

STUART GUY CONSULTING

Report number 16-04-01

Date 4th May 2016

Environmental Risk Assessment of site off Kirkgate &

Cross Street, Whaplode, Spalding, Lincolnshire, PE12 6TF

Non - technical Summary

The site (about 0.37 ha) is located off Kirkgate and Cross Street with entrances on both Kirkgate and Cross Street. A narrow road runs from Kirkgate to Cross Street with hard standing on the rest of the site that has been used for car parking when it was part of the factory on the other side of Kirkgate. A desk study by Goldfinch Environmental Ltd found reference to a closed fuel filling station very close to the northern boundary and confirmed that the site was used latterly for car parking. No other sources of potential contamination were listed in that report

A walk around the area found no evidence for any further sources of potential contamination, as per the desk study. Trial pits were excavated from rear garden areas, including the front garden of plot 6 as it was enclosed and could be used as a garden to grow food.

The site investigation reported little or no TPH, PAH or toxic metals. Therefore the risk of harm from TPH, PAH and toxic metals to the health of the occupiers is not significant and the risk is acceptable. The risk to the aquatic environment is not significant owing to the impermeable nature of the soil under the site and the very low concentrations of metals and hydrocarbons identified.

No further site investigation is necessary.

Environmental Risk Assessment of site off Kirkgate &

Cross Street, Whaplode, Spalding, Lincolnshire, PE12 6TF

Planning Application No. H23-0434-14

1. Scope of the Risk Assessment

1.1 Under instructions from Peter Pitt of D Brown Building Contractors Limited, Seas End, Moulton Loosegate, PE12 6JX, I have prepared this risk assessment based on the following:
An Environmental Desk Study report by Goldfinch Environmental Ltd, number 0225/1 dated June 2014.

A geotechnical report on the site with borehole logs by Sidebottom, Richardson, Cheng Ltd, reference 28915, dated February 2016

A site investigation to take soil samples on 14th April 2016

Information on the site from Peter Pitt from D Brown Building Contractors about the site
Analysis of samples by The Environmental Laboratory Ltd, report number 16-06483, dated 20th April 2016

1.2 The purpose of this report is to assess whether this site, or potential contaminants from adjacent sites, could present a significant risk of harm to the occupiers of the site or to the environment.

2 Summary of Desk Study and Borehole Logs

2.1 The Desk Study reported that there was no evidence that buildings had been on the site for over 50 years. Potential sources of contamination were identified as being a fuel filling station about 18 m north of the site and parked cars that occupied the site for many years. No other sources of significance were identified. A site investigation to excavate trial pits and take soil samples for analysis was recommended, which is normal for car parking sites and ones that are in very close (next to the northern boundary) proximity to closed fuel filling facilities. Therefore, the report suggested that a general suite of contaminants should be analysed in samples taken from the garden areas of the site.

2.2 The borehole logs indicated that the ground was very soft in most places and had variable depths of fill, as well as a layer of hardcore on the surface. Borehole 4 reported an odour of 'slight petrochemical smell', but as rotting vegetation can produce similar odours, it was poor evidence of hydrocarbon contamination as no samples were collected for analysis.

3 Site Investigation on 16th April 2016 and Information from Peter Pitt

3.1 The site was visited when the weather was overcast and dull. The northern boundary had a garage to the west that may have had fuel filling facilities and houses to the eastern part. Nothing could be seen from the site as high fences were blocking the view. A single lane road ran through the site, which was L-shaped which accessed parking space with gravel hard standing (photos 1 to 4). The plan was to excavate trial pits in the garden areas of the planned

houses and take samples for analysis. A general suite of metals, speciated Total Petroleum Hydrocarbons (TPH) and speciated Polycyclic Aromatic Hydrocarbons (PAH) was selected for analysis as this covered the contaminants that could arise from cars being parked or worked on. The gardens were selected to cover the potential migration of hydrocarbons from the former fuel filling station on High Road, the apparent odour of hydrocarbons reported from BH4 during the geotechnical evaluation of the site and general checks on gardens for spills, leaks, metals from used engine oil and sooty deposits in exhaust systems from cars parked on site.

