SocEnv Soils and Stones project:
Case study demonstrating one or more of the ten principles of good soils and stones management in action

Seaford Road, Salford

Figure 1-Former site layout

Figure 2- Red Line Boundary

Summary: Redevelopment of a former waterproof textile manufacturers in Salford for the delivery of residential dwellings and infrastructure.

The site had a number of tanks containing various solvents, predating world war two and any current day environmental measures. The site use and demise as an industrial unit led to prolonged and widespread contamination of soils and gravels.

The site was grossly contaminated with Volatile Organic Compounds, hydrocarbons, heavy metals and a xylene emulsified plume containing phthalates (a contaminate of concern), posing a risk to soils, controlled wasters and human health. The emulsification meant that traditional risk assessment tools couldn't be utilised as the combination of organic aromatic compounds exaggerated mobility of a more stable phthalate. The issue made the derivation of remediation targets and sustainable remediation complex.

Applying good practice: A remediation options appraisal allowed for the most cost effective and sustainable approach, tailored to the site setting. Site specific screening values were agreed, which ultimately allowed for the retention and re-use of site derived soils. Demolition materials were also recycled for use in the development.

Characterisation, testing and tracking of soils allowed for an effective reuse of materials, reducing the need for materials to be imported or disposed of in landfill.

Stakeholders included the landowner, Kellen Homes, The Environment Agency, Salford Council, McAuliffe Group, E3P and local residents. (228/300)

Figure 3- Proposed development

Meeting the ten principles:

Principle	How the principle was met in this project.
1. Implement soils and stones management practices to drive sustainable economic growth.	A DoWCoP Material Management Plan (hub and cluster) was in place throughout the enabling works to ensure sustainable re-use of soils and stones. The provision of a suitable development platform contributes to the local economy in an urban area close to employment centres.
2. Preserve, protect, and enhance the value of all soils and stones in situ.	Soil types were segregated and stockpiled by their type/grading. Chemically impacted soils underwent in situ treatment to preserve, protect, and enhance their value. In situ treatment options minimise the need for ex situ treatment methods and the need for excavations.
3. Promote and enhance the inherent value of soils and stones as part of a wider integrated environmental system (e.g., for carbon sequestration, food security and biodiversity).	Remediation of impacted soils and gravels was undertaken to ensure there was no unacceptable risk or impact to the groundwater aquifer and surface waters. Suitable soils were utilised in soft landscaping areas to further promote biodiversity.
4. Use a common standard for soil health in relation to land-use, taking underlying soil conditions and functions into account in the management of land.	Site specific screening values were calculated and agreed with the Local Planning Authority and the Environment Agency. The values were calculated using common standards and accounted for the environmental setting and soil types as well as the proposed land use.
5. Use common quality standards for soil based on principle #4 for excavated soils, stones and dredgings to be used in specific end-uses.	Common quality standards applied throughout (Highways Standards) to ensure the site won soils were processed and engineered to a desired specification for the intended end use (roads, structural areas, landscaping).
6. Understand and identify site specific soil conditions at the start of project planning or change of land-use. Define the status of any excavated soils and stones according to their value as an end-use resource and avoid the intention to discard them as surplus to the needs of the project. Protect undisturbed soils to enhance soil health.	Detailed desk study and multiple phases of ground investigation to characterise the soils and define the type and extent of contamination in soils. A volumetric appraisal allowed for retention of soils. A xylene emulsified hydrocarbon and phthalate plume was present in the groundwater impacting soils. Remediation minimised materials going to landfill.

Principle	How the principle was met in this project.
7. Develop and implement a resource hierarchy for the management of land, soils and stones.	Chemically unsuitable materials after treatment were to be removed from site. To **reduce** the volumes of material requiring removal, options for additional treatment were applied. Site won aggregates were processed as a **recycled** material. The majority of soils and stones were **reused** within the development, increasing **circularity**.
8. Implement financial metrics for the life cycle of all projects based on the impact on soil value in order to drive the market for offsetting (e.g., metrics for biodiversity loss, carbon sequestration and loss of food security).	N/A
9. Implement a national policy progressively to harmonise legislation, regulation, best practice guidance and monitoring programmes to protect soils. Include the fields of planning, **land contamination**, forestry, agriculture, ecological restoration, and waste management. Aim to promote integrated markets for soils and stones, offset trading and policies thereby allowing land values to reflect optimum soil health based on metrics in principle #4.	National Planning Policy Framework (NPPF) to promote brownfield development was the driver behind the development. Best practice guidance for re-using soils and monitoring of the remediation works was implemented from the demolition stage to the build phase. A remediation options appraisal accounted for the most sustainable approaches.
10. Periodically benchmark the natural and economic value of UK soils against both base-line UK and international metrics, taking into account global social, economic and environmental sustainability (e.g., the supply chain impacts of ensuring UK food security, and the valuation of soils and stones).	N/A

Lessons learned: Defining the extent of any contamination is key to appraising the potential volumes that could go to landfill without treatment. Detailed preparatory works are vital to this as well as an appetite from the landowner and developers to address complex contamination issues.

Close work with regulators at an early stage is key to ensure all stakeholders are aware of the works required and potential timeframes.

There is a need to balance willingness and expectations against the complexities of grossly contaminated sites.

It was realised that the technical explanation to the developer had to be communicated in a way that helped them realise the site could be developed in a suitable way that promotes a waste hierarchy and good practice, but also has significant cost saving benefits.

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