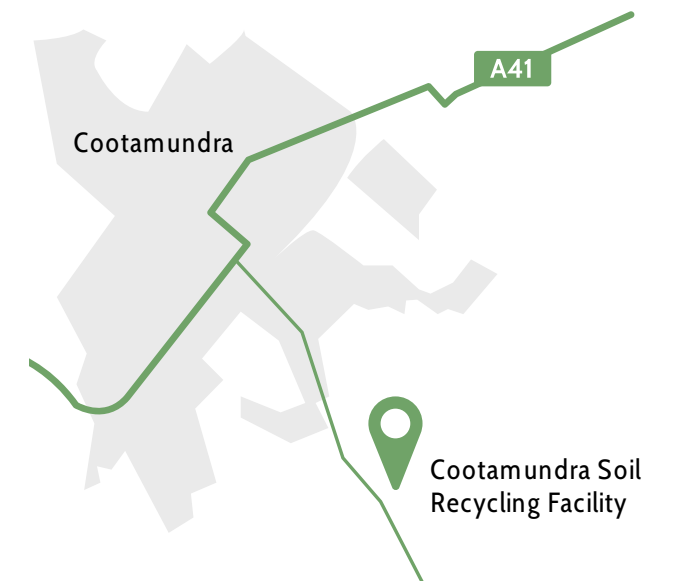
Experts in off-site and on-site soil contaminated soil treatment



Off-site Bioremediation at our Soil Treatment Facility in Cootamundra, NSW

Through our fully-licensed soil treatment facility, we offer a cost-effective alternative to landfill disposal for soil contaminated with petrol, diesel, solvents, coal tar and waste oil, among others.

Our Soil Treatment Facility in Cootamundra was designed specifically to meet the needs of clients with smaller sites or tight schedules, who lack the space and/or time to allow for on-site bioremediation of hydrocarbon contamination. Following treatment, all soils are validated to meet NSW EPA requirements and then reused to rehabilitate local and regional approved sites.



