Norwich Western Link

Environmental Statement Chapter 13: Geology and Soils

Appendix 13.2: Generic Quantitative Risk Assessment

Sub Appendix C: Laboratory Results

Author: WSP

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Contents

1 Introduction

1.1.1 WSP UK Ltd was commissioned by NCC to complete a Generic Quantitative Risk Assessment following an intrusive site investigation undertaken by a contractor. This appendix contains table containing the laboratory results of soil and water testing.

1.1.2 We have included a summary of key information shown in this document in an accessible format in section 1.1.1. However, some users may not be able to access all technical details that are included in the rest of this document. If you require this document in a more accessible format, please contact norwichwesternlink@norfolk.gov.uk

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FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/08001
Issue Number: 1 **Date:** 04 September, 2019

Client:
Norfolk Partnership Laboratory
Environment, Transport and Development Department
Norfolk County Council
County Hall
Norwich
Norfolk
NR1 2SG

Project Manager: Sharon Woods; Simon Holden
Project Name: Ringland A47-A1067 Western Link Road
Project Ref: PK1002D2
Order No: 642593
Date Samples Received: 22/08/19
Date Instructions Received: 28/08/19
Date Analysis Completed: 04/09/19

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 19/08001

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08001/1	19/08001/2						Units	Limit of Detection	Method ref
Client Sample No	1	3								
Client Sample ID	BH001	BH001								
Depth to Top	0.50	2.00								
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	6A								
% Stones >10mm$_A$	5.8	<0.1						% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.33	8.45						pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	<0.01	<0.01						g/l	0.01	A-T-026s
Cyanide (free)$_A$$^{M\#}$	<1	<1						mg/kg	1	A-T-042sFCN
Phenols - Total by HPLC$_A$	<0.2	<0.2						mg/kg	0.2	A-T-050s
Organic matter$_D$$^{M\#}$	0.6	0.3						% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	5	3						mg/kg	1	A-T-024s
Boron (water soluble)$_D$$^{M\#}$	<1.0	<1.0						mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	<0.5	<0.5						mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	9	12						mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	25	23						mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1						mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	8	7						mg/kg	1	A-T-024s
Mercury$_D$	0.28	0.66						mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	24	23						mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1						mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	41	40						mg/kg	5	A-T-024s

Envirolab Job Number: 19/08001

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08001/1	19/08001/2						Units	Limit of Detection	Method ref
Client Sample No	1	3								
Client Sample ID	BH001	BH001								
Depth to Top	0.50	2.00								
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	6A								
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_D^{\#}$	NAD	-								A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	N/A	-								A-T-045

Envirolab Job Number: 19/08001

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08001/1	19/08001/2						Units	Limit of Detection	Method ref
Client Sample No	1	3								
Client Sample ID	BH001	BH001								
Depth to Top	0.50	2.00								
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	6A								
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02						mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05						mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05						mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07						mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06						mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08						mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07						mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08						mg/kg	0.01	A-T-019s

Envirolab Job Number: 19/08001

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08001/1	19/08001/2						Units	Limit of Detection	Method ref
Client Sample No	1	3								
Client Sample ID	BH001	BH001								
Depth to Top	0.50	2.00								
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	6A								
Speciated PCB-EC7										
PCB BZ $28_A^{M\#}$	<0.002	-						mg/kg	0.002	A-T-004s
PCB BZ $52_A^{M\#}$	<0.002	-						mg/kg	0.002	A-T-004s
PCB BZ $101_A^{M\#}$	<0.004	-						mg/kg	0.004	A-T-004s
PCB BZ $118_A^{M\#}$	<0.007	-						mg/kg	0.007	A-T-004s
PCB BZ $138_A^{M\#}$	<0.006	-						mg/kg	0.006	A-T-004s
PCB BZ $153_A^{M\#}$	<0.004	-						mg/kg	0.004	A-T-004s
PCB BZ $180_A^{M\#}$	<0.004	-						mg/kg	0.004	A-T-004s
Total Speciated PCB-$EC7_A^{M\#}$	<0.007	-						mg/kg	0.002	A-T-004s

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Lab Sample ID	19/08001/1	19/08001/2						Units	Limit of Detection	Method ref
Client Sample No	1	3								
Client Sample ID	BH001	BH001								
Depth to Top	0.50	2.00								
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	6A								
SVOC										
Hexachlorobenzene$_A$	<100	-						µg/kg	100	A-T-052s
Diethyl phthalate$_A$	<100	-						µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	<100	-						µg/kg	100	A-T-052s
Dibenzofuran$_A$	<100	-						µg/kg	100	A-T-052s
Carbazole$_A$	<100	-						µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	<100	-						µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	<500	-						µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	<100	-						µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	<100	-						µg/kg	100	A-T-052s
4-Nitrophenol$_A$	<200	-						µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	<100	-						µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	<100	-						µg/kg	100	A-T-052s
2-Nitrophenol$_A$	<100	-						µg/kg	100	A-T-052s
2-Methylphenol$_A$	<100	-						µg/kg	100	A-T-052s
2-Chlorophenol$_A$	<100	-						µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	<100	-						µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	<100	-						µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	<100	-						µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	<100	-						µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	<100	-						µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	<100	-						µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	<100	-						µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	<100	-						µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	<100	-						µg/kg	100	A-T-052s
Phenol$_A$	<100	-						µg/kg	100	A-T-052s
Pentachlorophenol (SVOC)$_A$	<100	-						µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	<100	-						µg/kg	100	A-T-052s
n-Dioctylphthalate$_A$	<500	-						µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	<100	-						µg/kg	100	A-T-052s
Nitrobenzene$_A$	<100	-						µg/kg	100	A-T-052s
Isophorone$_A$	<100	-						µg/kg	100	A-T-052s
Hexachloroethane$_A$	<100	-						µg/kg	100	A-T-052s

Envirolab Job Number: 19/08001

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08001/1	19/08001/2						Units	Limit of Detection	Method ref
Client Sample No	1	3								
Client Sample ID	BH001	BH001								
Depth to Top	0.50	2.00								
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	6A								
Hexachlorocyclopentadiene$_A$	<100	-						µg/kg	100	A-T-052s
Perylene$_A$	<100	-						µg/kg	100	A-T-052s

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Lab Sample ID	19/08001/1	19/08001/2						Units	Limit of Detection	Method ref
Client Sample No	1	3								
Client Sample ID	BH001	BH001								
Depth to Top	0.50	2.00								
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	6A								
VOC										
Dichlorodifluoromethane$_{A}$	<1	-						µg/kg	1	A-T-006s
Chloromethane$_{A}$	<10	-						µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Dichloromethane$_{A}$	<5	-						µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	<5	-						µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	<2	-						µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	<10	-						µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	<3	-						µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s

Envirolab Job Number: 19/08001

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08001/1	19/08001/2						Units	Limit of Detection	Method ref
Client Sample No	1	3								
Client Sample ID	BH001	BH001								
Depth to Top	0.50	2.00								
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	6A								
Chlorobenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	<1	-						µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	<1	-						µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	<2	-						µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	<1	-						µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	<2	-						µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	<3	-						µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	<3	-						µg/kg	3	A-T-006s

Envirolab Job Number: 19/08001

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08001/1	19/08001/2						Units	Limit of Detection	Method ref
Client Sample No	1	3								
Client Sample ID	BH001	BH001								
Depth to Top	0.50	2.00								
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	6A								
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C21-C35$_A$	2	1						mg/kg	1	A-T-055s
Total Aliphatics$_A$	2	1						mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C10-C12$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	3	2						mg/kg	1	A-T-055s
Total Aromatics$_A$	3	2						mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	5	5						mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/08163
Issue Number: 1 **Date:** 06 September, 2019

Client:
Norfolk Partnership Laboratory
Environment, Transport and Development Department
Norfolk County Council
County Hall
Norwich
Norfolk
NR1 2SG

Project Manager: Sharon Woods; Simon Holden
Project Name: Ringland A47 - A1067 Western Link Road
Project Ref: PK1002D2
Order No: 642939
Date Samples Received: 29/08/19
Date Instructions Received: 30/08/19
Date Analysis Completed: 06/09/19

Prepared by:
Melanie Marshall
Laboratory Coordinator

Approved by:
Iain Haslock
Analytical Consultant

Envirolab Job Number: 19/08163

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
% Stones >10mm$_A$	21.3	0.7						% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	7.51	7.49						pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	<0.01	<0.01						g/l	0.01	A-T-026s
Cyanide (free)$_A$$^{M\#}$	<1	<1						mg/kg	1	A-T-042sFCN
Phenols - Total by HPLC$_A$	<0.2	<0.2						mg/kg	0.2	A-T-050s
Organic matter$_D$$^{M\#}$	0.4	0.5						% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	4	2						mg/kg	1	A-T-024s
Boron (water soluble)$_D$$^{M\#}$	<1.0	<1.0						mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	<0.5	<0.5						mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	3	<1						mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	10	5						mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1						mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	7	3						mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17						mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	8	7						mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1						mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	24	19						mg/kg	5	A-T-024s
Leachate Prep NRA (10:1)$_A$	*	-								A-T-001
Ammonium / Ammoniacal Nitrogen as NH4 (leachable)$_A$	0.508	-						mg/l	0.026	A-T-033w
Phenols (total by HPLC) (leachable)$_A$	<0.01	-						mg/l	0.01	A-T-050w
Arsenic (leachable)$_A$$^{\#}$	<1	-						µg/l	1	A-T-025w
Boron (leachable)$_A$$^{\#}$	51	-						µg/l	10	A-T-025w
Cadmium (leachable)$_A$$^{\#}$	<1	-						µg/l	1	A-T-025w
Copper (leachable)$_A$$^{\#}$	6	-						µg/l	1	A-T-025w
Chromium (leachable)$_A$$^{\#}$	<1	-						µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_A$	<0.05	-						mg/l	0.05	A-T-040w
Lead (leachable)$_A$$^{\#}$	4	-						µg/l	1	A-T-025w
Mercury (leachable)$_A$$^{\#}$	<0.1	-						µg/l	0.1	A-T-025w
Nickel (leachable)$_A$$^{\#}$	1	-						µg/l	1	A-T-025w
Selenium (leachable)$_A$$^{\#}$	<1	-						µg/l	1	A-T-025w
Zinc (leachable)$_A$$^{\#}$	9	-						µg/l	1	A-T-025w

Envirolab Job Number: 19/08163

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_{D}^{\#}$	NAD	-								A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	-								A-T-045

Envirolab Job Number: 19/08163

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02						mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05						mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05						mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07						mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06						mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08						mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07						mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08						mg/kg	0.01	A-T-019s

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Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	0.55	-						µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	0.03	-						µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	0.12	-						µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	0.03	-						µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	<0.02	-						µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	0.04	-						µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	0.27	-						µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	0.42	-						µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	0.76	-						µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	0.71	-						µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	0.23	-						µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	3.16	-						µg/l	0.02	A-T-019w

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Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
Speciated PCB-EC7										
PCB BZ $28_A^{M\#}$	<0.002	-						mg/kg	0.002	A-T-004s
PCB BZ $52_A^{M\#}$	<0.002	-						mg/kg	0.002	A-T-004s
PCB BZ $101_A^{M\#}$	<0.004	-						mg/kg	0.004	A-T-004s
PCB BZ $118_A^{M\#}$	<0.007	-						mg/kg	0.007	A-T-004s
PCB BZ $138_A^{M\#}$	<0.006	-						mg/kg	0.006	A-T-004s
PCB BZ $153_A^{M\#}$	<0.004	-						mg/kg	0.004	A-T-004s
PCB BZ $180_A^{M\#}$	<0.004	-						mg/kg	0.004	A-T-004s
Total Speciated PCB-$EC7_A^{M\#}$	<0.007	-						mg/kg	0.002	A-T-004s

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Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
SVOC										
Hexachlorobenzene$_A$	<100	-						µg/kg	100	A-T-052s
Diethyl phthalate$_A$	<100	-						µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	<100	-						µg/kg	100	A-T-052s
Dibenzofuran$_A$	<100	-						µg/kg	100	A-T-052s
Carbazole$_A$	<100	-						µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	<100	-						µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	<500	-						µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	<100	-						µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	<100	-						µg/kg	100	A-T-052s
4-Nitrophenol$_A$	<100	-						µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	<100	-						µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	<100	-						µg/kg	100	A-T-052s
2-Nitrophenol$_A$	<100	-						µg/kg	100	A-T-052s
2-Methylphenol$_A$	<100	-						µg/kg	100	A-T-052s
2-Chlorophenol$_A$	<100	-						µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	<100	-						µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	<100	-						µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	<100	-						µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	<100	-						µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	<100	-						µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	<100	-						µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	<100	-						µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	<100	-						µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	<100	-						µg/kg	100	A-T-052s
Phenol$_A$	<100	-						µg/kg	100	A-T-052s
Pentachlorophenol (SVOC)$_A$	<100	-						µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	<100	-						µg/kg	100	A-T-052s
n-Dioctylphthalate$_A$	<500	-						µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	<100	-						µg/kg	100	A-T-052s
Nitrobenzene$_A$	<100	-						µg/kg	100	A-T-052s
Isophorone$_A$	<100	-						µg/kg	100	A-T-052s
Hexachloroethane$_A$	<100	-						µg/kg	100	A-T-052s

Envirolab Job Number: 19/08163

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Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
Hexachlorocyclopentadiene$_A$	<100	-						µg/kg	100	A-T-052s
Perylene$_A$	<100	-						µg/kg	100	A-T-052s

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Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
VOC										
Dichlorodifluoromethane$_{A}$	<1	-						µg/kg	1	A-T-006s
Chloromethane$_{A}$	<10	-						µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Dichloromethane$_{A}$	<5	-						µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	<5	-						µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	<2	-						µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	<10	-						µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	<3	-						µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s

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Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
Chlorobenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	<1	-						µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	<1	-						µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	<2	-						µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	<1	-						µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	<2	-						µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	<3	-						µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	<3	-						µg/kg	3	A-T-006s

