



LAND CONTAMINATION SURVEYS

GS Development Services Ltd
Former Builders Yard
Cropwell Road
Langer
Nottinghamshire
NG13 9HD

RE: Land off Middle Lane, Nether Broughton – Topsoil Chemical Analysis

1. Introduction

Castledine Environmental has been commissioned by GS Development (the 'Client') to undertake an environmental chemical assessment of the shallow topsoil present at Middle Lane, Nether Broughton. Chemical testing was undertaken as the Client intends to excavate the shallow soils (~300mm below ground level (mbgl)) from their site at Middle Lane, for intended use in private gardens and areas of soft landscaping at their receiving site at Former Builders Yard, Cropwell Road, Langer NG13 9HD.

A Site Location Plan is presented in Appendix A.

2. Site Setting

The site comprises an area of open pasture land located north of Middle Lane, Nether Broughton, Leicestershire and covers an area of approximately 0.2ha. During the time of the most recent fieldwork, the site was formed by undeveloped pastureland, set within a surrounding residential area in the rural village of Nether Broughton.

3. Ground Investigation

Castledine Environmental attended site on the 16th February 2024 in order to undertake six hand-dug exploratory hole locations (designated SS01 to SS06 inclusive) and progressed to depths of between 0.60mbgl and 0.80mbgl. The location of hand-dug pits are presented on the site plan provided in Appendix B.

The following ground conditions were encountered onsite:

- Topsoil – Topsoil was encountered within all hole locations to depth of between 0.50mbgl and 0.55mbgl and generally encountered as a dark brown mottled orange, slightly sandy, silty clay with rare gravels of mudstone. No anthropogenic materials (i.e. brick or concrete) were observed and the topsoil is considered to be a virgin source.
- Weathered Brandon Sandstone Bed – Observed within all locations to depths of between 0.60mbgl and 0.80mbgl and not fully penetrated at any location. This stratum was recorded as a grey mottled brown, sandy, silty clay with gravels of sandstone.

Groundwater

Groundwater was encountered within all exploratory hole location at depths of between 0.50mbgl and 0.55mbgl and generally standing upon the underlying natural clay strata. It should be noted that the ground conditions across the field were generally waterlogged during the time of the investigation.

Contamination Observations

No visual or olfactory sign of contamination were noted during the most recent fieldwork, and the soils encountered were considered to be natural undeveloped soils.

4. Contamination Risk Assessment

Human Health

The Client intends to excavate approximately 300mm of soil from within the donor Middle Lane site, to be moved and placed within private gardens and soft landscaping at the receiving site at Former Builders Yard, Cropwell Road, Langer. On that basis, the below chemical assessment has been completed in order to confirm the suitability of the soils for re-use purposes.

The results of the chemical samples have been directly compared against the relevant GAC for residential with plant uptake. In order to adopt a conservative approach, a Soil Organic Matter (SOM) of 1% has been used to assess the topsoil, inline with the intended use of the soils.

The results of the chemical analysis are presented in Appendix D, whilst the soil screening values are presented within the tables below:

Metals and Semi-Metals – Residential with Plant Uptake (1% SOM)

Determinant	Units	Accreditation	S4UL (mg/kg)	Highest Value(s) (mg/kg)	Location of Highest value	Exceedance? Y/N
Arsenic	(mg/kg)	MCERTS	37	8.3	SS03	N
Cadmium	(mg/kg)	MCERTS	11	<1.6 (LOD)	All locations	N
Chromium (total)	(mg/kg)	UKAS	910	31.5	SS03	N
Chromium (VI)	(mg/kg)	U	6	<0.04 (LOD)	All locations	N
Copper	(mg/kg)	MCERTS	2400	14.1	SS01	N
Lead	(mg/kg)	MCERTS	200	54.0	SS05	N
Mercury	(mg/kg)	UKAS	1.2	<0.7 (LOD)	All locations	N
Nickel	(mg/kg)	MCERTS	180	15.3	SS05	N
Zinc	(mg/kg)	MCERTS	3700	75.2	SS05	N
Selenium	(mg/kg)	MCERTS	250	<3 (LOD)	All locations	N
Total Phenols	(mg/kg)	MCERTS	280	0.7	SS01 & SS05	N
pH	pH units	MCERTS	-	4.7 – 5.8	SS04 – SS06	N
Asbestos	-	-	-	NAD	-	-

Non-Metals - Residential with Plant Uptake (1% SOM)