Rehabilitation of former quarry using New Soil Treated Soil

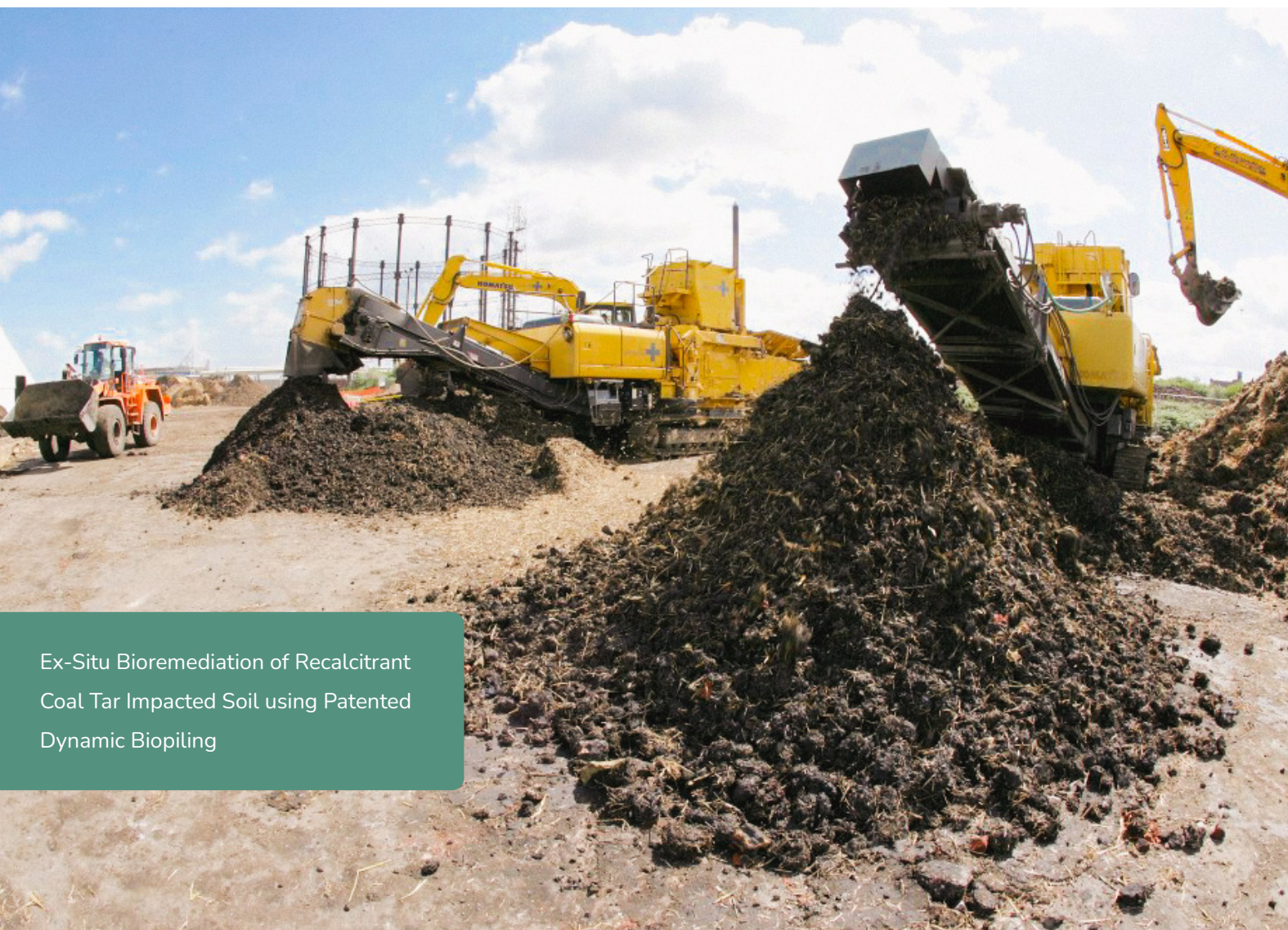


Nature based treatments – Maintaining soil function through Dynamic Biopiling

Soil organic matter and most other soil functional capability lies in the microbial life in the soil. Destructive contaminant treatment technologies, such as thermal incineration, destroy not only contaminants, but all microbial activity and soil functionality to support life.

New Soil's Dynamic Biopiles avoid destructive soil treatment and remove contamination by amplifying soil microbial activity to break down contaminants efficiently while retaining soil function.

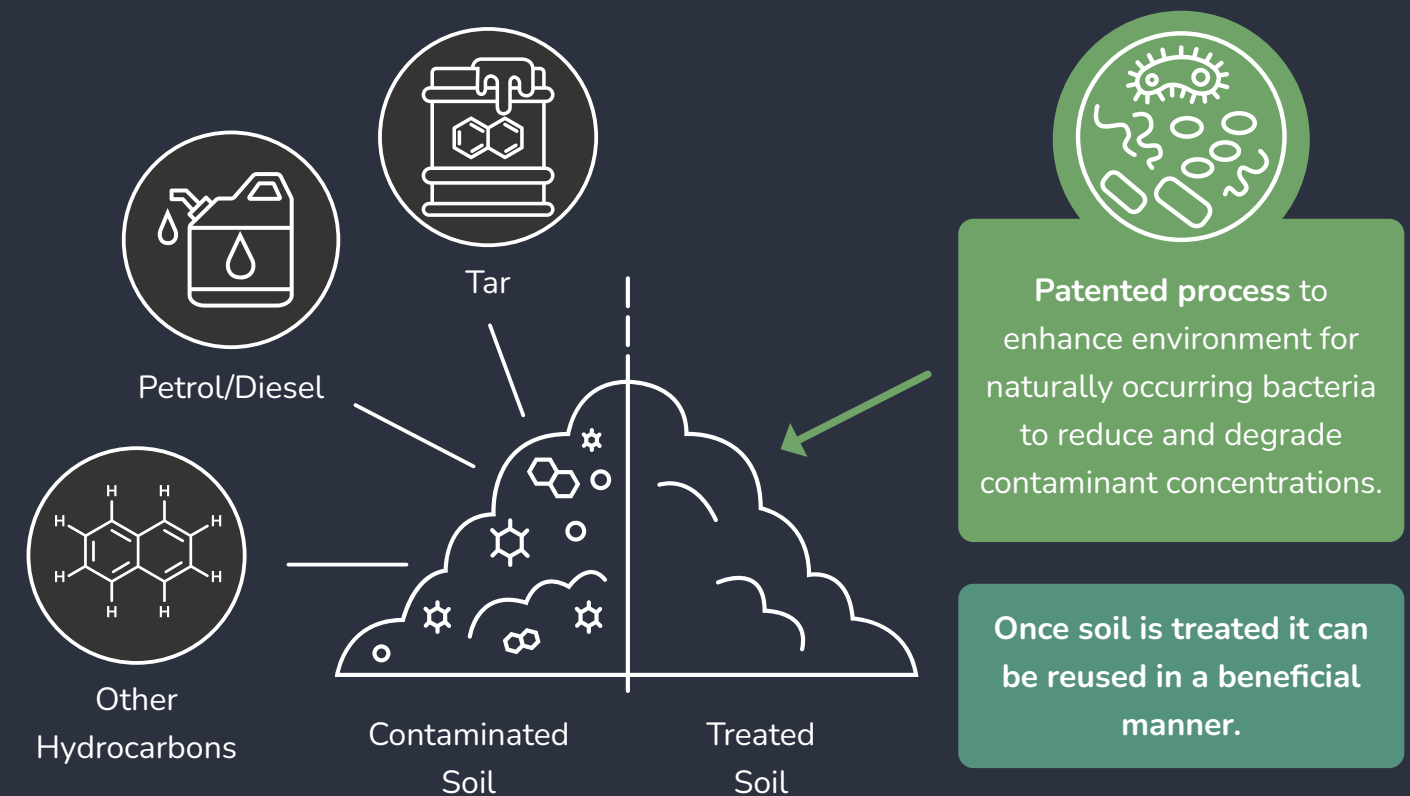
Along with a significant reduction in the carbon footprint of soil treatment, our patented process results in an environmentally friendly, treated and validated product that meets human health guidelines and is safe to be reused in parks or infrastructure projects.