Envirolab Job Number: 19/08163

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
TPH CWG (leachable)										
Ali >C5-C6 (leachable)$_A$	<1	-						µg/l	1	A-T-022w
Ali >C6-C8 (leachable)$_A$	<1	-						µg/l	1	A-T-022w
Ali >C8-C10 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Ali >C10-C12 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Ali >C12-C16 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Ali >C16-C21 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Ali >C21-C35 (leachable)$_A$	<20	-						µg/l	20	A-T-055w
Total Aliphatics (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Aro >C5-C7 (leachable)$_A$	<1	-						µg/l	1	A-T-022w
Aro >C7-C8 (leachable)$_A$	<1	-						µg/l	1	A-T-022w
Aro >C8-C10 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Aro >C10-C12 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Aro >C12-C16 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Aro >C16-C21 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Total Aromatics (leachable)$_A$	<20	-						µg/l	20	A-T-055w
TPH (Ali & Aro >C5-C35) (leachable)$_A$	<20	-						µg/l	20	A-T-055w
BTEX - Benzene (leachable)$_A$	<1	-						µg/l	1	A-T-022w
BTEX - Toluene (leachable)$_A$	<1	-						µg/l	1	A-T-022w
BTEX - Ethyl Benzene (leachable)$_A$	<1	-						µg/l	1	A-T-022w
BTEX - o Xylene (leachable)$_A$	<1	-						µg/l	1	A-T-022w
BTEX - m & p Xylene (leachable)$_A$	<1	-						µg/l	1	A-T-022w
MTBE (leachable)$_A$	<1	-						µg/l	1	A-T-022w
Aro >C21-C35 (leachable)$_A$	<20	-						µg/l	20	A-T-055w

Envirolab Job Number: 19/08163

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C21-C35$_A$	<1	<1						mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C10-C12$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	<1						mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	<1	<1						mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/08163
Issue Number: 1 **Date:** 06 September, 2019

Client:
Norfolk Partnership Laboratory
Environment, Transport and Development Department
Norfolk County Council
County Hall
Norwich
Norfolk
NR1 2SG

Project Manager: Sharon Woods; Simon Holden
Project Name: Ringland A47 - A1067 Western Link Road
Project Ref: PK1002D2
Order No: 642939
Date Samples Received: 29/08/19
Date Instructions Received: 30/08/19
Date Analysis Completed: 06/09/19

Prepared by:
Melanie Marshall
Laboratory Coordinator

Approved by:
Iain Haslock
Analytical Consultant

Envirolab Job Number: 19/08163

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
% Stones >10mm$_A$	21.3	0.7						% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	7.51	7.49						pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	<0.01	<0.01						g/l	0.01	A-T-026s
Cyanide (free)$_A$$^{M\#}$	<1	<1						mg/kg	1	A-T-042sFCN
Phenols - Total by HPLC$_A$	<0.2	<0.2						mg/kg	0.2	A-T-050s
Organic matter$_D$$^{M\#}$	0.4	0.5						% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	4	2						mg/kg	1	A-T-024s
Boron (water soluble)$_D$$^{M\#}$	<1.0	<1.0						mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	<0.5	<0.5						mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	3	<1						mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	10	5						mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1						mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	7	3						mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17						mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	8	7						mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1						mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	24	19						mg/kg	5	A-T-024s
Leachate Prep NRA (10:1)$_A$	*	-								A-T-001
Ammonium / Ammoniacal Nitrogen as NH4 (leachable)$_A$	0.508	-						mg/l	0.026	A-T-033w
Phenols (total by HPLC) (leachable)$_A$	<0.01	-						mg/l	0.01	A-T-050w
Arsenic (leachable)$_A$$^{\#}$	<1	-						µg/l	1	A-T-025w
Boron (leachable)$_A$$^{\#}$	51	-						µg/l	10	A-T-025w
Cadmium (leachable)$_A$$^{\#}$	<1	-						µg/l	1	A-T-025w
Copper (leachable)$_A$$^{\#}$	6	-						µg/l	1	A-T-025w
Chromium (leachable)$_A$$^{\#}$	<1	-						µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_A$	<0.05	-						mg/l	0.05	A-T-040w
Lead (leachable)$_A$$^{\#}$	4	-						µg/l	1	A-T-025w
Mercury (leachable)$_A$$^{\#}$	<0.1	-						µg/l	0.1	A-T-025w
Nickel (leachable)$_A$$^{\#}$	1	-						µg/l	1	A-T-025w
Selenium (leachable)$_A$$^{\#}$	<1	-						µg/l	1	A-T-025w
Zinc (leachable)$_A$$^{\#}$	9	-						µg/l	1	A-T-025w

Envirolab Job Number: 19/08163

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_{D}^{\#}$	NAD	-								A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	-								A-T-045

Envirolab Job Number: 19/08163

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02						mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05						mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05						mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07						mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06						mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08						mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07						mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08						mg/kg	0.01	A-T-019s

Envirolab Job Number: 19/08163

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	0.55	-						µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	0.03	-						µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	0.12	-						µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	0.03	-						µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	<0.02	-						µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	0.04	-						µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	0.27	-						µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	0.42	-						µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	0.76	-						µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	0.71	-						µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	0.23	-						µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	3.16	-						µg/l	0.02	A-T-019w

Envirolab Job Number: 19/08163

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
Speciated PCB-EC7										
PCB BZ $28_A^{M\#}$	<0.002	-						mg/kg	0.002	A-T-004s
PCB BZ $52_A^{M\#}$	<0.002	-						mg/kg	0.002	A-T-004s
PCB BZ $101_A^{M\#}$	<0.004	-						mg/kg	0.004	A-T-004s
PCB BZ $118_A^{M\#}$	<0.007	-						mg/kg	0.007	A-T-004s
PCB BZ $138_A^{M\#}$	<0.006	-						mg/kg	0.006	A-T-004s
PCB BZ $153_A^{M\#}$	<0.004	-						mg/kg	0.004	A-T-004s
PCB BZ $180_A^{M\#}$	<0.004	-						mg/kg	0.004	A-T-004s
Total Speciated PCB-$EC7_A^{M\#}$	<0.007	-						mg/kg	0.002	A-T-004s

Envirolab Job Number: 19/08163

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
SVOC										
Hexachlorobenzene$_A$	<100	-						µg/kg	100	A-T-052s
Diethyl phthalate$_A$	<100	-						µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	<100	-						µg/kg	100	A-T-052s
Dibenzofuran$_A$	<100	-						µg/kg	100	A-T-052s
Carbazole$_A$	<100	-						µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	<100	-						µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	<500	-						µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	<100	-						µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	<100	-						µg/kg	100	A-T-052s
4-Nitrophenol$_A$	<100	-						µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	<100	-						µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	<100	-						µg/kg	100	A-T-052s
2-Nitrophenol$_A$	<100	-						µg/kg	100	A-T-052s
2-Methylphenol$_A$	<100	-						µg/kg	100	A-T-052s
2-Chlorophenol$_A$	<100	-						µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	<100	-						µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	<100	-						µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	<100	-						µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	<100	-						µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	<100	-						µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	<100	-						µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	<100	-						µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	<100	-						µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	<100	-						µg/kg	100	A-T-052s
Phenol$_A$	<100	-						µg/kg	100	A-T-052s
Pentachlorophenol (SVOC)$_A$	<100	-						µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	<100	-						µg/kg	100	A-T-052s
n-Dioctylphthalate$_A$	<500	-						µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	<100	-						µg/kg	100	A-T-052s
Nitrobenzene$_A$	<100	-						µg/kg	100	A-T-052s
Isophorone$_A$	<100	-						µg/kg	100	A-T-052s
Hexachloroethane$_A$	<100	-						µg/kg	100	A-T-052s

Envirolab Job Number: 19/08163

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
Hexachlorocyclopentadiene$_A$	<100	-						µg/kg	100	A-T-052s
Perylene$_A$	<100	-						µg/kg	100	A-T-052s

Envirolab Job Number: 19/08163

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
VOC										
Dichlorodifluoromethane$_{A}$	<1	-						µg/kg	1	A-T-006s
Chloromethane$_{A}$	<10	-						µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Dichloromethane$_{A}$	<5	-						µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	<5	-						µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	<2	-						µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	<10	-						µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	<3	-						µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s

Envirolab Job Number: 19/08163

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
Chlorobenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	<1	-						µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	<1	-						µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	<2	-						µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	<1	-						µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	<2	-						µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	<3	-						µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	<1	-						µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	<3	-						µg/kg	3	A-T-006s

Envirolab Job Number: 19/08163

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
TPH CWG (leachable)										
Ali >C5-C6 (leachable)$_A$	<1	-						µg/l	1	A-T-022w
Ali >C6-C8 (leachable)$_A$	<1	-						µg/l	1	A-T-022w
Ali >C8-C10 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Ali >C10-C12 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Ali >C12-C16 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Ali >C16-C21 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Ali >C21-C35 (leachable)$_A$	<20	-						µg/l	20	A-T-055w
Total Aliphatics (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Aro >C5-C7 (leachable)$_A$	<1	-						µg/l	1	A-T-022w
Aro >C7-C8 (leachable)$_A$	<1	-						µg/l	1	A-T-022w
Aro >C8-C10 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Aro >C10-C12 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Aro >C12-C16 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Aro >C16-C21 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Total Aromatics (leachable)$_A$	<20	-						µg/l	20	A-T-055w
TPH (Ali & Aro >C5-C35) (leachable)$_A$	<20	-						µg/l	20	A-T-055w
BTEX - Benzene (leachable)$_A$	<1	-						µg/l	1	A-T-022w
BTEX - Toluene (leachable)$_A$	<1	-						µg/l	1	A-T-022w
BTEX - Ethyl Benzene (leachable)$_A$	<1	-						µg/l	1	A-T-022w
BTEX - o Xylene (leachable)$_A$	<1	-						µg/l	1	A-T-022w
BTEX - m & p Xylene (leachable)$_A$	<1	-						µg/l	1	A-T-022w
MTBE (leachable)$_A$	<1	-						µg/l	1	A-T-022w
Aro >C21-C35 (leachable)$_A$	<20	-						µg/l	20	A-T-055w

Envirolab Job Number: 19/08163

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08163/1	19/08163/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	BH002	BH002								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4AE								
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C21-C35$_A$	<1	<1						mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C10-C12$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	<1						mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	<1	<1						mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/08193
Issue Number: 1 **Date:** 09 September, 2019

Client:
Norfolk Partnership Laboratory
Environment, Transport and Development Department
Norfolk County Council
County Hall
Norwich
Norfolk
NR1 2SG

Project Manager: Sharon Woods; Simon Holden
Project Name: Ringland A47 - A1067 Western Link Road
Project Ref: PK1002D2
Order No: 642938
Date Samples Received: 29/08/19
Date Instructions Received: 02/09/19
Date Analysis Completed: 09/09/19

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 19/08193

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08193/1	19/08193/2	19/08193/3	19/08193/4				Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS101	WS102	WS104	WS114						
Depth to Top	0.50	1.00	0.50	0.50						
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19	23-Aug-19	23-Aug-19						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	4AE	5AE	4AE	4AE						
% Stones >10mm$_A$	15.8	1.8	<0.1	4.0				% w/w	0.1	A-T-044
pH$_D^{M\#}$	7.76	6.01	7.44	8.06				pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	<0.01	0.07	0.02	<0.01				g/l	0.01	A-T-026s
Cyanide (free)$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-042sFCN
Phenols - Total by HPLC$_A$	<0.2	<0.2	<0.2	<0.2				mg/kg	0.2	A-T-050s
Organic matter$_D^{M\#}$	1.0	0.3	0.4	0.9				% w/w	0.1	A-T-032 OM
Arsenic$_D^{M\#}$	4	11	6	6				mg/kg	1	A-T-024s
Boron (water soluble)$_D^{M\#}$	<1.0	<1.0	<1.0	<1.0				mg/kg	1	A-T-027s
Cadmium$_D^{M\#}$	0.5	0.6	<0.5	<0.5				mg/kg	0.5	A-T-024s
Copper$_D^{M\#}$	8	16	5	6				mg/kg	1	A-T-024s
Chromium$_D^{M\#}$	13	41	10	12				mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1	<1				mg/kg	1	A-T-040s
Lead$_D^{M\#}$	13	12	6	11				mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17	<0.17	<0.17				mg/kg	0.17	A-T-024s
Nickel$_D^{M\#}$	13	36	8	11				mg/kg	1	A-T-024s
Selenium$_D^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-024s
Zinc$_D^{M\#}$	36	51	23	32				mg/kg	5	A-T-024s

Envirolab Job Number: 19/08193

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08193/1	19/08193/2	19/08193/3	19/08193/4				Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS101	WS102	WS104	WS114						
Depth to Top	0.50	1.00	0.50	0.50						
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19	23-Aug-19	23-Aug-19						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	4AE	5AE	4AE	4AE						
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_D^{\#}$	NAD	NAD	NAD	NAD						A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	N/A	N/A	N/A	N/A						A-T-045

Envirolab Job Number: 19/08193

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08193/1	19/08193/2	19/08193/3	19/08193/4				Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS101	WS102	WS104	WS114						
Depth to Top	0.50	1.00	0.50	0.50						
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19	23-Aug-19	23-Aug-19						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	4AE	5AE	4AE	4AE						
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02	<0.02				mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05				mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05				mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07				mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06	<0.06				mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08				mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07				mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08				mg/kg	0.01	A-T-019s

Envirolab Job Number: 19/08193

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08193/1	19/08193/2	19/08193/3	19/08193/4				Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS101	WS102	WS104	WS114						
Depth to Top	0.50	1.00	0.50	0.50						
Depth To Bottom										
Date Sampled	23-Aug-19	23-Aug-19	23-Aug-19	23-Aug-19						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	4AE	5AE	4AE	4AE						
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C21-C35$_A$	<1	<1	1	7				mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	<1	1	7				mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C10-C12$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	<1	2	4				mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	<1	2	4				mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	<1	<1	3	11				mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/08491
Issue Number: 1 **Date:** 18 September, 2019

Client:
Norfolk Partnership Laboratory
Environment, Transport and Development Department
Norfolk County Council
County Hall
Norwich
Norfolk
NR1 2SG

Project Manager: Sharon Woods; Simon Holden
Project Name: Ringland A47-A1067 Western Link Road
Project Ref: PK1002D2
Order No: 643804
Date Samples Received: 05/09/19
Date Instructions Received: 10/09/19
Date Analysis Completed: 18/09/19

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Holly Neary-King
Client Manager