3.2 Trial Pit logs:

TP1 in northwest corner of site (photo 5)

Depth	Description of ground
0 – 0.300 m	Yellow sand, bricks, stones – fill hard standing
0.3 – 1.4 m	Black dry friable clay
	Samples from 0.3 – 0.4 m, 1.2 – 1.4 m

TP2 near Cross Street and BH4 (photo 6)

Depth	Description of ground
0 – 0.250 m	Yellow sand, bricks, stones – fill hard standing
0.3 – 1.2 m	Dark brown silty clayey sand
	Samples from 0 – 0.3 m, 0.8 – 1.2 m

TP3 near fence extending onto site (photo 7)

Depth	Description of ground
0 – 350 mm	Yellow sand, bricks, stones – fill hard standing
0.35 – 0.55m	Black dry friable silty clay
0.9 – 1.2 m	Black dry friable clay hit buried rubbish, metal, pots, glass – water ingress
1.1 – 1.3 m	Light gray very wet silty coarse sand
	Samples from 0.35 – 0.55 m, 1.1 – 1.3 m

TP4 half way down long fence on eastern side of site (photo 8)

Depth	Description of ground
0 – 400 mm	Dirty dark grey sand, bricks and a few stones
0.4 – 0.7 m	Black friable silty clay
0.7 – 1.6 m	Damp soft brown silty sand
	Samples from 0.4 – 0.6 m, 0.7 – 0.9 m

TP5 near northwest corner of site (photo 8)

Depth	Description of ground
0 – 250 mm	Dirty yellow sand, bricks and some stones
0.25 – 0.9 m	Black dry friable silty clay
0.9 – 1.5 m	Damp soft brown silty sand
	Samples from 0.25 – 0.45 m, 0.9 – 1.1 m

TP6 garden of plot 6 (photo 8)

Depth	Description of ground
0 – 350 mm	Yellow sand, copious small stones and a few bricks
0.35 – 1.3 m	Black damp friable silty clay
1.3 – 1.6 m	Dark grey silty coarse sand
	Samples from 0.35 – 0.55 m, 1.3 – 1.5 m

3.3 The samples were placed into a cool box containing an ice pack for transport to the office. The cool box (with a new ice pack) was sent by carrier to The Environmental Laboratory Ltd where UKAS accreditation has been obtained for most of the species required.

4. Analytical Results

4.1 The concentrations of lead, chromium, nickel and zinc are slightly elevated above the background values that are normally found.

4.2 The concentrations of PAH species in all the samples are very low, the highest total being just 15 mg/kg.

7.3 The concentrations of petroleum hydrocarbon fractions were very low, the highest total being just under 20 mg/kg.

5. Risk Assessment

5.1 The concentrations of some heavy metals that are toxic to human health were slightly elevated, compared to most normal soil, but none exceeded the soil guideline values (SGV) or Category 4 values. Therefore, the risk of harm to the occupiers of the site is not significant and the risk is acceptable.

5.2 The concentrations of TPH species is very low in all samples, most fractions reporting less than the lower limit of 1 mg/kg. Therefore, the risk of harm to the occupiers of the site from TPH is not significant and the risk is acceptable.

5.3 The concentrations of total PAH in all samples were very low, most fractions being below the reporting value of 0.1 mg/kg. Therefore, the risk of harm from PAH to the occupiers of this site is not significant and the risk is acceptable.

5.4 The risk of harm to surface and groundwater is dependent on infiltration into the ground and lateral flow to surface water, as well as solubility of the contaminants reported. However, very low concentrations of all contaminants were reported, groundwater vulnerability is classified as non aquifer and the surface water drain appears to be very clean. Therefore the risk of harm to the aquatic environment from metals, PAH and hydrocarbons is not significant and the risk is acceptable.

6. Remediation

6.1 The top layer of stones, bricks and sand should be removed from garden areas as this is not suitable for plant growth. Soil of suitable quality, as approved by the Local Authority Land Contamination Officer, should be applied to the garden areas to make up the levels.

6.2 No other site investigation or remediation is necessary to provide an acceptable level of risk to the occupiers of the site.

7. Summary

7.1 The site (about 0.37 ha) is located off Kirkgate and Cross Street with entrances on both Kirkgate and Cross Street. It is L-shaped with a ditch/drain running along the western side and then culverted under the northern part of the site towards High Street. A narrow road runs from Kirkgate to Cross Street with hard standing on the rest of the site that has been used for car parking when it was part of the factory on the other side of Kirkgate. A desk study by Goldfinch Environmental Ltd found reference to a closed fuel filling station very close to the northern boundary and confirmed that the site was used latterly for car parking. No other sources of potential contamination were listed in that report

7.2 A walk around the area found no evidence for any further sources of potential contamination, as per the desk study. Trial pits were excavated from rear garden areas, including the front garden of plot 6 as it was enclosed and could be used as a garden to grow food.

7.3 The site investigation reported little or no TPH, PAH or toxic metals. Therefore the risk of harm from TPH, PAH and toxic metals to the health of the occupiers is not significant and the risk is acceptable. The risk to the aquatic environment is not significant owing to the impermeable nature of the soil under the site and the very low concentrations of metals and hydrocarbons identified.

7.4 No further site investigation is necessary.

7.5 Those workers whose main job it is to grade sites or excavate significant quantities of soil could be subject to cumulative exposure to various substances on many sites and they should wear overalls and gloves, even if the soils do not present a significant risk to the health of the workforce. For example, the presence of water contaminated with Weil's disease is a small probability but working on many sites increases the risk of infection to a worker. Localised contamination from small amounts of chemicals that could have been discarded is an unlikely event, but if heavily discoloured or highly odorous materials are encountered, then appropriate advice should be sought.