Ex-Situ Bioremediation of Recalcitrant Coal Tar Impacted Soil using Patented Dynamic Biopiling



How our off-site bioremediation process works



New Soil uses bacteria already present in the contaminated soils to break down hydrocarbons (i.e. petrol, diesel, oils, tars, etc.). This is a patented process that enhances the environment for naturally occurring bacteria, which increases their numbers in order to reduce contaminant concentrations.

By degrading contaminated soils to acceptable levels through this process, soils can be effectively cleaned and reused as engineering fill and in some cases landscape soil.

In some instances, complete clean up is not possible but hazard reduction is. In these cases soil is disposed of to landfill at less cost.

The soil produced by this process contains nutrients and can thus be easily cultivated, in contrast to the destructive process of soil incineration.

As urban areas or former industrial sites are redeveloped, bioremediation offers a sustainable approach to contaminant treatment while also allowing soils to be reused in a beneficial manner.

Besides reducing the amount of contaminated soil transported to landfills and reducing the need for quarried material to be used as general fill, this also reduces the concentration of contaminants in the area.

Client Site Contamination Treatment Solutions

New Soil offers the following contamination treatment services on client sites:

1 Biological Remediation

2 Physical Remediation

- Cement Stabilisation
- Activated Carbon
- Bonded Asbestos Removal

3 Chemical Remediation

- Chemical Neutralisation of Potential Acid Sulfate Soils (PASS) and Acid Sulfate Soils (ASS)
- Chemical Immobilisation
- Chemical Reduction
- Chemical Oxidation



Steam from stockpile created by bioremediation

1 Biological Remediation

To achieve sustainable remediation of hydrocarbon-impacted soils on a client’s site, the New Soil team applies the same patented bioremediation process we use at our off-site facility whenever possible, the key factors here are time and space.

Depending on the contaminants present, contamination treatment typically takes between 3 and 12 months. The Dynamic Biopile process can be performed on-site if the client’s project timeline allows for such timeframes, and as long as there is sufficient space for stockpiling the treated soils.

Our team approaches every project with a review of the soil treatment design to ensure the most sustainable and cost-effective remediation solution is utilised.

Low-cost soil treatment is often not the least expensive. A poorly managed or executed project may fail to achieve the required environmental targets, requiring additional phases of remediation and mobilisation. Such additional stages of work are likely to increase project costs and timeframes. While fast turnaround times and a focus on sustainability do cost more, they often eliminate further costs and provide additional benefits further down the line that far outweigh them.

There are several advantages of on-site treatment:

- Removal of haulage fees and limitations
- Higher treatment criteria
- Potential for on-site reuse of soils once treated
- Significant reduction in overall treatment costs

2 Physical Remediation

Cement Stabilisation

Cement immobilisation has been used successfully to treat a range of chemicals that are leachable and hazardous. Due to carbon emissions it is a solution that is less preferred but does have its place when other solutions are more expensive.

Activated Carbon

Organic contaminants can be remedied in-situ using activated carbon (AC)-based amendments. In this process, activated carbon is combined with chemical or biological additives to enhance contaminant sequestration. It is also useful to immobilise PFAS.

Bonded Asbestos Removal

Soil validated to National Environmental Protection Measures (NEPM) criteria.

New Soil has extensive experience in the management and handling of asbestos. We offer off-site disposal of asbestos impacted soils and on-site cap and contain solutions.

Additionally, we offer pre-screening services where the form and extent of asbestos present in on-site soils is reviewed in order to determine whether abatement (physical removal either via mechanical screening or manual picking), would be successful in reducing asbestos concentrations.