Envirolab Job Number: 19/08491

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08491/1	19/08491/2	19/08491/3	19/08491/4	19/08491/6	19/08491/7	19/08491/8	Units	Limit of Detection	Method ref
Client Sample No	1	3	4	1	3	1	2			
Client Sample ID	003	003	003	004	004	103	103			
Depth to Top	0.20	0.90	1.20	0.50	2.00	0.20	1.00			
Depth To Bottom										
Date Sampled	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4AE	4ABE	4AE	4A	4AE	4AE			
% Stones >10mm$_A$	27.2	5.7	37.0	29.4	4.2	8.6	21.9	% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	7.82	7.43	7.45	7.64	7.62	7.93	8.01	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	g/l	0.01	A-T-026s
Cyanide (free)$_A$$^{M\#}$	<1	-	<1	<1	-	<1	<1	mg/kg	1	A-T-042sFCN
Phenols - Total by HPLC$_A$	<0.2	-	<0.2	<0.2	-	<0.2	<0.2	mg/kg	0.2	A-T-050s
Organic matter$_D$$^{M\#}$	1.3	2.4	0.9	0.6	<0.1	1.3	0.5	% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	3	-	1	6	-	5	4	mg/kg	1	A-T-024s
Boron (water soluble)$_D$$^{M\#}$	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	<1	-	2	2	-	3	<1	mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	9	-	11	11	-	12	8	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	-	<1	<1	-	<1	<1	mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	8	-	3	9	-	13	5	mg/kg	1	A-T-024s
Mercury$_D$	<0.17	-	<0.17	<0.17	-	<0.17	<0.17	mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	7	-	7	8	-	6	4	mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	-	<1	<1	-	<1	<1	mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	17	-	9	20	-	17	8	mg/kg	5	A-T-024s
MTBE$_A$$^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Leachate Prep BS EN 12457-2 (10:1)$_A$	*	-	-	-	-	*	-			A-T-001
Ammonium / Ammoniacal Nitrogen as NH4 (leachable)$_A$	0.156	-	-	-	-	0.240	-	mg/l	0.026	A-T-033w
Phenols (total by HPLC) (leachable)$_A$	<0.01	-	-	-	-	<0.01	-	mg/l	0.01	A-T-050w
Arsenic (leachable)$_A$$^{\#}$	<1	-	-	-	-	1	-	µg/l	1	A-T-025w
Boron (leachable)$_A$$^{\#}$	96	-	-	-	-	62	-	µg/l	10	A-T-025w
Cadmium (leachable)$_A$$^{\#}$	<1	-	-	-	-	<1	-	µg/l	1	A-T-025w
Copper (leachable)$_A$$^{\#}$	3	-	-	-	-	3	-	µg/l	1	A-T-025w
Chromium (leachable)$_A$$^{\#}$	<1	-	-	-	-	<1	-	µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_A$	<0.05	-	-	-	-	<0.05	-	mg/l	0.05	A-T-040w
Lead (leachable)$_A$$^{\#}$	12	-	-	-	-	9	-	µg/l	1	A-T-025w
Mercury (leachable)$_A$$^{\#}$	<0.1	-	-	-	-	<0.1	-	µg/l	0.1	A-T-025w
Nickel (leachable)$_A$$^{\#}$	4	-	-	-	-	2	-	µg/l	1	A-T-025w
Selenium (leachable)$_A$$^{\#}$	<1	-	-	-	-	<1	-	µg/l	1	A-T-025w
Zinc (leachable)$_A$$^{\#}$	65	-	-	-	-	21	-	µg/l	1	A-T-025w

Envirolab Job Number: 19/08491

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08491/1	19/08491/2	19/08491/3	19/08491/4	19/08491/6	19/08491/7	19/08491/8	Units	Limit of Detection	Method ref
Client Sample No	1	3	4	1	3	1	2			
Client Sample ID	003	003	003	004	004	103	103			
Depth to Top	0.20	0.90	1.20	0.50	2.00	0.20	1.00			
Depth To Bottom										
Date Sampled	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4AE	4ABE	4AE	4A	4AE	4AE			
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_D^{\#}$	NAD	-	NAD	NAD	-	NAD	NAD			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	N/A	-	N/A	N/A	-	N/A	N/A			A-T-045

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Client Sample No	1	3	4	1	3	1	2			
Client Sample ID	003	003	003	004	004	103	103			
Depth to Top	0.20	0.90	1.20	0.50	2.00	0.20	1.00			
Depth To Bottom										
Date Sampled	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4AE	4ABE	4AE	4A	4AE	4AE			
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	-	<0.02	<0.02	-	<0.02	<0.02	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	-	<0.04	<0.04	-	<0.04	<0.04	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	-	<0.04	<0.04	-	<0.04	<0.04	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	-	<0.07	<0.07	-	<0.07	<0.07	mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	-	<0.06	<0.06	-	<0.06	<0.06	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	-	<0.04	<0.04	-	<0.04	<0.04	mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	-	<0.08	<0.08	-	<0.08	<0.08	mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	-	<0.03	<0.03	-	<0.03	<0.03	mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	-	<0.03	<0.03	-	<0.03	<0.03	mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	-	<0.03	<0.03	-	<0.03	<0.03	mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	-	<0.07	<0.07	-	<0.07	<0.07	mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	-	<0.08	<0.08	-	<0.08	<0.08	mg/kg	0.01	A-T-019s

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Client Sample No	1	3	4	1	3	1	2			
Client Sample ID	003	003	003	004	004	103	103			
Depth to Top	0.20	0.90	1.20	0.50	2.00	0.20	1.00			
Depth To Bottom										
Date Sampled	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4AE	4ABE	4AE	4A	4AE	4AE			
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	0.06	-	-	-	-	0.50	-	µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	<0.02	-	-	-	-	<0.02	-	µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	0.02	-	-	-	-	0.10	-	µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	<0.02	-	-	-	-	<0.02	-	µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	<0.02	-	-	-	-	<0.02	-	µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	<0.02	-	-	-	-	<0.02	-	µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	<0.02	-	-	-	-	<0.02	-	µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	<0.02	-	-	-	-	<0.02	-	µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	<0.02	-	-	-	-	<0.02	-	µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	<0.02	-	-	-	-	<0.02	-	µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	0.07	-	-	-	-	0.19	-	µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	0.06	-	-	-	-	0.39	-	µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	<0.02	-	-	-	-	<0.02	-	µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	0.12	-	-	-	-	0.31	-	µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	0.17	-	-	-	-	0.66	-	µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	0.05	-	-	-	-	0.12	-	µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	0.55	-	-	-	-	2.27	-	µg/l	0.02	A-T-019w

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Depth To Bottom										
Date Sampled	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4AE	4ABE	4AE	4A	4AE	4AE			
Speciated PCB-EC7										
PCB BZ $28_A^{M\#}$	<0.002	-	<0.002	<0.002	-	<0.002	-	mg/kg	0.002	A-T-004s
PCB BZ $52_A^{M\#}$	<0.002	-	<0.002	<0.002	-	<0.002	-	mg/kg	0.002	A-T-004s
PCB BZ $101_A^{M\#}$	<0.004	-	<0.004	<0.004	-	<0.004	-	mg/kg	0.004	A-T-004s
PCB BZ $118_A^{M\#}$	<0.007	-	<0.007	<0.007	-	<0.007	-	mg/kg	0.007	A-T-004s
PCB BZ $138_A^{M\#}$	<0.006	-	<0.006	<0.006	-	<0.006	-	mg/kg	0.006	A-T-004s
PCB BZ $153_A^{M\#}$	<0.004	-	<0.004	<0.004	-	<0.004	-	mg/kg	0.004	A-T-004s
PCB BZ $180_A^{M\#}$	<0.004	-	<0.004	<0.004	-	<0.004	-	mg/kg	0.004	A-T-004s
Total Speciated PCB-$EC7_A^{M\#}$	<0.007	-	<0.007	<0.007	-	<0.007	-	mg/kg	0.002	A-T-004s

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Lab Sample ID	19/08491/1	19/08491/2	19/08491/3	19/08491/4	19/08491/6	19/08491/7	19/08491/8	Units	Limit of Detection	Method ref
Client Sample No	1	3	4	1	3	1	2			
Client Sample ID	003	003	003	004	004	103	103			
Depth to Top	0.20	0.90	1.20	0.50	2.00	0.20	1.00			
Depth To Bottom										
Date Sampled	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4AE	4ABE	4AE	4A	4AE	4AE			
SVOC										
Hexachlorobenzene$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
Diethyl phthalate$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
Dibenzofuran$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
Carbazole$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	<500	-	<500	<500	-	<500	-	µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
4-Nitrophenol$_A$	<200	-	<200	<200	-	<200	-	µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
2-Nitrophenol$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
2-Methylphenol$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
2-Chlorophenol$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
Phenol$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
Pentachlorophenol (SVOC)$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
n-Dioctylphthalate$_A$	<500	-	<500	<500	-	<500	-	µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
Nitrobenzene$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
Isophorone$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
Hexachloroethane$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s

Envirolab Job Number: 19/08491

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08491/1	19/08491/2	19/08491/3	19/08491/4	19/08491/6	19/08491/7	19/08491/8	Units	Limit of Detection	Method ref
Client Sample No	1	3	4	1	3	1	2			
Client Sample ID	003	003	003	004	004	103	103			
Depth to Top	0.20	0.90	1.20	0.50	2.00	0.20	1.00			
Depth To Bottom										
Date Sampled	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4AE	4ABE	4AE	4A	4AE	4AE			
Hexachlorocyclopentadiene$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s
Perylene$_A$	<100	-	<100	<100	-	<100	-	µg/kg	100	A-T-052s

Envirolab Job Number: 19/08491

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08491/1	19/08491/2	19/08491/3	19/08491/4	19/08491/6	19/08491/7	19/08491/8	Units	Limit of Detection	Method ref
Client Sample No	1	3	4	1	3	1	2			
Client Sample ID	003	003	003	004	004	103	103			
Depth to Top	0.20	0.90	1.20	0.50	2.00	0.20	1.00			
Depth To Bottom										
Date Sampled	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4AE	4ABE	4AE	4A	4AE	4AE			
VOC										
Dichlorodifluoromethane$_{A}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Chloromethane$_{A}$	<10	-	<10	<10	-	<10	-	µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Dichloromethane$_{A}$	<5	-	<5	<5	-	<5	-	µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	<5	-	<5	<5	-	<5	-	µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	<2	-	<2	<2	-	<2	-	µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	<10	-	<10	<10	-	<10	-	µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	*<1*	-	*<1*	*<1*	-	*<1*	-	µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	<3	-	<3	<3	-	<3	-	µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s

Envirolab Job Number: 19/08491

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08491/1	19/08491/2	19/08491/3	19/08491/4	19/08491/6	19/08491/7	19/08491/8	Units	Limit of Detection	Method ref
Client Sample No	1	3	4	1	3	1	2			
Client Sample ID	003	003	003	004	004	103	103			
Depth to Top	0.20	0.90	1.20	0.50	2.00	0.20	1.00			
Depth To Bottom										
Date Sampled	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4AE	4ABE	4AE	4A	4AE	4AE			
Chlorobenzene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	<2	-	<2	<2	-	<2	-	µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	<2	-	<2	<2	-	<2	-	µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	<3	-	<3	<3	-	<3	-	µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	<1	-	<1	<1	-	<1	-	µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	<3	-	<3	<3	-	<3	-	µg/kg	3	A-T-006s

Envirolab Job Number: 19/08491

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08491/1	19/08491/2	19/08491/3	19/08491/4	19/08491/6	19/08491/7	19/08491/8	Units	Limit of Detection	Method ref
Client Sample No	1	3	4	1	3	1	2			
Client Sample ID	003	003	003	004	004	103	103			
Depth to Top	0.20	0.90	1.20	0.50	2.00	0.20	1.00			
Depth To Bottom										
Date Sampled	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4AE	4ABE	4AE	4A	4AE	4AE			
TPH CWG (leachable)										
Ali >C5-C6 (leachable)$_A$	<1	-	-	-	-	<1	-	µg/l	1	A-T-022w
Ali >C6-C8 (leachable)$_A$	<1	-	-	-	-	<1	-	µg/l	1	A-T-022w
Ali >C8-C10 (leachable)$_A$	<10	-	-	-	-	<10	-	µg/l	10	A-T-055w
Ali >C10-C12 (leachable)$_A$	<10	-	-	-	-	<10	-	µg/l	10	A-T-055w
Ali >C12-C16 (leachable)$_A$	<10	-	-	-	-	<10	-	µg/l	10	A-T-055w
Ali >C16-C21 (leachable)$_A$	<10	-	-	-	-	<10	-	µg/l	10	A-T-055w
Ali >C21-C35 (leachable)$_A$	<20	-	-	-	-	<20	-	µg/l	20	A-T-055w
Total Aliphatics (leachable)$_A$	<10	-	-	-	-	<10	-	µg/l	10	A-T-055w
Aro >C5-C7 (leachable)$_A$	<1	-	-	-	-	<1	-	µg/l	1	A-T-022w
Aro >C7-C8 (leachable)$_A$	<1	-	-	-	-	<1	-	µg/l	1	A-T-022w
Aro >C8-C10 (leachable)$_A$	<10	-	-	-	-	<10	-	µg/l	10	A-T-055w
Aro >C10-C12 (leachable)$_A$	<10	-	-	-	-	<10	-	µg/l	10	A-T-055w
Aro >C12-C16 (leachable)$_A$	<10	-	-	-	-	<10	-	µg/l	10	A-T-055w
Aro >C16-C21 (leachable)$_A$	<10	-	-	-	-	<10	-	µg/l	10	A-T-055w
Total Aromatics (leachable)$_A$	<20	-	-	-	-	<20	-	µg/l	20	A-T-055w
TPH (Ali & Aro >C5-C35) (leachable)$_A$	<20	-	-	-	-	<20	-	µg/l	20	A-T-055w
BTEX - Benzene (leachable)$_A$	<1	-	-	-	-	<1	-	µg/l	1	A-T-022w
BTEX - Toluene (leachable)$_A$	<1	-	-	-	-	<1	-	µg/l	1	A-T-022w
BTEX - Ethyl Benzene (leachable)$_A$	<1	-	-	-	-	<1	-	µg/l	1	A-T-022w
BTEX - o Xylene (leachable)$_A$	<1	-	-	-	-	<1	-	µg/l	1	A-T-022w
BTEX - m & p Xylene (leachable)$_A$	<1	-	-	-	-	<1	-	µg/l	1	A-T-022w
MTBE (leachable)$_A$	<1	-	-	-	-	<1	-	µg/l	1	A-T-022w
Aro >C21-C35 (leachable)$_A$	<20	-	-	-	-	<20	-	µg/l	20	A-T-055w

