

Our ref: TC/AC/SL/ST14610/0001

Date: 6 March 2015

Your ref:

Mr Duncan Beattie  
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Dear Duncan

### Soil Sampling, Ivy Cottage, Alton

Thank you for your instruction to carry out soil sampling works at the Ivy Cottage site in Alton. These works were carried out in order to address concerns raised by Dr Dan McCrory of Staffordshire Moorlands Council in relation to the use of the site as an orchard and the proposed residential housing development. Wardell Armstrong agreed the general scope of works for this in advance with Dr McCrory.

### Site Description

The site is currently occupied by a small two storey cottage along the northern boundary of the site. Behind the cottage and further to the south the ground is well vegetated, with trees dispersed throughout. Adjacent to the site, to the east and the west are a row of residential properties. To the south of the site, land is agricultural, currently fallow fields. A farm building sits adjacent to the site, beyond the south west corner, the primary use of which appears to be storage of farm vehicles and equipment and represents a possible, but unlikely source of contamination.

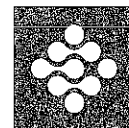
The main road through Alton (B5032) runs parallel to the sites northern boundary and provides the main access route to the site.

### Site History

A number of maps were provided by the client for review. The five maps detail the approximate history of the site between 1775 and 1924.

From 1775 the site appears to be disused open land prior to 1843, wherein the site boundary is now detailed. Its use is unknown but agricultural use is most likely. Additionally a row of residential properties sits adjacent to the site, stretching west from the north-west corner of the site.





From the 1887 mapping, the site boundary is now detailed with trees, along with a row of trees running north-south through the site. A building is now described along the northern edge of the site falling within a small area separated from the rest of the site. Approximately 250m beyond the site to the north a Quarry is now indicated.

The 1900 mapping indicates no changes to the layout within the site boundary but does describe the construction of a large building beyond the southern boundary of the site, possibly farm buildings.

No changes are apparent from the 1924 mapping.

### **Soil Sampling Works**

Ten holes were excavated using spade and hand auger to approximately 0.5m bgl or until the final depth of topsoil. Ten samples of topsoil were taken from the locations indicated on the enclosed plan. Additionally three samples of natural clay material beneath the top soil, were taken from locations A, B and H from between 0.4m and 0.9m bgl.

The sampled material was a dark to light brown, slightly sandy, slightly clayey topsoil. Roots, vegetation and organic matter were present along with occasional gravel.

Beneath the top soil was light chocolaty brown, slightly sandy slightly silty CLAY.

### **Analytical Results**

The 13 samples were scheduled for the analysis of 9 toxic metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Se and Zn). The analysis was undertaken by the MCERTS accredited Alcontrol Laboratories. The full results of the analysis are enclosed with this letter. The results of the analysis were compared with Generic Assessment Criteria (GAC) values for a residential development with plant uptake.

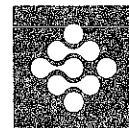
A 253mg/kg concentration of lead was identified from sample E which exceeds the GAC value of 200mg/kg, and represents the only exceedance measured. Statistical analysis has been undertaken in accordance with CIEH/CL:AIRE (2008) *Guidance on Comparing Soil Contamination Data with a Critical Concentration*. The samples were taken in a non-targeted random pattern and from soils that appeared consistent across the site. The results for the ten topsoil samples were assessed as being lognormally distributed, with no outliers. On this basis the 95UCL value was calculated using the non-parametric Cebyshev Theorem. The result of this was 157.6mg/kg.

Given the conservative nature of the screening criteria used, and the result of the 95UCL test, the one elevated result for lead is not considered to represent a significant risk to human health.

### **Conclusions**

Wardell Armstrong has undertaken a review of the Ivy Cottage Site, Alton. This included a review of historic mapping, a site walkover and sampling of near surface soils.

The site has been used as an orchard since sometime between 1843 and 1887 to the present day. A small farm for the storage of farm vehicles and equipment is located adjacent to the south west of the site. No other potential sources of contamination have been identified.



Soil sampling was undertaken at ten locations spread across the site. The samples were analysed for toxic metals at an MCERTS accredited laboratory. The results indicated that there were one exceedance of lead in comparison to the relevant Generic Assessment Criteria in relation to human health, this value was not considered to be significant given the relatively low concentration of the 95th percentile from across the 10 samples. No other exceedances were recorded.

Yours faithfully  
for Wardell Armstrong LLP

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Enc: 001 Sample Location Plan  
002 Certificate of Analysis  
003 Historical Plans