Stuart Guy, BSc, PhD, C Chem, MRSC, C Eng, MIMMM

Site plan not to scale

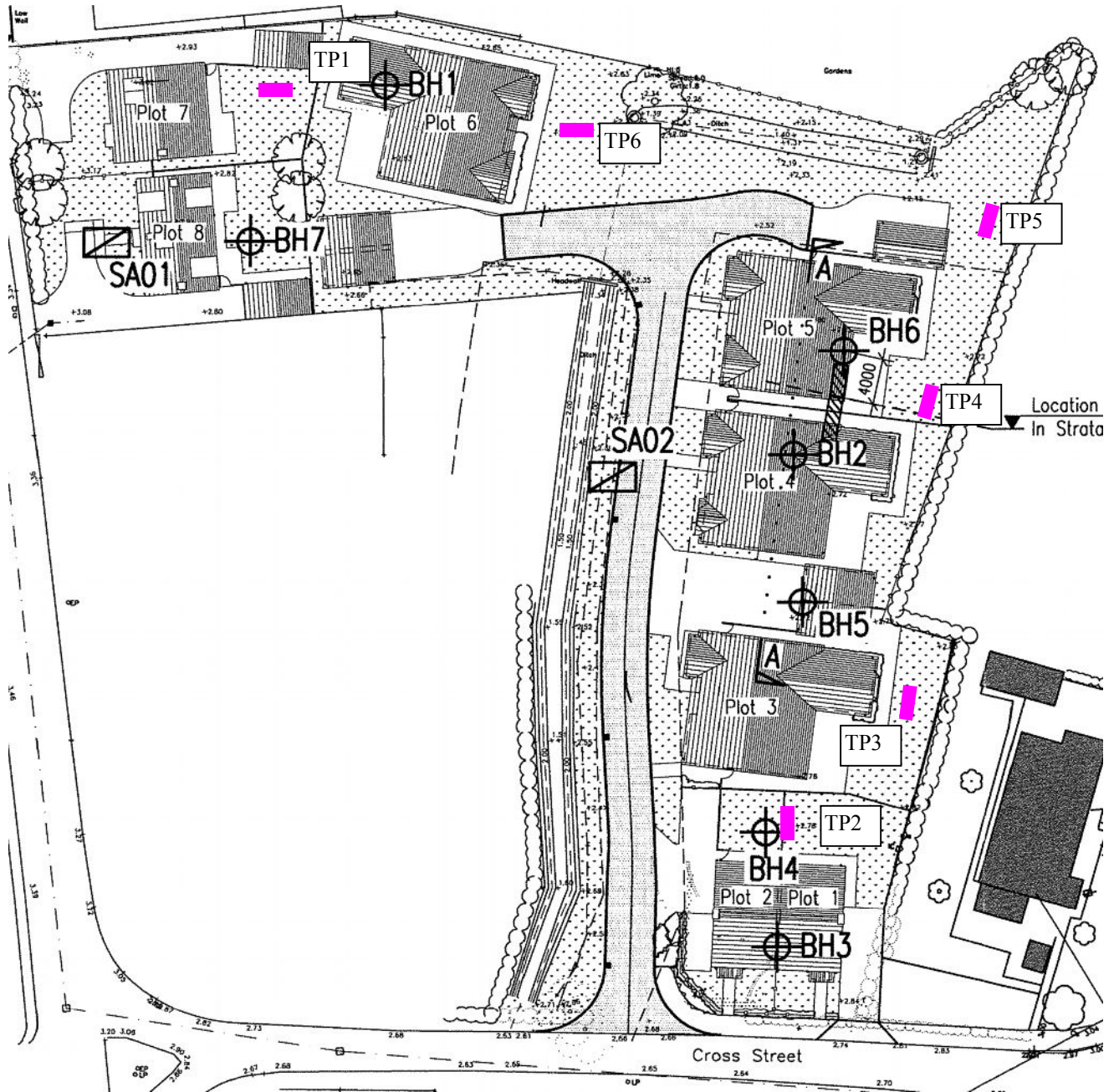


Photo 1 Site entrance on Kirkgate



Photo 2 Houses on north eastern side of site



Photo 3 South towards entrance on Cross Street with ditch to right



Photo 4 Northern boundary with ditch on left and trees alongside it



Photo 5 TP1 near to site of potential fuel tanks



Photo 6 TP2 at south eastern part of site and near BH4



Photo 7 TP3 in garden area of plot 3



Photo 8 TP4 in southern part of garden of plot 5



Photo 9 TP5 in northern part of garden of plot 5



Photo 10 TP6 garden area of plot 6