Envirolab Job Number: 19/08491

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08491/1	19/08491/2	19/08491/3	19/08491/4	19/08491/6	19/08491/7	19/08491/8	Units	Limit of Detection	Method ref
Client Sample No	1	3	4	1	3	1	2			
Client Sample ID	003	003	003	004	004	103	103			
Depth to Top	0.20	0.90	1.20	0.50	2.00	0.20	1.00			
Depth To Bottom										
Date Sampled	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19	30-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4AE	4ABE	4AE	4A	4AE	4AE			
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	-	<1	<1	-	<1	<1	mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	-	<1	<1	-	<1	<1	mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	-	<1	<1	-	<1	<1	mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	-	<1	<1	-	<1	<1	mg/kg	1	A-T-055s
Ali >C21-C35$_A$	4	-	1	2	-	10	2	mg/kg	1	A-T-055s
Total Aliphatics$_A$	4	-	1	2	-	10	2	mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	-	<1	<1	-	2	<1	mg/kg	1	A-T-055s
Aro >C10-C12$_A^{M\#}$	<1	-	<1	<1	-	<1	<1	mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	-	<1	<1	-	<1	<1	mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	-	<1	<1	-	<1	<1	mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	5	-	2	2	-	9	2	mg/kg	1	A-T-055s
Total Aromatics$_A$	5	-	2	3	-	11	2	mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	9	-	3	5	-	22	4	mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	mg/kg	0.01	A-T-022s

Envirolab Job Number: 19/08491

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08491/9	19/08491/10	19/08491/11	19/08491/12	19/08491/13	19/08491/14	19/08491/15	Units	Limit of Detection	Method ref
Client Sample No	7	1	3	1	3	5	5			
Client Sample ID	103	401A	401A	402A	402A	402A	401A			
Depth to Top	3.00	0.50	1.00	0.50	1.00	2.00	2.00			
Depth To Bottom										
Date Sampled	30-Aug-19	27-Aug-19	27-Aug-19	27-Aug-19	27-Aug-19	27-Aug-19	27-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4A	4ABE	4A	4ABE	4A	4AE	4AE			
% Stones >10mm$_A$	<0.1	20.9	10.4	13.4	11.5	7.6	8.6	% w/w	0.1	A-T-044
pH$_D^{M\#}$	8.46	7.63	9.65	6.89	8.21	8.32	7.60	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	-	<0.01	-	<0.01	<0.01	-	<0.01	g/l	0.01	A-T-026s
Cyanide (free)$_A^{M\#}$	-	<1	-	<1	<1	-	<1	mg/kg	1	A-T-042sFCN
Phenols - Total by HPLC$_A$	-	<0.2	-	<0.2	<0.2	-	<0.2	mg/kg	0.2	A-T-050s
Organic matter$_D^{M\#}$	<0.1	0.3	0.2	0.3	0.3	<0.1	<0.1	% w/w	0.1	A-T-032 OM
Arsenic$_D^{M\#}$	-	9	-	6	5	-	4	mg/kg	1	A-T-024s
Boron (water soluble)$_D^{M\#}$	-	<1.0	-	<1.0	<1.0	-	<1.0	mg/kg	1	A-T-027s
Cadmium$_D^{M\#}$	-	<0.5	-	<0.5	<0.5	-	<0.5	mg/kg	0.5	A-T-024s
Copper$_D^{M\#}$	-	2	-	6	<1	-	3	mg/kg	1	A-T-024s
Chromium$_D^{M\#}$	-	13	-	16	8	-	11	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	-	<1	-	<1	<1	-	<1	mg/kg	1	A-T-040s
Lead$_D^{M\#}$	-	5	-	9	4	-	5	mg/kg	1	A-T-024s
Mercury$_D$	-	<0.17	-	<0.17	<0.17	-	<0.17	mg/kg	0.17	A-T-024s
Nickel$_D^{M\#}$	-	10	-	14	7	-	10	mg/kg	1	A-T-024s
Selenium$_D^{M\#}$	-	<1	-	<1	<1	-	<1	mg/kg	1	A-T-024s
Zinc$_D^{M\#}$	-	24	-	30	16	-	21	mg/kg	5	A-T-024s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s

Envirolab Job Number: 19/08491

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08491/9	19/08491/10	19/08491/11	19/08491/12	19/08491/13	19/08491/14	19/08491/15	Units	Limit of Detection	Method ref
Client Sample No	7	1	3	1	3	5	5			
Client Sample ID	103	401A	401A	402A	402A	402A	401A			
Depth to Top	3.00	0.50	1.00	0.50	1.00	2.00	2.00			
Depth To Bottom										
Date Sampled	30-Aug-19	27-Aug-19	27-Aug-19	27-Aug-19	27-Aug-19	27-Aug-19	27-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4A	4ABE	4A	4ABE	4A	4AE	4AE			
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_D^{\#}$	-	NAD	-	NAD	NAD	-	NAD			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	-	N/A	-	N/A	N/A	-	N/A			A-T-045

Envirolab Job Number: 19/08491

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08491/9	19/08491/10	19/08491/11	19/08491/12	19/08491/13	19/08491/14	19/08491/15	Units	Limit of Detection	Method ref
Client Sample No	7	1	3	1	3	5	5			
Client Sample ID	103	401A	401A	402A	402A	402A	401A			
Depth to Top	3.00	0.50	1.00	0.50	1.00	2.00	2.00			
Depth To Bottom										
Date Sampled	30-Aug-19	27-Aug-19	27-Aug-19	27-Aug-19	27-Aug-19	27-Aug-19	27-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4A	4ABE	4A	4ABE	4A	4AE	4AE			
PAH-16MS										
Acenaphthene$_A^{M\#}$	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	-	<0.02	-	<0.02	<0.02	-	<0.02	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	<0.04	-	<0.04	<0.04	-	<0.04	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	<0.04	-	<0.04	<0.04	-	<0.04	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	-	<0.05	-	<0.05	<0.05	-	<0.05	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	<0.05	-	<0.05	<0.05	-	<0.05	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	-	<0.07	-	<0.07	<0.07	-	<0.07	mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	-	<0.06	-	<0.06	<0.06	-	<0.06	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	-	<0.04	-	<0.04	<0.04	-	<0.04	mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	-	<0.08	-	<0.08	<0.08	-	<0.08	mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	-	<0.03	-	<0.03	<0.03	-	<0.03	mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	-	<0.03	-	<0.03	<0.03	-	<0.03	mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	-	<0.03	-	<0.03	<0.03	-	<0.03	mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	-	<0.07	-	<0.07	<0.07	-	<0.07	mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	-	<0.08	-	<0.08	<0.08	-	<0.08	mg/kg	0.01	A-T-019s

Envirolab Job Number: 19/08491

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08491/9	19/08491/10	19/08491/11	19/08491/12	19/08491/13	19/08491/14	19/08491/15	Units	Limit of Detection	Method ref
Client Sample No	7	1	3	1	3	5	5			
Client Sample ID	103	401A	401A	402A	402A	402A	401A			
Depth to Top	3.00	0.50	1.00	0.50	1.00	2.00	2.00			
Depth To Bottom										
Date Sampled	30-Aug-19	27-Aug-19	27-Aug-19	27-Aug-19	27-Aug-19	27-Aug-19	27-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4A	4ABE	4A	4ABE	4A	4AE	4AE			
TPH CWG										
Ali >C5-C6$_A^{\#}$	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	-	<1	-	<1	<1	-	<1	mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	-	<1	-	<1	<1	-	<1	mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	-	<1	-	<1	<1	-	<1	mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	-	<1	-	<1	<1	-	<1	mg/kg	1	A-T-055s
Ali >C21-C35$_A$	-	<1	-	3	<1	-	<1	mg/kg	1	A-T-055s
Total Aliphatics$_A$	-	<1	-	3	<1	-	<1	mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	-	<1	-	<1	<1	-	<1	mg/kg	1	A-T-055s
Aro >C10-C12$_A^{M\#}$	-	<1	-	<1	<1	-	<1	mg/kg	1	A-T-055s
Aro >C12-C16$_A$	-	<1	-	<1	<1	-	<1	mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	-	<1	-	<1	<1	-	<1	mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	-	<1	-	2	<1	-	<1	mg/kg	1	A-T-055s
Total Aromatics$_A$	-	<1	-	3	<1	-	<1	mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	-	<1	-	6	<1	-	<1	mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT
SUPPLEMENT TO TEST REPORT 19/08001/1

Amendments: Request for Additional Analysis

Envirolab Job Number: 19/08001
Issue Number: 2 **Date:** 19 September, 2019

Client:
Norfolk Partnership Laboratory
Environment, Transport and Development Department
Norfolk County Council
County Hall
Norwich
Norfolk
NR1 2SG

Project Manager: Sharon Woods; Simon Holden
Project Name: Ringland A47-A1067 Western Link Road
Project Ref: PK1002D2
Order No: 642593
Date Samples Received: 22/08/19
Date Instructions Received: 28/08/19
Date Analysis Completed: 19/09/19

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 19/08001

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08001/1	19/08001/2	19/08001/3					Units	Limit of Detection	Method ref
Client Sample No	1	3	2							
Client Sample ID	001	001	001							
Depth to Top	0.50	2.00	1.00							
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19	20-Aug-19							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	5a							
% Stones >10mm$_A$	5.8	<0.1	<0.1					% w/w	0.1	A-T-044
pH$_D^{M\#}$	8.33	8.45	8.44					pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	<0.01	<0.01	-					g/l	0.01	A-T-026s
Cyanide (free)$_A^{M\#}$	<1	<1	-					mg/kg	1	A-T-042sFCN
Phenols - Total by HPLC$_A$	<0.2	<0.2	-					mg/kg	0.2	A-T-050s
Organic matter$_D^{M\#}$	0.6	0.3	0.3					% w/w	0.1	A-T-032 OM
Arsenic$_D^{M\#}$	5	3	-					mg/kg	1	A-T-024s
Boron (water soluble)$_D^{M\#}$	<1.0	<1.0	-					mg/kg	1	A-T-027s
Cadmium$_D^{M\#}$	<0.5	<0.5	-					mg/kg	0.5	A-T-024s
Copper$_D^{M\#}$	9	12	-					mg/kg	1	A-T-024s
Chromium$_D^{M\#}$	25	23	-					mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	-					mg/kg	1	A-T-040s
Lead$_D^{M\#}$	8	7	-					mg/kg	1	A-T-024s
Mercury$_D$	0.28	0.66	-					mg/kg	0.17	A-T-024s
Nickel$_D^{M\#}$	24	23	-					mg/kg	1	A-T-024s
Selenium$_D^{M\#}$	<1	<1	-					mg/kg	1	A-T-024s
Zinc$_D^{M\#}$	41	40	-					mg/kg	5	A-T-024s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s

Envirolab Job Number: 19/08001

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08001/1	19/08001/2	19/08001/3					Units	Limit of Detection	Method ref
Client Sample No	1	3	2							
Client Sample ID	001	001	001							
Depth to Top	0.50	2.00	1.00							
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19	20-Aug-19							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	5a							
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_D^{\#}$	NAD	-	-							A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	N/A	-	-							A-T-045

Envirolab Job Number: 19/08001

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08001/1	19/08001/2	19/08001/3					Units	Limit of Detection	Method ref
Client Sample No	1	3	2							
Client Sample ID	001	001	001							
Depth to Top	0.50	2.00	1.00							
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19	20-Aug-19							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	5a							
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	-					mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	-					mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	-					mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	-					mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	-					mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	-					mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	-					mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	-					mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	-					mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	-					mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	-					mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	-					mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	-					mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	-					mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	-					mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	-					mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08	-					mg/kg	0.01	A-T-019s

Envirolab Job Number: 19/08001

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08001/1	19/08001/2	19/08001/3					Units	Limit of Detection	Method ref
Client Sample No	1	3	2							
Client Sample ID	001	001	001							
Depth to Top	0.50	2.00	1.00							
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19	20-Aug-19							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	5a							
Speciated PCB-EC7										
PCB BZ $28_A^{M\#}$	<0.002	-	-					mg/kg	0.002	A-T-004s
PCB BZ $52_A^{M\#}$	<0.002	-	-					mg/kg	0.002	A-T-004s
PCB BZ $101_A^{M\#}$	<0.004	-	-					mg/kg	0.004	A-T-004s
PCB BZ $118_A^{M\#}$	<0.007	-	-					mg/kg	0.007	A-T-004s
PCB BZ $138_A^{M\#}$	<0.006	-	-					mg/kg	0.006	A-T-004s
PCB BZ $153_A^{M\#}$	<0.004	-	-					mg/kg	0.004	A-T-004s
PCB BZ $180_A^{M\#}$	<0.004	-	-					mg/kg	0.004	A-T-004s
Total Speciated PCB-$EC7_A^{M\#}$	<0.007	-	-					mg/kg	0.002	A-T-004s

Envirolab Job Number: 19/08001

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08001/1	19/08001/2	19/08001/3					Units	Limit of Detection	Method ref
Client Sample No	1	3	2							
Client Sample ID	001	001	001							
Depth to Top	0.50	2.00	1.00							
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19	20-Aug-19							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	5a							
SVOC										
Hexachlorobenzene$_A$	<100	-	-					µg/kg	100	A-T-052s
Diethyl phthalate$_A$	<100	-	-					µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	<100	-	-					µg/kg	100	A-T-052s
Dibenzofuran$_A$	<100	-	-					µg/kg	100	A-T-052s
Carbazole$_A$	<100	-	-					µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	<100	-	-					µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	<500	-	-					µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	<100	-	-					µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	<100	-	-					µg/kg	100	A-T-052s
4-Nitrophenol$_A$	<200	-	-					µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	<100	-	-					µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	<100	-	-					µg/kg	100	A-T-052s
2-Nitrophenol$_A$	<100	-	-					µg/kg	100	A-T-052s
2-Methylphenol$_A$	<100	-	-					µg/kg	100	A-T-052s
2-Chlorophenol$_A$	<100	-	-					µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	<100	-	-					µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	<100	-	-					µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	<100	-	-					µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	<100	-	-					µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	<100	-	-					µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	<100	-	-					µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	<100	-	-					µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	<100	-	-					µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	<100	-	-					µg/kg	100	A-T-052s
Phenol$_A$	<100	-	-					µg/kg	100	A-T-052s
Pentachlorophenol (SVOC)$_A$	<100	-	-					µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	<100	-	-					µg/kg	100	A-T-052s
n-Dioctylphthalate$_A$	<500	-	-					µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	<100	-	-					µg/kg	100	A-T-052s
Nitrobenzene$_A$	<100	-	-					µg/kg	100	A-T-052s
Isophorone$_A$	<100	-	-					µg/kg	100	A-T-052s
Hexachloroethane$_A$	<100	-	-					µg/kg	100	A-T-052s