The pre-screening service helps clients determine whether the soils in question are suitable for the proposed land use, without additional or ongoing management controls.



Treatment using
MUST and Screen

3 Chemical Remediation

Chemical Neutralisation of Potential Acid Sulfate Soils (PASS) and Acid Sulfate Soils (ASS)

New Soil has investigated and treated PASS and ASS for over 25 years, during which we have successfully treated more than 115,000m³ of acid sulfate soil with different techniques suited to the site and excavation rate. This can include pugmills or using a larger scale paddock options, which is suitable for higher excavation rates. Our staff are trained in soil sampling and validation to reduce time by not relying on external consultants.

Depending on the size of the area available for treatment and your individual objectives, we utilise a variety of treatment technologies to either maximise daily treatment volumes, or to treat soils with the smallest environmental footprint possible, for example by utilising our Mobile Unit for Soil Treatment (MUST).

Chemical Immobilisation

Our team has extensive experience in producing bench trials and accelerating the application process for obtaining Specific Immobilisation Approvals (SIAs) for a proposed chemical stabilisation. Utilising our proven methodology and technology, our team has performed a wide range of lead stabilisation remediation, including sludge stabilisation from metal manufacturing plants and shooting range soil stabilisation.

By performing on-site immobilisation, contamination disposal can be performed at a lower waste classification, thereby reducing disposal fees significantly.

Chemical immobilisation is typically undertaken to treat the leachability and bioavailability of elements, particularly metals. Whilst elements in soil cannot be destroyed, their level of toxicity can be minimised by manipulating that element's state.

For most elements, level of toxicity relates to the level of solubility of the element. To change the solubility of a metal, it needs to be ensured that all soluble and ongoing soluble components of that metal can be altered to an insoluble mineral.

This involves adding chemicals to create insoluble minerals; binding the metals as part of a non-dissolvable crystal lattice. Here the nature of the additives varies according to the mineral that requires immobilisation.

Compounds treated by chemical immobilisation include:

- Barium
- Lead
- Zinc
- Copper
- Arsenic
- Antimony

Chemical Reduction

The opposite chemical reaction to oxidation, Chemical Reduction uses powerful reducing compounds to chemically treat contaminated soil and groundwater.

During this process, a reductant solution such as zerovalent iron, or in the case of Hexavalent Chromium (CrVI), organic matter, is inserted into the contaminated soil or groundwater, where it reacts with the contaminants.

The contaminants are destroyed chemically through a process that breaks them down or converts them into less toxic compounds and harmless byproducts.

Compounds treated by chemical reduction include:

- Hexavalent Chromium
- In-situ Chlorinated Solvents (together with biostimulation)
- Chlorinated Pesticides

Chemical Oxidation

Through chemical oxidation, organic pollutants can be converted into less hazardous or harmless substances. In the best case scenario, complete oxidation of organic substances will result in carbon dioxide and water. This technique can also be used to remove inorganic components (e.g. oxidation of cyanide).

Chemical oxidation can be undertaken on chlorinated or chloflourinated solvents. The solvents can be treated on client site or excavated and treated off-site and can involve a variety of oxidants. Whilst ex-situ treatment often involves sodium percarbonate, calcium persulfate or Condyl's crystals, in-situ treatment tends to involve Fenton's reagent or Condyl's crystals.

Compounds treated by chemical oxidation include:

- Chlorinated Solvents



Soil Sampling Solutions (QLD, NSW & VIC)

New Soil offers the following soil sampling services on client sites:

- Soil Sampling for Carbon and Nutrient Sampling (to 1m)
- Soil Profiling
- Continuous or Segmented Cores as Required



Soil Sampling Services

Our soil sampling services are designed to deliver dependable and actionable information about soil conditions. Whether you are in need of basic soil sampling or a comprehensive soil profiling assessment, our experienced team and cutting-edge equipment are ready to meet your requirements. We take pride in being a trusted partner in agricultural and environmental projects across Queensland, New South Wales, and Victoria.

Providing sample collection for a variety of properties such as carbon content, soil characteristics, nutrient levels and composition, we can tailor sample collection to your requirements. We utilise digital tools to speed up the process of collecting soil samples from designated locations, ensuring that the collected samples are representative of the area of interest for accurate analysis. We accommodate specific lab requirements, supporting both continuous cores or segmented cores to work with analysis procedures.

We possess a diverse fleet of drill rigs, including tractor-mounted and custom-mounted rigs. This range of equipment enables us to access various terrains and locations, ensuring that we can collect samples from even the most challenging sites.

Maintaining the integrity and traceability of soil samples is paramount. Our team is experienced in maintaining a strict chain of custody, ensuring that sample data is accurate and reliable for reporting and analysis.