Determinant	Units	Accreditation	S4UL (mg/kg)	Highest Value(s) (mg/kg)	Location of Highest value	Exceedance? Y/N
Naphthalene	(mg/kg)	MCERTS	2.3	<0.02 (LOD)	All locations	N
Acenaphthylene	(mg/kg)	UKAS	170	<0.02 (LOD)	All locations	N
Acenaphthene	(mg/kg)	UKAS	210	<0.02 (LOD)	All locations	N
Fluorene	(mg/kg)	MCERTS	170	<0.02 (LOD)	All locations	N
Phenanthrene	(mg/kg)	MCERTS	95	0.06	SS05	N
Anthracene	(mg/kg)	MCERTS	2400	<0.02 (LOD)	All locations	N
Fluoranthene	(mg/kg)	MCERTS	280	0.15	SS05	N
Pyrene	(mg/kg)	MCERTS	620	0.13	SS05	N
Benzo(a)anthracene	(mg/kg)	MCERTS	7.2	0.07	SS05	N
Chrysene	(mg/kg)	MCERTS	15	0.08	SS05	N
Benzo(b)fluoranthene	(mg/kg)	MCERTS	2.6	0.07	SS05	N
Benzo(k)fluoranthene	(mg/kg)	MCERTS	77	0.03	SS05	N
Benzo(a)pyrene	(mg/kg)	MCERTS	2.2	0.07	SS05	N
Indeno(1, 2, 3,-cd)pyrene	(mg/kg)	MCERTS	27	0.05	SS05	N
Dibenzo(a,h)anthracene	(mg/kg)	MCERTS	0.24	<0.02 (LOD)	All locations	N
Benzo(g, h, i)perylene	(mg/kg)	MCERTS	320	0.04	SS04 & SS05	N
Total PAH (Sum of USEPA 16)	(mg/kg)	UKAS	NC	0.76	SS05	N

Analysis of Results

The results of chemical analysis have not identified any concentration of contaminants above the relevant GAC for residential with plant update, which is considered inline with the intended use of the soils.

Additionally, no asbestos has been detected within the sample screened (nor was anthropogenic material visually noted within the deposits) and no SVOCs have been detected above the laboratory's limit of detection (<0.1mg/kg) with no tentatively identified SVOC compounds were recorded.

5. Conclusions

The topsoil present within the Nether Broughton donor site have been shown to be uncontaminated, and is considered to be chemical suitability for use in residential gardens and areas of soft landscaping. Additionally, no unwanted or oversized material (brick, concrete or sharps) was observed within any of the soils encountered during the most recent fieldwork.

We trust that the above is suitable for your requirements, should any further information or clarification be required, please don't hesitate to contact us.

Andrew Lamont (BSc, FGS)

Appendices:

Appendix A – Site Location Plan

Appendix B – Exploratory Hole Location Plan

Appendix C – Exploratory Hole Logs

Appendix D – Chemical Analysis Results



Site Location Plan

Address: Middle Lane, Nether Broughton LE14 3HD
Client: GS Development Services Ltd



Castledine Environmental, 4 Wymeswold Road, Hoton, Loughborough, Leicestershire LE12 5SN
Telephone: 01509 880399 info@castledineenvironmental.co.uk



EHLP

Address: Middle Lane, Nether Broughton LE14 3HD
Client: GS Development Services Ltd



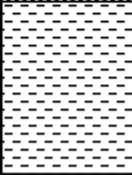

Legend



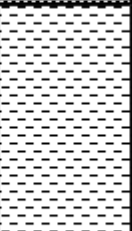

SS01
● Shallow Sample









APPENDIX C

EXPLORATORY HOLE LOGS

Project.		Middle Lane, Nether Broughton LE14 3HD		Hand-Dug Pit.			
Client.		SV GS Developments		SS01			
Method.		Hand-held tools.		Date.			
				16/02/2023			
				Project Reference.			
				3690A			
GW	Backfill	Depth (m)	Description of Strata	Legend	Samples		
					Type	Depth (m) From To	
0.50m ▼		0.00 - 0.50	Grass over dark brown mottled orange, slightly sandy, silty CLAY. Sand is fine to coarse. Rare gravel of fine to medium sub-angular mudstone. (TOP SOIL)		SS01 ES01	0.20	
		0.50 - 0.65	Firm, grey mottled brown, sandy CLAY. Sand is fine to coarse. (WEATHERED BRANDON SANDSTONE BED)				
Remarks			Key			 Castledine Environmental LAND CONTAMINATION SURVEYS	
Backfilled with arisings.			Logged By	Scale	Sheet		
			AL	Not to Scale	1 of 1		