Envirolab Job Number: 19/08001

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08001/1	19/08001/2	19/08001/3					Units	Limit of Detection	Method ref
Client Sample No	1	3	2							
Client Sample ID	001	001	001							
Depth to Top	0.50	2.00	1.00							
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19	20-Aug-19							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	5a							
Hexachlorocyclopentadiene$_A$	<100	-	-					µg/kg	100	A-T-052s
Perylene$_A$	<100	-	-					µg/kg	100	A-T-052s

Envirolab Job Number: 19/08001

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08001/1	19/08001/2	19/08001/3					Units	Limit of Detection	Method ref
Client Sample No	1	3	2							
Client Sample ID	001	001	001							
Depth to Top	0.50	2.00	1.00							
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19	20-Aug-19							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	5a							
VOC										
Dichlorodifluoromethane$_{A}$	<1	-	-					µg/kg	1	A-T-006s
Chloromethane$_{A}$	<10	-	-					µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Dichloromethane$_{A}$	<5	-	-					µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	<5	-	-					µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	<2	-	-					µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	<10	-	-					µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	<3	-	-					µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s

Lab Sample ID	19/08001/1	19/08001/2	19/08001/3					Units	Limit of Detection	Method ref
Client Sample No	1	3	2							
Client Sample ID	001	001	001							
Depth to Top	0.50	2.00	1.00							
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19	20-Aug-19							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	5a							
Chlorobenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	<1	-	-					µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	<1	-	-					µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	<2	-	-					µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	<1	-	-					µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	<2	-	-					µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	<3	-	-					µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	<3	-	-					µg/kg	3	A-T-006s

Envirolab Job Number: 19/08001

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08001/1	19/08001/2	19/08001/3					Units	Limit of Detection	Method ref
Client Sample No	1	3	2							
Client Sample ID	001	001	001							
Depth to Top	0.50	2.00	1.00							
Depth To Bottom										
Date Sampled	20-Aug-19	20-Aug-19	20-Aug-19							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	5a							
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	-					mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	-					mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	-					mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	-					mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	-					mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	-					mg/kg	1	A-T-055s
Ali >C21-C35$_A$	2	1	-					mg/kg	1	A-T-055s
Total Aliphatics$_A$	2	1	-					mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	-					mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	-					mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1	-					mg/kg	1	A-T-055s
Aro >C10-C12$_A^{M\#}$	<1	<1	-					mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1	-					mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1	-					mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	3	2	-					mg/kg	1	A-T-055s
Total Aromatics$_A$	3	2	-					mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	5	5	-					mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	-					mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	-					mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	-					mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	-					mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	-					mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/08635
Issue Number: 1 **Date:** 24 September, 2019

Client:
Norfolk Partnership Laboratory
Environment, Transport and Development Department
Norfolk County Council
County Hall
Norwich
Norfolk
NR1 2SG

Project Manager: Scott Viner/Sharon Woods; Simon Holden
Project Name: Ringland A47-A1067 Western Link Road
Project Ref: PK1002D2
Order No: 644213
Date Samples Received: 09/09/19
Date Instructions Received: 16/09/19
Date Analysis Completed: 24/09/19

Prepared by:

Sophie France
Admin Assistant

Approved by:

Danielle Brierley
Client Manager

Envirolab Job Number: 19/08635

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08635/1	19/08635/2	19/08635/3	19/08635/4	19/08635/5			Units	Limit of Detection	Method ref
Client Sample No	1	2	3	2	4					
Client Sample ID	009	009	009	010	010					
Depth to Top	0.50	1.00	2.00	0.50	0.90					
Depth To Bottom										
Date Sampled	04-Sep-19	04-Sep-19	04-Sep-19	04-Sep-19	04-Sep-19					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	4AE	1A	1A	4AE	4A					
% Stones >10mm$_A$	4.2	0.4	0.3	7.3	10.0			% w/w	0.1	A-T-044
pH$_D^{M\#}$	7.51	7.91	8.86	7.62	7.96			pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	<0.01	-	<0.01	<0.01	<0.01			g/l	0.01	A-T-026s
Cyanide (free)$_A^{M\#}$	<1	-	<1	<1	<1			mg/kg	1	A-T-042sFCN
Phenols - Total by HPLC$_A$	<0.2	-	<0.2	<0.2	<0.2			mg/kg	0.2	A-T-050s
Organic matter$_D^{M\#}$	0.6	0.2	<0.1	0.9	0.3			% w/w	0.1	A-T-032 OM
Arsenic$_D^{M\#}$	9	-	5	6	5			mg/kg	1	A-T-024s
Boron (water soluble)$_D^{M\#}$	<1.0	-	<1.0	<1.0	<1.0			mg/kg	1	A-T-027s
Cadmium$_D^{M\#}$	<0.5	-	<0.5	<0.5	<0.5			mg/kg	0.5	A-T-024s
Copper$_D^{M\#}$	5	-	2	3	2			mg/kg	1	A-T-024s
Chromium$_D^{M\#}$	10	-	6	7	10			mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	-	<1	<1	<1			mg/kg	1	A-T-040s
Lead$_D^{M\#}$	11	-	3	12	5			mg/kg	1	A-T-024s
Mercury$_D$	<0.17	-	<0.17	<0.17	<0.17			mg/kg	0.17	A-T-024s
Nickel$_D^{M\#}$	10	-	8	5	8			mg/kg	1	A-T-024s
Selenium$_D^{M\#}$	<1	-	<1	<1	<1			mg/kg	1	A-T-024s
Zinc$_D^{M\#}$	31	-	15	20	16			mg/kg	5	A-T-024s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s

Envirolab Job Number: 19/08635

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08635/1	19/08635/2	19/08635/3	19/08635/4	19/08635/5			Units	Limit of Detection	Method ref
Client Sample No	1	2	3	2	4					
Client Sample ID	009	009	009	010	010					
Depth to Top	0.50	1.00	2.00	0.50	0.90					
Depth To Bottom										
Date Sampled	04-Sep-19	04-Sep-19	04-Sep-19	04-Sep-19	04-Sep-19					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	4AE	1A	1A	4AE	4A					
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_D^{\#}$	NAD	-	NAD	NAD	NAD					A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	N/A	-	N/A	N/A	N/A					A-T-045

Envirolab Job Number: 19/08635

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08635/1	19/08635/2	19/08635/3	19/08635/4	19/08635/5			Units	Limit of Detection	Method ref
Client Sample No	1	2	3	2	4					
Client Sample ID	009	009	009	010	010					
Depth to Top	0.50	1.00	2.00	0.50	0.90					
Depth To Bottom										
Date Sampled	04-Sep-19	04-Sep-19	04-Sep-19	04-Sep-19	04-Sep-19					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	4AE	1A	1A	4AE	4A					
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	-	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	-	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	-	<0.02	<0.02	<0.02			mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	-	<0.04	<0.04	<0.04			mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	-	<0.04	<0.04	<0.04			mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	-	<0.05	<0.05	<0.05			mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	-	<0.05	<0.05	<0.05			mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	-	<0.07	<0.07	<0.07			mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	-	<0.06	<0.06	<0.06			mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	-	<0.04	<0.04	<0.04			mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	-	<0.08	<0.08	<0.08			mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	-	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	-	<0.03	0.04	<0.03			mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	-	<0.03	<0.03	<0.03			mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	-	<0.03	<0.03	<0.03			mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	-	<0.07	<0.07	<0.07			mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	-	<0.08	<0.08	<0.08			mg/kg	0.01	A-T-019s

Envirolab Job Number: 19/08635

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/08635/1	19/08635/2	19/08635/3	19/08635/4	19/08635/5			Units	Limit of Detection	Method ref
Client Sample No	1	2	3	2	4					
Client Sample ID	009	009	009	010	010					
Depth to Top	0.50	1.00	2.00	0.50	0.90					
Depth To Bottom										
Date Sampled	04-Sep-19	04-Sep-19	04-Sep-19	04-Sep-19	04-Sep-19					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	4AE	1A	1A	4AE	4A					
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	-	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	-	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	-	<1	<1	<1			mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	-	<1	<1	<1			mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	-	<1	<1	<1			mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	-	<1	<1	<1			mg/kg	1	A-T-055s
Ali >C21-C35$_A$	<1	-	<1	3	<1			mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	-	<1	3	<1			mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	-	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	-	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	-	<1	2	<1			mg/kg	1	A-T-055s
Aro >C10-C12$_A^{M\#}$	<1	-	<1	<1	<1			mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	-	<1	<1	<1			mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	-	<1	<1	<1			mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	1	-	<1	4	<1			mg/kg	1	A-T-055s
Total Aromatics$_A$	1	-	<1	6	<1			mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	1	-	<1	9	<1			mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	-	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	-	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	-	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	-	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	-	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT
SUPPLEMENT TO TEST REPORT 19/09361/1

Amendments: Request for project/sample information change

Envirolab Job Number: 19/09361
Issue Number: 2 **Date:** 26 June, 2020

Client:
Norse Eastern Ltd t/a Norse Highways
280 Fifers Lane
Norwich
Norfolk
NR6 6EQ

Project Manager: Scott Viner/Sharon Woods; Simon Holden
Project Name: Ringland A47-A1067 Western Link Road
Project Ref: PK1002D2
Order No: PN05000126
Date Samples Received: 23/09/19
Date Instructions Received: 07/10/19
Date Analysis Completed: 14/10/19

Prepared by:

Richard Wong
Client Manager

Approved by:

Sophie France
Client Service Manager

Envirolab Job Number: 19/09361

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/09361/1	19/09361/2	19/09361/3	19/09361/4	19/09361/5	19/09361/6		Units	Limit of Detection	Method ref
Client Sample No	2	3	1	4	1	2				
Client Sample ID	107	107	108	108	109	109				
Depth to Top	0.50	0.80	0.20	1.20	0.20	0.80				
Depth To Bottom										
Date Sampled	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4AE	4AE	4AE	4A	4AE	4				
% Stones >10mm$_A$	1.9	<0.1	5.5	3.6	12.4	<0.1		% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	6.80	6.88	6.80	6.96	6.15	6.63		pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	<0.01	0.02	<0.01	0.03	<0.01	0.02		g/l	0.01	A-T-026s
Cyanide (free)$_A$$^{M\#}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-042sFCN
Phenols - Total by HPLC$_A$	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		mg/kg	0.2	A-T-050s
Organic matter$_D$$^{M\#}$	1.3	0.2	0.6	0.2	1.1	0.2		% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	7	7	8	13	7	14		mg/kg	1	A-T-024s
Boron (water soluble)$_D$$^{M\#}$	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	<0.5	<0.5	<0.5	0.9	<0.5	0.7		mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	8	3	4	8	3	4		mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	12	11	11	16	10	17		mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	19	6	10	8	12	6		mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17		mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	9	10	11	29	7	16		mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1	<1	<1	1		mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	49	36	35	65	36	53		mg/kg	5	A-T-024s
MTBE$_A$$^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Leachate Prep NRA (10:1)$_A$	*	-	-	-	*	-				A-T-001
Ammonium / Ammoniacal Nitrogen as NH4 (leachable)$_A$	0.135	-	-	-	<0.026	-		mg/l	0.026	A-T-033w
Phenols (total by HPLC) (leachable)$_A$	<0.01	-	-	-	<0.01	-		mg/l	0.01	A-T-050w
Arsenic (leachable)$_A$$^{\#}$	3	-	-	-	2	-		µg/l	1	A-T-025w
Boron (leachable)$_A$$^{\#}$	20	-	-	-	19	-		µg/l	10	A-T-025w
Cadmium (leachable)$_A$$^{\#}$	<1	-	-	-	<1	-		µg/l	1	A-T-025w
Copper (leachable)$_A$$^{\#}$	9	-	-	-	6	-		µg/l	1	A-T-025w
Chromium (leachable)$_A$$^{\#}$	<1	-	-	-	<1	-		µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_A$	<0.05	-	-	-	<0.05	-		mg/l	0.05	A-T-040w
Lead (leachable)$_A$$^{\#}$	8	-	-	-	7	-		µg/l	1	A-T-025w
Mercury (leachable)$_A$$^{\#}$	<0.1	-	-	-	<0.1	-		µg/l	0.1	A-T-025w
Nickel (leachable)$_A$$^{\#}$	2	-	-	-	1	-		µg/l	1	A-T-025w
Selenium (leachable)$_A$$^{\#}$	<1	-	-	-	<1	-		µg/l	1	A-T-025w
Zinc (leachable)$_A$$^{\#}$	26	-	-	-	12	-		µg/l	1	A-T-025w

Envirolab Job Number: 19/09361

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/09361/1	19/09361/2	19/09361/3	19/09361/4	19/09361/5	19/09361/6		Units	Limit of Detection	Method ref
Client Sample No	2	3	1	4	1	2				
Client Sample ID	107	107	108	108	109	109				
Depth to Top	0.50	0.80	0.20	1.20	0.20	0.80				
Depth To Bottom										
Date Sampled	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4AE	4AE	4AE	4A	4AE	4				
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_D^{\#}$	NAD	NAD	NAD	NAD	NAD	NAD				A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	N/A	N/A	N/A	N/A	N/A	N/A				A-T-045

Envirolab Job Number: 19/09361

Client Project Name: Ringland A47-A1067 Western Link Road

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Lab Sample ID	19/09361/1	19/09361/2	19/09361/3	19/09361/4	19/09361/5	19/09361/6		Units	Limit of Detection	Method ref
Client Sample No	2	3	1	4	1	2				
Client Sample ID	107	107	108	108	109	109				
Depth to Top	0.50	0.80	0.20	1.20	0.20	0.80				
Depth To Bottom										
Date Sampled	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4AE	4AE	4AE	4A	4AE	4				
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07		mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06		mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08		mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07		mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08		mg/kg	0.01	A-T-019s

Envirolab Job Number: 19/09361

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/09361/1	19/09361/2	19/09361/3	19/09361/4	19/09361/5	19/09361/6		Units	Limit of Detection	Method ref
Client Sample No	2	3	1	4	1	2				
Client Sample ID	107	107	108	108	109	109				
Depth to Top	0.50	0.80	0.20	1.20	0.20	0.80				
Depth To Bottom										
Date Sampled	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4AE	4AE	4AE	4A	4AE	4				
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	0.10	-	-	-	0.30	-		µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	<0.02	-	-	-	0.48	-		µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	0.04	-	-	-	0.10	-		µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	<0.02	-	-	-	<0.02	-		µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	<0.02	-	-	-	<0.02	-		µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	<0.02	-	-	-	<0.02	-		µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	<0.02	-	-	-	<0.02	-		µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	<0.02	-	-	-	<0.02	-		µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	<0.02	-	-	-	<0.02	-		µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	<0.02	-	-	-	<0.02	-		µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	0.09	-	-	-	0.15	-		µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	0.12	-	-	-	0.34	-		µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	<0.02	-	-	-	<0.02	-		µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	0.05	-	-	-	0.43	-		µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	0.20	-	-	-	0.45	-		µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	0.06	-	-	-	0.10	-		µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	0.66	-	-	-	2.35	-		µg/l	0.02	A-T-019w