Tractor mounted
drill rig

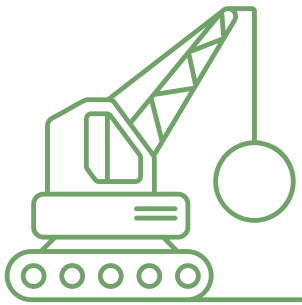


Built Environment Solutions

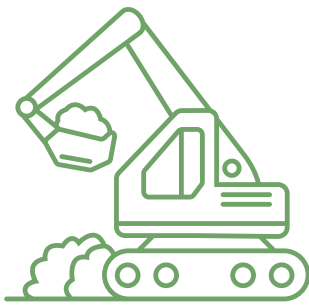
Bringing sustainability to the built environment

We also offer a range of additional services to access and treat contaminated soils, including demolition, civil works and UST removal, which can be seamlessly integrated into your project as required. By integrating the early works, including demolition, New Soil further reduces the possibility of cross-contamination of soils, maximising the volume of material suitable for treatment and reuse.

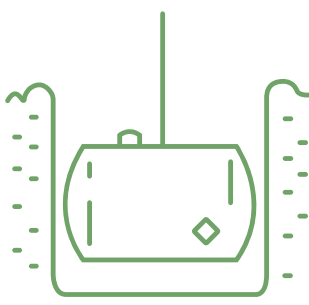
Our built environment services include:



Demolition



Excavation



Underground Storage Tank (UST) Removals



Our commitment to safety guides our work.

To ensure the safety of our workers and the environment, New Soil strives to raise standards not only for client projects, but in all we do.

As a result of a detailed formal review of our systems, processes and site audits, we maintain ISO Certification of our tailored Information Management System (IMS) to ISO45001-2018 OHS Management Systems, ISO14001-2016 Environmental Management Systems, and ISO9001-2016 Quality Management Systems.



Our approach: Environment, Social and Governance

Environment

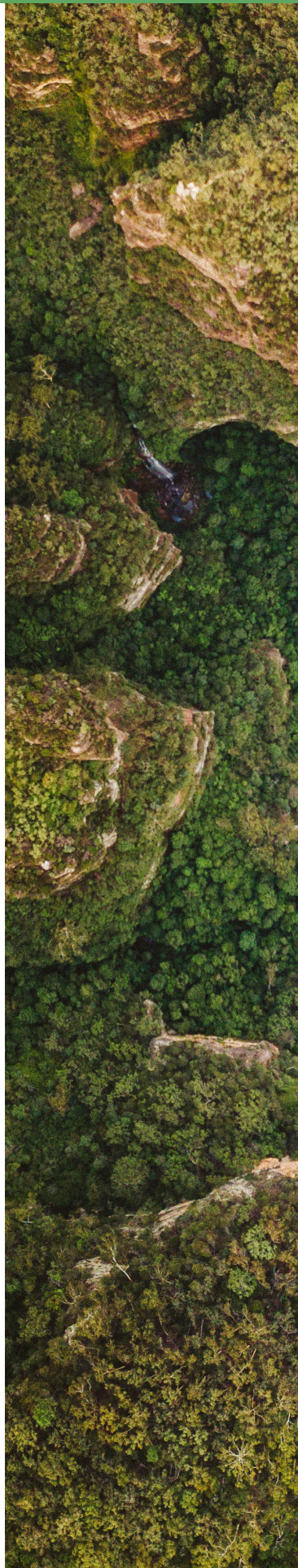
At New Soil, our primary goal is to combat environmental contamination using sustainable natural processes that either break down contaminants or reduce their toxicity. Throughout this process, we've developed treatment additives that are both energy-efficient and biodegradable, ensuring minimal secondary environmental impact resulting from our operations.

Social

People are our greatest asset, and thus, we are committed to providing our employees with an environment of excellence, entrepreneurship, personal growth, diversity, and inclusion that attracts and retains high-calibre talent. We encourage knowledge sharing and interdisciplinary collaboration, and are committed to providing equal opportunities for all. We pride ourselves in our flat organisational structure that empowers our people and fosters interdisciplinary collaboration and agile decision-making at every level. To ensure that we leave behind safe, healthy and sustainable spaces, we are dedicated to engaging with local providers to economically benefit the areas in which we operate, and volunteer into our local community.

Corporate Governance

Our Board continually reviews New Soil's corporate governance and how we conduct our business. To continue to decrease risk, maximise value and provide the best service to our partners, we adjust our processes and rules in response to changing circumstances. This reflects our strong commitment to transparency of decision making between Management, the Board and our employees.





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