

8.0 Remediation

8.1 General

The generic risk assessment has confirmed that unbound asbestos (chrysotile) is present within shallow reworked topsoil and confined to an area in the south of the site historically used for tipping of materials including ACMs, specifically asbestos cement sheeting. These soils are considered as potentially present a human health risk to end users of the site if they remain at the surface.

With respect to localised impact of shallow soils by petroleum hydrocarbons in the vicinity of the existing above ground diesel tank, there could be a potential risk to shallow perched groundwater if these remain.

Asbestos in Soils

The reworked topsoil containing unbound asbestos and present at the surface in the vicinity of WS06 in the south of the site will require remediation to remove any risk to end users of the redevelopment. As this underlies or is adjacent to the area of historic tipping where ACMs in the form of asbestos cement sheeting has been identified, it is considered likely that these materials are the source of the asbestos within the reworked topsoil.

To mitigate any such risk, the asbestos impacted surface reworked topsoil can be removed from this area and taken off site for disposal to a suitably licensed facility, which could be undertaken in conjunction with the removal of the associated tipped materials including the ACMs. In conjunction with these works, it is recommended that validation soil samples are taken of the remaining adjacent topsoil materials and chemically validated to demonstrate that all impacted soils have been successfully removed. Alternatively, subsequent to the clearance of stockpiled soils (SP01) and historic tipped materials, the placement of clean capping soils at a minimum thickness of 450mm could be undertaken, subject to approval by regulators.

When handling soils known to contain asbestos, the Control of Asbestos Regulations (CAR) 2012 will apply during works as part of the redevelopment of the site. In accordance with CAR, a risk assessment will be required along with a plan of work which sets out the control measures to prevent or reduce exposure to asbestos and arrangements for handling and disposal (if required) of asbestos impacted materials.

Fuel Impacted Shallow Soils

It is recommended that the petroleum hydrocarbon impacted shallow soils are excavated and removed from site to be disposed of at a suitably licensed facility. This would address the source and mitigate any future risk to the shallow groundwater beneath the site. As part of these works, it is recommended that validation soil samples are taken from the sides and base of the resultant excavation and chemically validated to demonstrate that all impacted soils have been successfully removed. The diesel tank itself should either be removed or fitted with an appropriate bund to prevent downward movement of fuel into the underlying shallow soils and groundwater.

There is an associated potential significant human health risk to construction personnel from slightly elevated concentrations of petroleum hydrocarbons present within the shallow soils

in the vicinity of the above ground diesel tank. In order to properly mitigate any such human health risks, it is recommended that PPE is used and good hygiene practice is adhered to during all groundworks.

Validation of Imported Soils

Should any imported soils be proposed as part of the redevelopment of the site, either as capping soils or general fill materials, then these will be required to be chemically validated prior to import to determine their suitability for the proposed end use.

Any imported materials destined to be used on site should be managed in accordance with the YALPAG – 'Verification Requirements for Cover Systems: Technical Guidance for Developers, Landowners and Consultants'. The chemical testing validation rates are shown in the table below:

Source and Validation Rate	Chemical Analysis Suite		
	General Soil Suite	Asbestos	Hydrocarbons (TPHCWG)
Greenfield / Manufactured soils 1 per 250m ³ (minimum of 3)	✓	✓	
Brownfield / Screened soils 1 per 100m ³ (minimum of 6)	✓	✓	✓

It is recommended that a Remediation Strategy be completed to provide more detail on the remedial requirements and validation procedures to be agreed with the local authority.

8.2 Utilities

The need for additional protection (e.g. barrier pipes) to underground services and pipework is not considered warranted at this stage, as it is envisaged that all pipework and apparatus would be installed entirely within the natural soils.

The results of laboratory chemical tests should be provided to the appropriate utility companies to allow their assessment for the correct selection of water supply pipework.

8.3 Waste Disposal

Any site generated materials which the developer intends to discard as part of the construction phase of the development would be classed as waste and must be appropriately handled in accordance with current Waste Legislation. The developer should be aware of and utilise the waste hierarchy where possible – Reduce → Reuse → Recycle → Recovery → Disposal. Where materials are unable to remain on site and disposal is the only option, the waste should be classified and sent to an appropriately licensed waste receiving facility. Waste Acceptance Criteria (WAC) testing would be required by the waste receiving facility prior to disposal.

Whether any soils generated are to remain on site or are to be removed from site for disposal, in order to comply with statutory regulations, they will need to be classified at the time of being generated in accordance with WM3 'Waste Classification' guidance. If any materials are to be removed from site, this should be undertaken in accordance with Duty of Care

Regulations, 1991 and the Hazardous Waste Regulations, 2005. This protocol will apply to the off site removal and disposal of soil stockpiles SP01, SP02 and SP03 at the site.

The classification of any construction-derived potential waste materials present at the site is beyond the scope of this report.

8.4 Gas Protection Measures

Given the very low hazard potential for the generation of ground gas at the site, gas protection measures for ground gas are not considered to be required.

No radon protection measures are required for new development.