Envirolab Job Number: 19/09361

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/09361/1	19/09361/2	19/09361/3	19/09361/4	19/09361/5	19/09361/6		Units	Limit of Detection	Method ref
Client Sample No	2	3	1	4	1	2				
Client Sample ID	107	107	108	108	109	109				
Depth to Top	0.50	0.80	0.20	1.20	0.20	0.80				
Depth To Bottom										
Date Sampled	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4AE	4AE	4AE	4A	4AE	4				
Speciated PCB-EC7										
PCB BZ $28_A^{M\#}$	<0.002	-	-	-	<0.002	-		mg/kg	0.002	A-T-004s
PCB BZ $52_A^{M\#}$	<0.002	-	-	-	<0.002	-		mg/kg	0.002	A-T-004s
PCB BZ $101_A^{M\#}$	<0.004	-	-	-	<0.004	-		mg/kg	0.004	A-T-004s
PCB BZ $118_A^{M\#}$	<0.007	-	-	-	<0.007	-		mg/kg	0.007	A-T-004s
PCB BZ $138_A^{M\#}$	<0.006	-	-	-	<0.006	-		mg/kg	0.006	A-T-004s
PCB BZ $153_A^{M\#}$	<0.004	-	-	-	<0.004	-		mg/kg	0.004	A-T-004s
PCB BZ $180_A^{M\#}$	<0.004	-	-	-	<0.004	-		mg/kg	0.004	A-T-004s
Total Speciated PCB-EC7$_A^{M\#}$	<0.007	-	-	-	<0.007	-		mg/kg	0.002	A-T-004s

Envirolab Job Number: 19/09361

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/09361/1	19/09361/2	19/09361/3	19/09361/4	19/09361/5	19/09361/6		Units	Limit of Detection	Method ref
Client Sample No	2	3	1	4	1	2				
Client Sample ID	107	107	108	108	109	109				
Depth to Top	0.50	0.80	0.20	1.20	0.20	0.80				
Depth To Bottom										
Date Sampled	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4AE	4AE	4AE	4A	4AE	4				
SVOC										
Hexachlorobenzene$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
Diethyl phthalate$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
Dibenzofuran$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
Carbazole$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	<500	-	-	-	<500	-		µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
4-Nitrophenol$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
2-Nitrophenol$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
2-Methylphenol$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
2-Chlorophenol$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
Phenol$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
Pentachlorophenol (SVOC)$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
n-Dioctylphthalate$_A$	<500	-	-	-	<500	-		µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
Nitrobenzene$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
Isophorone$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
Hexachloroethane$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s

Envirolab Job Number: 19/09361

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/09361/1	19/09361/2	19/09361/3	19/09361/4	19/09361/5	19/09361/6		Units	Limit of Detection	Method ref
Client Sample No	2	3	1	4	1	2				
Client Sample ID	107	107	108	108	109	109				
Depth to Top	0.50	0.80	0.20	1.20	0.20	0.80				
Depth To Bottom										
Date Sampled	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4AE	4AE	4AE	4A	4AE	4				
Hexachlorocyclopentadiene$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s
Perylene$_A$	<100	-	-	-	<100	-		µg/kg	100	A-T-052s

Envirolab Job Number: 19/09361

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/09361/1	19/09361/2	19/09361/3	19/09361/4	19/09361/5	19/09361/6		Units	Limit of Detection	Method ref
Client Sample No	2	3	1	4	1	2				
Client Sample ID	107	107	108	108	109	109				
Depth to Top	0.50	0.80	0.20	1.20	0.20	0.80				
Depth To Bottom										
Date Sampled	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4AE	4AE	4AE	4A	4AE	4				
VOC										
Dichlorodifluoromethane$_A$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Chloromethane$_A$	<10	-	-	-	<10	-		µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Bromomethane$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Chloroethane$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Trichlorofluoromethane$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
1,1-Dichloroethene$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Carbon Disulphide$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Dichloromethane$_A$	<5	-	-	-	<5	-		µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
1,1-Dichloroethane$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
2,2-Dichloropropane$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Bromochloromethane$_A$#	<5	-	-	-	<5	-		µg/kg	5	A-T-006s
Chloroform$_A$#	*<1*	-	-	-	*<1*	-		µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
1,1-Dichloropropene$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Carbon Tetrachloride$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
1,2-Dichloroethane$_A$#	<2	-	-	-	<2	-		µg/kg	2	A-T-006s
Benzene$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Trichloroethene$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
1,2-Dichloropropane$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Dibromomethane$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Bromodichloromethane$_A$#	<10	-	-	-	<10	-		µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Toluene$_A$#	*<1*	-	-	-	*<1*	-		µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
1,3-Dichloropropane$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Tetrachloroethene$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Dibromochloromethane$_A$#	<3	-	-	-	<3	-		µg/kg	3	A-T-006s
1,2-Dibromoethane$_A$#	<1	-	-	-	<1	-		µg/kg	1	A-T-006s

Envirolab Job Number: 19/09361

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/09361/1	19/09361/2	19/09361/3	19/09361/4	19/09361/5	19/09361/6		Units	Limit of Detection	Method ref
Client Sample No	2	3	1	4	1	2				
Client Sample ID	107	107	108	108	109	109				
Depth to Top	0.50	0.80	0.20	1.20	0.20	0.80				
Depth To Bottom										
Date Sampled	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4AE	4AE	4AE	4A	4AE	4				
Chlorobenzene$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	*<1*	-	-	-	*<1*	-		µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	*<1*	-	-	-	*<1*	-		µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	*<2*	-	-	-	*<2*	-		µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	<2	-	-	-	<2	-		µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	<3	-	-	-	<3	-		µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	<1	-	-	-	<1	-		µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	<3	-	-	-	<3	-		µg/kg	3	A-T-006s

Envirolab Job Number: 19/09361

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/09361/1	19/09361/2	19/09361/3	19/09361/4	19/09361/5	19/09361/6		Units	Limit of Detection	Method ref
Client Sample No	2	3	1	4	1	2				
Client Sample ID	107	107	108	108	109	109				
Depth to Top	0.50	0.80	0.20	1.20	0.20	0.80				
Depth To Bottom										
Date Sampled	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4AE	4AE	4AE	4A	4AE	4				
TPH CWG (leachable)										
Ali >C5-C6 (leachable)$_A$	<1	-	-	-	<1	-		µg/l	1	A-T-022w
Ali >C6-C8 (leachable)$_A$	<1	-	-	-	<1	-		µg/l	1	A-T-022w
Ali >C8-C10 (leachable)$_A$	<10	-	-	-	<10	-		µg/l	10	A-T-055w
Ali >C10-C12 (leachable)$_A$	<10	-	-	-	<10	-		µg/l	10	A-T-055w
Ali >C12-C16 (leachable)$_A$	<10	-	-	-	<10	-		µg/l	10	A-T-055w
Ali >C16-C21 (leachable)$_A$	<10	-	-	-	<10	-		µg/l	10	A-T-055w
Ali >C21-C35 (leachable)$_A$	<20	-	-	-	<20	-		µg/l	20	A-T-055w
Total Aliphatics (leachable)$_A$	<10	-	-	-	<10	-		µg/l	10	A-T-055w
Aro >C5-C7 (leachable)$_A$	<1	-	-	-	<1	-		µg/l	1	A-T-022w
Aro >C7-C8 (leachable)$_A$	<1	-	-	-	<1	-		µg/l	1	A-T-022w
Aro >C8-C10 (leachable)$_A$	63	-	-	-	58	-		µg/l	10	A-T-055w
Aro >C10-C12 (leachable)$_A$	<10	-	-	-	<10	-		µg/l	10	A-T-055w
Aro >C12-C16 (leachable)$_A$	<10	-	-	-	22	-		µg/l	10	A-T-055w
Aro >C16-C21 (leachable)$_A$	<10	-	-	-	12	-		µg/l	10	A-T-055w
Total Aromatics (leachable)$_A$	63	-	-	-	92	-		µg/l	20	A-T-055w
TPH (Ali & Aro >C5-C35) (leachable)$_A$	63	-	-	-	92	-		µg/l	20	A-T-055w
BTEX - Benzene (leachable)$_A$	<1	-	-	-	<1	-		µg/l	1	A-T-022w
BTEX - Toluene (leachable)$_A$	<1	-	-	-	<1	-		µg/l	1	A-T-022w
BTEX - Ethyl Benzene (leachable)$_A$	<1	-	-	-	<1	-		µg/l	1	A-T-022w
BTEX - o Xylene (leachable)$_A$	<1	-	-	-	<1	-		µg/l	1	A-T-022w
BTEX - m & p Xylene (leachable)$_A$	<1	-	-	-	<1	-		µg/l	1	A-T-022w
MTBE (leachable)$_A$	<1	-	-	-	<1	-		µg/l	1	A-T-022w
Aro >C21-C35 (leachable)$_A$	<20	-	-	-	<20	-		µg/l	20	A-T-055w

Envirolab Job Number: 19/09361

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/09361/1	19/09361/2	19/09361/3	19/09361/4	19/09361/5	19/09361/6		Units	Limit of Detection	Method ref
Client Sample No	2	3	1	4	1	2				
Client Sample ID	107	107	108	108	109	109				
Depth to Top	0.50	0.80	0.20	1.20	0.20	0.80				
Depth To Bottom										
Date Sampled	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19	19-Sep-19				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4AE	4AE	4AE	4A	4AE	4				
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C21-C35$_A$	4	<1	1	<1	<1	<1		mg/kg	1	A-T-055s
Total Aliphatics$_A$	4	<1	1	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C10-C12$_A^{M\#}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	5	<1	2	<1	3	<1		mg/kg	1	A-T-055s
Total Aromatics$_A$	5	<1	2	<1	3	<1		mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	9	<1	3	<1	4	<1		mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/09701
Issue Number: 1 **Date:** 22 October, 2019

Client: Norse Eastern Ltd t/a Norse Highways
280 Fifers Lane
Norwich
Norfolk
NR6 6EQ

Project Manager: Scott Viner/Sharon Woods; Simon Holden
Project Name: Ringland A47-A1067 Western Link Road
Project Ref: PK1002D2
Order No: PN05000283
Date Samples Received: 16/10/19
Date Instructions Received: 16/10/19
Date Analysis Completed: 22/10/19

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Iain Haslock
Analytical Consultant

Envirolab Job Number: 19/09701

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/09701/1							Units	Limit of Detection	Method ref
Client Sample No	2									
Client Sample ID	005									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	09-Oct-19									
Sample Type	Soil - ES									
Sample Matrix Code	4A									
% Stones >10mm$_A$	<0.1							% w/w	0.1	A-T-044
pH$_D$	7.64							pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	<0.01							g/l	0.01	A-T-026s
Cyanide (free)$_A^{M\#}$	<1							mg/kg	1	A-T-042sFCN
Phenols - Total by HPLC$_A$	<0.2							mg/kg	0.2	A-T-050s
Organic matter$_D^{M\#}$	0.2							% w/w	0.1	A-T-032 OM
Arsenic$_D^{M\#}$	14							mg/kg	1	A-T-024s
Boron (water soluble)$_D^{M\#}$	<1.0							mg/kg	1	A-T-027s
Cadmium$_D^{M\#}$	<0.5							mg/kg	0.5	A-T-024s
Copper$_D^{M\#}$	4							mg/kg	1	A-T-024s
Chromium$_D^{M\#}$	16							mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1							mg/kg	1	A-T-040s
Lead$_D^{M\#}$	6							mg/kg	1	A-T-024s
Mercury$_D$	<0.17							mg/kg	0.17	A-T-024s
Nickel$_D^{M\#}$	13							mg/kg	1	A-T-024s
Selenium$_D^{M\#}$	<1							mg/kg	1	A-T-024s
Zinc$_D^{M\#}$	38							mg/kg	5	A-T-024s

Envirolab Job Number: 19/09701

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/09701/1							Units	Limit of Detection	Method ref
Client Sample No	2									
Client Sample ID	005									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	09-Oct-19									
Sample Type	Soil - ES									
Sample Matrix Code	4A									
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_{D}^{\#}$	NAD									A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A									A-T-045

Envirolab Job Number: 19/09701

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/09701/1							Units	Limit of Detection	Method ref
Client Sample No	2									
Client Sample ID	005									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	09-Oct-19									
Sample Type	Soil - ES									
Sample Matrix Code	4A									
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02							mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05							mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05							mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07							mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06							mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08							mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07							mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08							mg/kg	0.01	A-T-019s

Envirolab Job Number: 19/09701

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/09701/1							Units	Limit of Detection	Method ref
Client Sample No	2									
Client Sample ID	005									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	09-Oct-19									
Sample Type	Soil - ES									
Sample Matrix Code	4A									
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1							mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C21-C35$_A$	<1							mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1							mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1							mg/kg	1	A-T-055s
Aro >C10-C12$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1							mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Total Aromatics$_A$	<1							mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	<1							mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s

REPORT NOTES

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Analytical results reflect the quality of the sample at the time of analysis only.
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The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
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Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

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Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/10104
Issue Number: 1 **Date:** 04 November, 2019

Client:
Norse Eastern Ltd t/a Norse Highways
280 Fifers Lane
Norwich
Norfolk
NR6 6EQ

Project Manager: Scott Viner/Sharon Woods; Simon Holden
Project Name: Ringland A47-A1067 Western Link Road
Project Ref: PK1002D2
Order No: PN05000395
Date Samples Received: 25/10/19
Date Instructions Received: 25/10/19
Date Analysis Completed: 04/11/19

