As of 02/10/2026 Land Contamination Assessment MIR Summary

Padnell Grange, Padnell Road, Cowplain, Waterlooville, Hampshire PO8 8ED
Soils Limited – Report 22035/MIR Rev 1.2

Purpose and Proposed Development

Soils Limited was commissioned by Stonebond Properties (Guildford) Limited and the Borrow Foundation to undertake an intrusive ground investigation at Padnell Grange. The purpose was to establish the site's ground and groundwater conditions, assess potential land contamination and provide geotechnical and environmental recommendations to support the proposed redevelopment.

The proposed scheme comprises demolition of the existing dilapidated farm and ancillary buildings and construction of a residential development of approximately **90 dwellings**, predominantly semi-detached houses and short terraces.

The investigation included eight windowless sampler boreholes to 5 m depth, eight dynamic probes to 5 m and two cable-percussion boreholes to 20 m. Four groundwater and ground-gas monitoring wells were also installed. Site investigation works took place during July 2025, followed by laboratory testing and groundwater/gas monitoring between August and November 2025.

Ground Conditions

Made Ground was identified across most of the site, generally extending from ground level to depths of approximately **0.10–1.00 m**. It typically comprised sandy and gravelly silt containing flint, chalk, brick, ceramic and clinker fragments. Limited topsoil was also encountered.

Below the Made Ground and topsoil, the investigation encountered the **Lambeth Group throughout the site**, extending to the maximum investigation depth of 20 m. This material consists of variable interbedded cohesive and granular soils, principally firm to very stiff sandy/silty clay together with layers of silty or clayey sand.

The Lambeth Group is considered a suitable natural founding material. However, its predominantly cohesive soils have been classified as having a **high volume-change potential**, meaning they are susceptible to shrinkage and swelling in response to changes in moisture content. Rooting and evidence of former roots was found to depths of up to approximately **4.7 m**, which is important when designing foundations close to existing or removed trees.

No groundwater was encountered during the initial drilling. Subsequent monitoring identified groundwater at variable depths, approximately **0.20–4.10 m below ground level**, with an overall rising trend between August and November 2025.

Land Contamination and Environmental Risk

Chemical testing identified a number of localised contaminant concentrations above the assessment criteria adopted for residential development with home-grown produce.

Within the Made Ground, elevated concentrations included **lead and several polycyclic aromatic hydrocarbons (PAHs)**. A lead concentration of 376 mg/kg was recorded at WS108 compared with a guideline value of 210 mg/kg, while elevated PAHs were recorded particularly at WS102 and WS103.

Within the natural Lambeth Group, one sample at WS101 contained **arsenic at 43 mg/kg**, compared with the adopted guideline concentration of 37 mg/kg. The assessment therefore identified potential

pollutant linkages affecting human health from shallow Made Ground and, locally, the Lambeth Group.

No asbestos was detected in the samples tested as part of the current investigation. However, the report notes that asbestos-containing material, comprising chrysotile asbestos debris, had previously been identified during the 2017 investigation. Consequently, the possibility of asbestos elsewhere on the site cannot be excluded and consultation with an appropriate asbestos specialist is recommended as part of the remediation process.

The quantitative risk assessment concluded that the identified soil contamination represents a potential risk to **construction workers and future residents**, and a remediation strategy is therefore required.

The initial risk to controlled waters is assessed as **low**. Following removal/remediation of affected shallow soils and implementation of the proposed drainage arrangements, the residual risk is expected to become negligible and no further controlled-waters assessment is considered necessary.

Ground-gas monitoring recorded a maximum carbon dioxide concentration of 4.6%, no detectable methane and no significant gas flow. The site was classified as **Characteristic Situation CS1 (very low risk)** and specific ground-gas protection measures are therefore not required. The site is also in a low-probability radon area and no radon protection measures are considered necessary.

Foundations and Construction

Foundations should **not be constructed within Made Ground or topsoil** and must extend into suitable natural Lambeth Group material. Shallow foundations are considered appropriate for the proposed low-rise houses and terrace blocks, subject to detailed design and consideration of trees, roots, groundwater and shrinkable clay.

Indicative allowable bearing capacities of approximately **75 kPa at 1.2 m depth and 100 kPa at 1.5 m depth** are given for the assessed strip foundation arrangement, with anticipated settlement of approximately 25 mm. All foundation formations should be inspected and approved by a competent person, and reinforcement is recommended because of the variable and interbedded nature of the ground.

For the apartment buildings, **piled foundations are recommended** because of the higher structural loads, high volume-change potential of the soils and locally deep root penetration. Piles should extend through Made Ground into suitable Lambeth Group strata.

Excavations in Made Ground may only be marginally stable, while deeper excavations into the Lambeth Group may require temporary support. Groundwater could also require local dewatering during construction. Concrete in contact with the ground should be designed for the identified **DS-1 / AC-1s** ground conditions.

Overall Conclusions and Recommendations

The site is considered capable of residential redevelopment, but **remediation and appropriate geotechnical design are required**. The principal environmental issue is localised shallow contamination by lead, arsenic and PAHs, together with the historical finding of asbestos. The remediation objective should be to break the relevant source–pathway–receptor linkages so that

unacceptable risks to residents, construction workers, building services and groundwater are removed.

Excavated materials should be appropriately characterised before reuse or disposal. Testing undertaken for waste classification indicated the assessed samples to be non-hazardous. Any imported soils must be chemically tested and demonstrated to be suitable for their intended use. A discovery strategy should also be maintained during demolition and construction so that any previously unidentified contamination can be appropriately assessed and managed.

In summary, the investigation does **not identify contamination or ground conditions that prevent development**, provided that an appropriate remediation strategy is implemented, foundations are designed for the variable and shrinkable Lambeth Group soils, tree/root influences and groundwater are accounted for, and unexpected contamination encountered during construction is properly managed.