Project.		Middle Lane, Nether Broughton LE14 3HD		Hand-Dug Pit.			
Client.		SV GS Developments		SS02			
Method.		Hand-held tools.		Date.			
				16/02/2023			
				Project Reference.			
				3690A			
GW	Backfill	Depth (m)	Description of Strata	Legend	Samples		
					Type	Depth (m) From To	
0.55m ▼		0.00 - 0.50	Grass over dark brown mottled orange, slightly sandy, silty CLAY. Sand is fine to coarse. Rare gravel of fine to medium sub-angular mudstone. (TOP SOIL)		SS02 ES01	0.25	
		0.50 - 0.60	Firm, grey mottled brown, sandy CLAY. Sand is fine to coarse. Rare fine to medium, sub-angular sandstone present. (WEATHERED BRANDON SANDSTONE BED)				
Remarks			Key			 Castledine Environmental LAND CONTAMINATION SURVEYS	
Backfilled with arisings.			Logged By	Scale	Sheet		
			AL	Not to Scale	1 of 1		

Project	Middle Lane, Nether Broughton LE14 3HD			Hand-Dug Pit.			
				SS03			
Client.	SV GS Developments			Date.			
				16/02/2023			
Method.				Project Reference.			
	Hand-held tools			3690A			
GW	Backfill	Depth (m)	Description of Strata	Legend	Samples		
					Type	Depth (m)	
						From	To
0.55m ▼		0.00 - 0.50	Grass over dark brown mottled orange, slightly sandy, silty CLAY. Sand is fine to coarse. (TOPSOIL)		SS03 ES01	0.25	
		0.50 - 0.60	Firm, grey mottled brown, sandy CLAY. Sand is fine to coarse. Rare fine to coarse, sub-angular sandstone present. (WEATHERED BRANDON SANDSTONE BED)				
Remarks			Key				
Backfilled with arisings.			Logged By	Scale	Sheet		
			AL	Not to Scale	1 of 1		
						 LAND CONTAMINATION SURVEYS	

Project	Middle Lane, Nether Broughton LE14 3HD			Hand-Dug Pit.			
				SS04			
Client.	SV GS Developments			Date.			
				16/02/2023			
Method.				Project Reference.			
	Hand-held tools			3690A			
GW	Backfill	Depth (m)	Description of Strata	Legend	Samples		
					Type	Depth (m)	
						From	To
0.55m ▼		0.00 - 0.55	Grass over dark brown mottled orange, slightly sandy, silty CLAY. Sand is fine to coarse. (TOPSOIL)		SS04 ES01	0.25	
		0.55 - 0.65	Firm, grey mottled brown, sandy CLAY. Sand is fine to coarse. Rare fine to coarse, sub-angular sandstone present. (WEATHERED BRANDON SANDSTONE BED)				
Remarks			Key				
Backfilled with arisings.			Logged By	Scale	Sheet		
			AL	Not to Scale	1 of 1		
						 LAND CONTAMINATION SURVEYS	

Project	Middle Lane, Nether Broughton LE14 3HD			Hand-Dug Pit.			
				SS05			
Client.	SV GS Developments			Date.			
				16/02/2023			
Method.				Project Reference.			
	Hand-held tools			3690A			
GW	Backfill	Depth (m)	Description of Strata	Legend	Samples		
					Type	Depth (m)	
						From	To
0.50m ▼		0.00 - 0.50	Grass over dark brown mottled orange, slightly sandy, silty CLAY. Sand is fine to coarse. (TOPSOIL)		SS05 ES01	0.25	
		0.50 - 0.65	Firm, grey mottled brown, sandy CLAY. Sand is fine to coarse. Rare fine to coarse, sub-angular sandstone present. (WEATHERED BRANDON SANDSTONE BED)				
Remarks			Key				
Backfilled with arisings.			Logged By	Scale	Sheet		
			AL	Not to Scale	1 of 1		
						 Castledine Environmental <small>LAND CONTAMINATION SURVEYS</small>	

Project	Middle Lane, Nether Broughton LE14 3HD			Hand-Dug Pit.			
				SS06			
Client.	SV GS Developments			Date.			
				16/02/2023			
Method.				Project Reference.			
	Hand-held tools			3690A			
GW	Backfill	Depth (m)	Description of Strata	Legend	Samples		
					Type	Depth (m)	
						From	To
0.55m ▼		0.00 - 0.50	Grass over dark brown mottled orange, slightly sandy, silty CLAY. Sand is fine to coarse. (TOPSOIL)		SS06 ES01	0.25	
		0.50 - 0.60	Firm, grey mottled brown, sandy CLAY. Sand is fine to coarse. Rare fine to coarse, sub-angular sandstone present. (WEATHERED BRANDON SANDSTONE BED)				
Remarks			Key				
Backfilled with arisings.			Logged By	Scale	Sheet		
			AL	Not to Scale	1 of 1		
						 Castledine Environmental <small>LAND CONTAMINATION SURVEYS</small>	

APPENDIX D

CHEMICAL ANALYSIS RESULTS

- Found as separate PDF(s)