Prepared by:
Melanie Marshall
Laboratory Coordinator

Approved by:
John Gustafson
Managing Director

Envirolab Job Number: 19/10104

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/10104/1	19/10104/2	19/10104/3	19/10104/4				Units	Limit of Detection	Method ref
Client Sample No	9	28	57	66						
Client Sample ID	011	011	011	011						
Depth to Top	1.60	7.50	17.00	20.00						
Depth To Bottom			17.50	20.50						
Date Sampled	11-Sep-19	11-Sep-19	12-Sep-19	12-Sep-19						
Sample Type	Soil - D	Soil - D	Solid	Solid						
Sample Matrix Code	4A	4A	7	7						
% Stones >10mm$_A$	1.4	1.8	<0.1	<0.1				% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	9.49	9.12	9.29	9.31				pH	0.01	A-T-031s
Ammonium NH4 BRE (water sol 2:1)$_D$	<1.00	<1.00	1.55	<1.00				mg/l	1	A-T-033s
Chloride BRE, SO4 equiv. (water sol 2:1)$_D$$^{M\#}$	<7	<7	<7	<7				mg/l	7	A-T-026s
Nitrate BRE, SO4 equiv. (water sol 2:1)$_D$	<0.4	0.8	2.7	0.6				mg/l	0.4	A-T-026s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	35	11	11	<10				mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D$$^{M\#}$	<0.02	<0.02	0.04	<0.04				% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	<0.01	<0.01	0.02	0.02				% w/w	0.01	A-T-024s
Magnesium BRE (water sol 2:1)$_D$	2	2	2	1				mg/l	1	A-T-SOLMETS

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For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
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TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
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Asbestos:
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A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

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Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/10319
Issue Number: 1 **Date:** 08 November, 2019

Client:
Norse Eastern Ltd t/a Norse Highways
280 Fifers Lane
Norwich
Norfolk
NR6 6EQ

Project Manager: Civil Lab/Sharon Woods; Simon Holden
Project Name: Ringland A47 - A1067 Western Link Road
Project Ref: PK1002D2
Order No: PN05000511
Date Samples Received: 31/10/19
Date Instructions Received: 31/10/19
Date Analysis Completed: 08/11/19

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Holly Neary-King
Deputy Admin & Client Services Supervisor

Envirolab Job Number: 19/10319

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/10319/1	19/10319/2	19/10319/3					Units	Limit of Detection	Method ref
Client Sample No	12	48	91							
Client Sample ID	005	005	005							
Depth to Top	3.00	15.00	29.00							
Depth To Bottom	3.50	15.50	29.50							
Date Sampled	09-Oct-19	11-Oct-19	16-Oct-19							
Sample Type	Soil - B	Soil - B	Soil - B							
Sample Matrix Code	4A	4	4							
% Stones >10mm$_A$	<0.1	<0.1	<0.1					% w/w	0.1	A-T-044
pH BRE$_D^{M\#}$	6.36	5.01	9.09					pH	0.01	A-T-031s
Ammonium NH4 BRE (water sol 2:1)$_D$	<1.00	<1.00	<1.00					mg/l	1	A-T-033s
Chloride BRE, SO4 equiv. (water sol 2:1)$_D^{M\#}$	<7	<7	<7					mg/l	7	A-T-026s
Nitrate BRE, SO4 equiv. (water sol 2:1)$_D$	<0.4	<0.4	3.5					mg/l	0.4	A-T-026s
Sulphate BRE (water sol 2:1)$_D^{M\#}$	<10	<10	<10					mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D^{M\#}$	<0.02	<0.02	<0.02					% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	<0.01	<0.01	0.01					% w/w	0.01	A-T-024s
Magnesium BRE (water sol 2:1)$_D$	2	1	1					mg/l	1	A-T-SOLMETS

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TPH analysis of water by method A-T-007:
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Electrical Conductivity of water by Method A-T-037:
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FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/10253
Issue Number: 1 **Date:** 11 November, 2019

Client:
Norse Eastern Ltd t/a Norse Highways
280 Fifers Lane
Norwich
Norfolk
NR6 6EQ

Project Manager: Scott Viner/Sharon Woods; Simon Holden
Project Name: Ringland A47-A1067 Western Link Road
Project Ref: PK1002D2
Order No: PN05000481
Date Samples Received: 23/10/19
Date Instructions Received: 30/10/19
Date Analysis Completed: 11/11/19

Prepared by:
Melanie Marshall
Laboratory Coordinator

Approved by:
Iain Haslock
Analytical Consultant

Envirolab Job Number: 19/10253

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/10253/1	19/10253/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	006	006								
Depth to Top	0.20	0.50								
Depth To Bottom										
Date Sampled	21-Oct-19	21-Oct-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4A								
% Stones >10mm$_A$	<0.1	9.3						% w/w	0.1	A-T-044
pH$_D$	6.24	4.95						pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	<0.01	<0.01						g/l	0.01	A-T-026s
Cyanide (free)$_A^{M\#}$	<1	<1						mg/kg	1	A-T-042sFCN
Phenols - Total by HPLC$_A$	<0.2	<0.2						mg/kg	0.2	A-T-050s
Organic matter$_D^{M\#}$	1.2	0.2						% w/w	0.1	A-T-032 OM
Arsenic$_D^{M\#}$	10	7						mg/kg	1	A-T-024s
Boron (water soluble)$_D^{M\#}$	<1.0	<1.0						mg/kg	1	A-T-027s
Cadmium$_D^{M\#}$	<0.5	<0.5						mg/kg	0.5	A-T-024s
Copper$_D^{M\#}$	4	<1						mg/kg	1	A-T-024s
Chromium$_D^{M\#}$	8	7						mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1						mg/kg	1	A-T-040s
Lead$_D^{M\#}$	17	565						mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17						mg/kg	0.17	A-T-024s
Nickel$_D^{M\#}$	5	5						mg/kg	1	A-T-024s
Selenium$_D^{M\#}$	<1	<1						mg/kg	1	A-T-024s
Zinc$_D^{M\#}$	91	21						mg/kg	5	A-T-024s
Leachate Prep NRA (10:1)$_A$	*	-								A-T-001
Ammonium / Ammoniacal Nitrogen as NH4 (leachable)$_A$	<0.026	-						mg/l	0.026	A-T-033w
Phenols (total by HPLC) (leachable)$_A$	<0.01	-						mg/l	0.01	A-T-050w
Arsenic (leachable)$_A^{\#}$	2	-						µg/l	1	A-T-025w
Boron (leachable)$_A^{\#}$	<10	-						µg/l	10	A-T-025w
Cadmium (leachable)$_A^{\#}$	<1	-						µg/l	1	A-T-025w
Copper (leachable)$_A^{\#}$	6	-						µg/l	1	A-T-025w
Chromium (leachable)$_A^{\#}$	<1	-						µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_A$	<0.05	-						mg/l	0.05	A-T-040w
Lead (leachable)$_A^{\#}$	10	-						µg/l	1	A-T-025w
Mercury (leachable)$_A^{\#}$	<0.1	-						µg/l	0.1	A-T-025w
Nickel (leachable)$_A^{\#}$	<1	-						µg/l	1	A-T-025w
Selenium (leachable)$_A^{\#}$	<1	-						µg/l	1	A-T-025w
Zinc (leachable)$_A^{\#}$	89	-						µg/l	1	A-T-025w

Envirolab Job Number: 19/10253

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/10253/1	19/10253/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	006	006								
Depth to Top	0.20	0.50								
Depth To Bottom										
Date Sampled	21-Oct-19	21-Oct-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4A								
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_{D}^{\#}$	NAD	NAD								A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	N/A								A-T-045

Envirolab Job Number: 19/10253

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/10253/1	19/10253/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	006	006								
Depth to Top	0.20	0.50								
Depth To Bottom										
Date Sampled	21-Oct-19	21-Oct-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4A								
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02						mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05						mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05						mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07						mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06						mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08						mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07						mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08						mg/kg	0.01	A-T-019s

Envirolab Job Number: 19/10253

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/10253/1	19/10253/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	006	006								
Depth to Top	0.20	0.50								
Depth To Bottom										
Date Sampled	21-Oct-19	21-Oct-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4A								
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	0.15	-						µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	0.03	-						µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	<0.02	-						µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	0.07	-						µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	0.12	-						µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	<0.02	-						µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	0.17	-						µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	0.16	-						µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	0.05	-						µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	0.75	-						µg/l	0.02	A-T-019w

Envirolab Job Number: 19/10253

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/10253/1	19/10253/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	006	006								
Depth to Top	0.20	0.50								
Depth To Bottom										
Date Sampled	21-Oct-19	21-Oct-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4A								
TPH CWG (leachable)										
Ali >C5-C6 (leachable)$_A$	<1	-						µg/l	1	A-T-022w
Ali >C6-C8 (leachable)$_A$	<1	-						µg/l	1	A-T-022w
Ali >C8-C10 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Ali >C10-C12 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Ali >C12-C16 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Ali >C16-C21 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Ali >C21-C35 (leachable)$_A$	21	-						µg/l	20	A-T-055w
Total Aliphatics (leachable)$_A$	21	-						µg/l	10	A-T-055w
Aro >C5-C7 (leachable)$_A$	<1	-						µg/l	1	A-T-022w
Aro >C7-C8 (leachable)$_A$	<1	-						µg/l	1	A-T-022w
Aro >C8-C10 (leachable)$_A$	18	-						µg/l	10	A-T-055w
Aro >C10-C12 (leachable)$_A$	34	-						µg/l	10	A-T-055w
Aro >C12-C16 (leachable)$_A$	36	-						µg/l	10	A-T-055w
Aro >C16-C21 (leachable)$_A$	<10	-						µg/l	10	A-T-055w
Total Aromatics (leachable)$_A$	97	-						µg/l	20	A-T-055w
TPH (Ali & Aro >C5-C35) (leachable)$_A$	118	-						µg/l	20	A-T-055w
BTEX - Benzene (leachable)$_A$	<1	-						µg/l	1	A-T-022w
BTEX - Toluene (leachable)$_A$	<1	-						µg/l	1	A-T-022w
BTEX - Ethyl Benzene (leachable)$_A$	<1	-						µg/l	1	A-T-022w
BTEX - o Xylene (leachable)$_A$	<1	-						µg/l	1	A-T-022w
BTEX - m & p Xylene (leachable)$_A$	<1	-						µg/l	1	A-T-022w
MTBE (leachable)$_A$	<1	-						µg/l	1	A-T-022w
Aro >C21-C35 (leachable)$_A$	<20	-						µg/l	20	A-T-055w

Envirolab Job Number: 19/10253

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/10253/1	19/10253/2						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	006	006								
Depth to Top	0.20	0.50								
Depth To Bottom										
Date Sampled	21-Oct-19	21-Oct-19								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	4AE	4A								
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C21-C35$_A$	6	<1						mg/kg	1	A-T-055s
Total Aliphatics$_A$	6	<1						mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	1	<1						mg/kg	1	A-T-055s
Aro >C10-C12$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Aro >C12-C16$_A$	1	<1						mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	2	<1						mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	19	<1						mg/kg	1	A-T-055s
Total Aromatics$_A$	23	<1						mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	29	<1						mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s

REPORT NOTES

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Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
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Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

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Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/10739
Issue Number: 1 **Date:** 20 November, 2019

Client: Norse Eastern Ltd t/a Norse Highways
280 Fifers Lane
Norwich
Norfolk
NR6 6EQ

Project Manager: Scott Viner/Sharon Woods; Simon Holden
Project Name: Ringland A47-A1067 Western Link Road
Project Ref: PK1002D2
Order No: PN05000883
Date Samples Received: 13/11/19
Date Instructions Received: 13/11/19
Date Analysis Completed: 20/11/19

Prepared by:

Sophie France
Admin Assistant

Approved by:

Iain Haslock
Analytical Consultant

Envirolab Job Number: 19/10739

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/10739/1	19/10739/2	19/10739/3					Units	Limit of Detection	Method ref
Client Sample No	05	27	60							
Client Sample ID	006	006	006							
Depth to Top	1.20	8.00	19.00							
Depth To Bottom	1.65	8.50	19.50							
Date Sampled	21-Oct-19	22-Oct-19	23-Oct-19							
Sample Type	Soil - D	Soil - B	Soil - B							
Sample Matrix Code	4A	4	4							
% Stones >10mm$_A$	<0.1	<0.1	<0.1					% w/w	0.1	A-T-044
pH BRE$_D^{M\#}$	6.27	9.22	7.27					pH	0.01	A-T-031s
Ammonium NH4 BRE (water sol 2:1)$_D$	<1.00	<1.00	<1.00					mg/l	1	A-T-033s
Chloride BRE, SO4 equiv. (water sol 2:1)$_D^{M\#}$	<7	<7	<7					mg/l	7	A-T-026s
Nitrate BRE, SO4 equiv. (water sol 2:1)$_D$	0.7	1.0	0.6					mg/l	0.4	A-T-026s
Sulphate BRE (water sol 2:1)$_D^{M\#}$	<10	<10	<10					mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D^{M\#}$	<0.02	<0.02	<0.02					% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	<0.01	<0.01	<0.01					% w/w	0.01	A-T-024s
Magnesium BRE (water sol 2:1)$_D$	2	<1	<1					mg/l	1	A-T-SOLMETS

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For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
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Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
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N/A indicates Not Applicable.
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Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/10840
Issue Number: 1 **Date:** 25 November, 2019

Client:
Norse Eastern Ltd t/a Norse Highways
280 Fifers Lane
Norwich
Norfolk
NR6 6EQ

Project Manager: Sharon Woods; Simon Holden
Project Name: Ringland A47-A1067 Western Link Road
Project Ref: PK1002D2
Order No: PN05000946
Date Samples Received: 15/11/19
Date Instructions Received: 15/11/19
Date Analysis Completed: 21/11/19

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 19/10840

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/10840/1	19/10840/2	19/10840/3	19/10840/4				Units	Limit of Detection	Method ref
Client Sample No	12	30	54	83						
Client Sample ID	007	007	007	007						
Depth to Top	3.00	9.00	17.00	25.00						
Depth To Bottom	3.50	9.50	17.50	25.50						
Date Sampled	28-Oct-19	29-Oct-19	30-Oct-19	01-Nov-19						
Sample Type	Soil - B	Soil - B	Soil - B	Soil - B						
Sample Matrix Code	1A	1	1	1A						
% Stones >10mm$_A$	1.1	<0.1	<0.1	<0.1				% w/w	0.1	A-T-044
pH BRE$_D^{M\#}$	6.93	8.56	9.39	9.21				pH	0.01	A-T-031s
Ammonium NH4 BRE (water sol 2:1)$_D$	1.50	1.61	1.55	1.58				mg/l	1	A-T-033s
Chloride BRE, SO4 equiv. (water sol 2:1)$_D^{M\#}$	<7	<7	<7	<7				mg/l	7	A-T-026s
Nitrate BRE, SO4 equiv. (water sol 2:1)$_D$	0.6	<0.4	3.1	4.5				mg/l	0.4	A-T-026s
Sulphate BRE (water sol 2:1)$_D^{M\#}$	<10	<10	<10	16				mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D^{M\#}$	<0.02	<0.02	<0.02	0.03				% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	<0.01	<0.01	<0.01	0.01				% w/w	0.01	A-T-024s
Magnesium BRE (water sol 2:1)$_D$	<1	<1	<1	1				mg/l	1	A-T-SOLMETS

REPORT NOTES

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Soil chemical analysis:
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For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
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Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

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FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/11027
Issue Number: 1 **Date:** 28 November, 2019

Client:
Norse Eastern Ltd t/a Norse Highways
280 Fifers Lane
Norwich
Norfolk
NR6 6EQ

Project Manager: Sharon Woods; Simon Holden
Project Name: Ringland A47 - A1067 Western Link Road
Project Ref: PK1002D2
Order No: PN05000999
Date Samples Received: 20/11/19
Date Instructions Received: 20/11/19
Date Analysis Completed: 27/11/19

Prepared by:

Sophie France
Admin Assistant

Approved by:

Iain Haslock
Analytical Consultant

Envirolab Job Number: 19/11027

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/11027/1	19/11027/2	19/11027/3	19/11027/4	19/11027/5	19/11027/6	19/11027/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	001	002	009	009	101	102	103			
Depth to Top	27.00	2.00	3.50	10.00	3.00	3.00	3.00			
Depth To Bottom										
Date Sampled	27-Sep-19	27-Aug-19	05-Sep-19	09-Sep-19	23-Aug-19	23-Aug-19	23-Aug-19			
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D			
Sample Matrix Code	5	5A	5A	3	3A	3A	5			
% Stones >10mm$_A$	<0.1	7.7	0.7	1.9	14.1	<0.1	3.7	% w/w	0.1	A-T-044
pH BRE$_D^{M\#}$	8.39	8.61	9.04	8.64	8.35	8.41	7.92	pH	0.01	A-T-031s
Ammonium NH4 BRE (water sol 2:1)$_D$	<1.00	<1.00	<1.00	<1.00	<1.00	2.61	<1.00	mg/l	1	A-T-033s
Chloride BRE, SO4 equiv. (water sol 2:1)$_D^{M\#}$	<7	<7	<7	<7	<7	<7	<7	mg/l	7	A-T-026s
Nitrate BRE, SO4 equiv. (water sol 2:1)$_D$	<0.4	<0.4	<0.4	1.4	2.7	<0.4	1.4	mg/l	0.4	A-T-026s
Sulphate BRE (water sol 2:1)$_D^{M\#}$	70	<10	<10	<10	<10	14	<10	mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D^{M\#}$	0.04	<0.02	<0.02	<0.02	0.03	0.03	<0.02	% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	0.06	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	% w/w	0.01	A-T-024s
Magnesium BRE (water sol 2:1)$_D$	2	2	<1	<1	<1	1	2	mg/l	1	A-T-SOLMETS

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

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Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/11104
Issue Number: 1 **Date:** 29 November, 2019

Client:
Norse Eastern Ltd t/a Norse Highways
280 Fifers Lane
Norwich
Norfolk
NR6 6EQ

Project Manager: Civil Lab/Sharon Woods; Simon Holden
Project Name: Ringland A47 - A1067 Western Link Road
Project Ref: PK1002D2
Order No: Voucher
Date Samples Received: 22/11/19
Date Instructions Received: 22/11/19
Date Analysis Completed: 29/11/19

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Holly Neary-King
Deputy Admin & Client Services Supervisor

Envirolab Job Number: 19/11104

Client Project Name: Ringland A47 - A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	19/11104/1	19/11104/2	19/11104/3					Units	Limit of Detection	Method ref
Client Sample No	05	20	28							
Client Sample ID	BH012	BH012	BH012							
Depth to Top	1.00	5.00	8.00							
Depth To Bottom		5.50	8.50							
Date Sampled	04-Nov-19	05-Nov-19	05-Nov-19							
Sample Type	Soil - D	Soil - B	Soil - B							
Sample Matrix Code	6A	6A	6A							
% Stones >10mm$_A$	26.7	<0.1	<0.1					% w/w	0.1	A-T-044
pH BRE$_D^{M\#}$	7.60	8.97	9.02					pH	0.01	A-T-031s
Ammonium NH4 BRE (water sol 2:1)$_D$	<1.00	<1.00	<1.00					mg/l	1	A-T-033s
Chloride BRE, SO4 equiv. (water sol 2:1)$_D^{M\#}$	<7	<7	<7					mg/l	7	A-T-026s
Nitrate BRE, SO4 equiv. (water sol 2:1)$_D$	<0.4	4.9	6.1					mg/l	0.4	A-T-026s
Sulphate BRE (water sol 2:1)$_D^{M\#}$	<10	<10	14					mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D^{M\#}$	<0.02	<0.02	0.02					% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	<0.01	0.01	0.01					% w/w	0.01	A-T-024s
Magnesium BRE (water sol 2:1)$_D$	<1	1	2					mg/l	1	A-T-SOLMETS

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All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
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Asbestos:
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Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

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Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

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FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/11398
Issue Number: 1 **Date:** 06 December, 2019

Client: Norse Eastern Ltd t/a Norse Highways
280 Fifers Lane
Norwich
Norfolk
NR6 6EQ

Project Manager: Sharon Woods; Simon Holden
Project Name: Western Link Cores
Project Ref: 100160
Order No: PN05001267
Date Samples Received: 02/12/19
Date Instructions Received: 02/12/19
Date Analysis Completed: 06/12/19

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 19/11398

Client Project Name: Western Link Cores

Client Project Ref: 100160

Lab Sample ID	19/11398/1	19/11398/2	19/11398/3	19/11398/4	19/11398/5	19/11398/6	19/11398/7	Units	Limit of Detection	Method ref
Client Sample No	11290	11291	11292	11293	11294	11295	11296			
Client Sample ID	2695	2696	2697	2698	2699	2700	2701			
Depth to Top	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Depth To Bottom	0.13	0.12	0.10	0.12	0.30	0.30	0.15			
Date Sampled	28-Nov-19	28-Nov-19	28-Nov-19	28-Nov-19	28-Nov-19	28-Nov-19	28-Nov-19			
Sample Type	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac			
Sample Matrix Code	7	7	7	7	7	7	7			
Leachate Prep BS EN 12457-2 (10:1)$_A$	*	*	*	*	*	*	*			A-T-001
Phenols (total by HPLC) (leachable) TAR$_A$	1.07	0.11	2.13	0.55	6.04	2.05	<0.01	mg/l	0.01	A-T-050w

Envirolab Job Number: 19/11398

Client Project Name: Western Link Cores

Client Project Ref: 100160

Lab Sample ID	19/11398/1	19/11398/2	19/11398/3	19/11398/4	19/11398/5	19/11398/6	19/11398/7	Units	Limit of Detection	Method ref
Client Sample No	11290	11291	11292	11293	11294	11295	11296			
Client Sample ID	2695	2696	2697	2698	2699	2700	2701			
Depth to Top	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Depth To Bottom	0.13	0.12	0.10	0.12	0.30	0.30	0.15			
Date Sampled	28-Nov-19	28-Nov-19	28-Nov-19	28-Nov-19	28-Nov-19	28-Nov-19	28-Nov-19			
Sample Type	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac			
Sample Matrix Code	7	7	7	7	7	7	7			
PAH-16 plus Coronene (leachable)										
Acenaphthene (leachable)$_A$	68.73	38.26	11.95	28.08	79.66	96.99	0.91	µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	0.45	0.35	0.14	0.26	0.52	0.69	<0.02	µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	9.95	6.22	1.06	14.23	68.40	55.61	0.04	µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	8.85	7.18	0.87	5.80	24.45	35.38	<0.02	µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	7.74	3.90	0.43	2.97	20.56	31.89	<0.02	µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	8.71	4.39	0.53	3.45	23.94	39.67	<0.02	µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	4.13	1.47	0.15	1.30	11.54	17.82	<0.02	µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	3.41	1.82	0.18	1.33	9.07	14.13	<0.02	µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	9.02	5.56	0.82	5.19	25.56	36.70	<0.02	µg/l	0.02	A-T-019w
Coronene (leachable)$_A$	1.10	0.40	0.04	0.37	3.33	4.93	<0.02	µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	0.78	0.32	0.03	0.26	2.28	3.61	<0.02	µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	31.85	21.90	3.28	33.00	132.64	163.40	0.11	µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	25.66	15.84	4.32	14.73	46.44	55.43	0.54	µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	4.83	1.82	0.17	1.54	12.62	20.10	<0.02	µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	306.84	109.26	0.53	154.90	284.40	174.80	<0.02	µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	59.86	34.52	4.99	55.86	243.27	250.97	0.43	µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	26.89	18.87	2.59	23.57	121.65	184.00	0.07	µg/l	0.02	A-T-019w
Total PAH-16 plus Coronene (leachable)$_A$	579	272	32.1	347	1110	1190	2.10	µg/l	0.02	A-T-019w

Envirolab Job Number: 19/11398

Client Project Name: Western Link Cores

Client Project Ref: 100160

Lab Sample ID	19/11398/1	19/11398/2	19/11398/3	19/11398/4	19/11398/5	19/11398/6	19/11398/7	Units	Limit of Detection	Method ref
Client Sample No	11290	11291	11292	11293	11294	11295	11296			
Client Sample ID	2695	2696	2697	2698	2699	2700	2701			
Depth to Top	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Depth To Bottom	0.13	0.12	0.10	0.12	0.30	0.30	0.15			
Date Sampled	28-Nov-19	28-Nov-19	28-Nov-19	28-Nov-19	28-Nov-19	28-Nov-19	28-Nov-19			
Sample Type	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac	Solid - Road Core / Tarmac			
Sample Matrix Code	7	7	7	7	7	7	7			
PAH-16MS plus Coronene (TAR)										
Acenaphthene$_D$	486.3	115.8	219.0	113.7	530.4	426.6	68.6	mg/kg	1	A-T-019 TAR
Acenaphthylene$_D$	8.4	2.7	2.5	1.5	7.5	7.2	2.7	mg/kg	1	A-T-019 TAR
Anthracene$_D$	452.6	163.6	230.0	111.8	458.3	419.7	128.4	mg/kg	1	A-T-019 TAR
Benzo(a)anthracene$_D$	540.6	272.2	173.0	116.3	461.9	494.5	281.5	mg/kg	4	A-T-019 TAR
Benzo(a)pyrene$_D$	326.1	152.7	101.4	80.2	283.5	307.8	151.3	mg/kg	4	A-T-019 TAR
Benzo(b)fluoranthene$_D$	393.1	179.4	110.9	93.3	328.3	361.5	179.4	mg/kg	5	A-T-019 TAR
Benzo(ghi)perylene$_D$	142.1	56.7	38.0	33.8	123.8	148.3	55.8	mg/kg	5	A-T-019 TAR
Benzo(k)fluoranthene$_D$	177.3	77.6	46.7	38.1	141.4	153.4	79.8	mg/kg	7	A-T-019 TAR
Chrysene$_D$	809.0	298.8	188.8	126.5	599.8	671.1	308.2	mg/kg	6	A-T-019 TAR
Coronene$_D$	34.8	13.5	9.2	9.9	28.7	36.1	13.8	mg/kg	1	A-T-019 TAR
Dibenzo(ah)anthracene$_D$	40.9	16.4	10.8	8.9	33.0	39.9	16.9	mg/kg	4	A-T-019 TAR
Fluoranthene$_D$	1440.9	680.6	549.6	353.3	1187.6	1221.2	623.8	mg/kg	8	A-T-019 TAR
Fluorene$_D$	452.8	104.6	219.0	97.9	414.0	347.3	65.4	mg/kg	1	A-T-019 TAR
Indeno(123-cd)pyrene$_D$	182.2	77.1	53.7	44.8	158.6	187.2	77.9	mg/kg	3	A-T-019 TAR
Naphthalene$_D$	340.9	47.0	391.9	155.8	702.0	292.7	20.1	mg/kg	3	A-T-019 TAR
Phenanthrene$_D$	2161.5	771.7	1197.5	548.0	1956.2	1689.1	528.6	mg/kg	3	A-T-019 TAR
Pyrene$_D$	1207.2	577.2	417.1	268.2	1004.0	1053.0	537.0	mg/kg	7	A-T-019 TAR
Total PAH-16MS plus Coronene (TAR)$_D$	9200	3610	3960	2200	8420	7860	3140	mg/kg	1	A-T-019 TAR

Envirolab Job Number: 19/11398

Client Project Name: Western Link Cores

Client Project Ref: 100160

Lab Sample ID	**19/11398/8**							**Units**	**Limit of Detection**	**Method ref**
Client Sample No	**11297**									
Client Sample ID	**2702**									
Depth to Top	**0.00**									
Depth To Bottom	**0.20**									
Date Sampled	**28-Nov-19**									
Sample Type	**Solid - Road Core / Tarmac**									
Sample Matrix Code	**7**									
Leachate Prep BS EN 12457-2 (10:1)$_A$	*****									**A-T-001**
Phenols (total by HPLC) (leachable) TAR$_A$	**<0.01**							**mg/l**	**0.01**	**A-T-050w**

Envirolab Job Number: 19/11398

Client Project Name: Western Link Cores

Client Project Ref: 100160

Lab Sample ID	19/11398/8									
Client Sample No	11297									
Client Sample ID	2702									
Depth to Top	0.00									
Depth To Bottom	0.20									
Date Sampled	28-Nov-19									
Sample Type	Solid - Road Core / Tarmac									
Sample Matrix Code	7								Units	Limit of Detection	Method ref
PAH-16 plus Coronene (leachable)											
Acenaphthene (leachable)$_A$	13.11								µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	0.05								µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	0.69								µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	0.07								µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	0.04								µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	0.05								µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	0.02								µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	<0.02								µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	0.07								µg/l	0.02	A-T-019w
Coronene (leachable)$_A$	<0.02								µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	<0.02								µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	0.39								µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	5.10								µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	0.02								µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	97.87								µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	4.61								µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	0.28								µg/l	0.02	A-T-019w
Total PAH-16 plus Coronene (leachable)$_A$	122								µg/l	0.02	A-T-019w

Envirolab Job Number: 19/11398

Client Project Name: Western Link Cores

Client Project Ref: 100160

Lab Sample ID	19/11398/8							Units	Limit of Detection	Method ref
Client Sample No	11297									
Client Sample ID	2702									
Depth to Top	0.00									
Depth To Bottom	0.20									
Date Sampled	28-Nov-19									
Sample Type	Solid - Road Core / Tarmac									
Sample Matrix Code	7									
PAH-16MS plus Coronene (TAR)										
Acenaphthene$_D$	18.1							mg/kg	1	A-T-019 TAR
Acenaphthylene$_D$	<1.0							mg/kg	1	A-T-019 TAR
Anthracene$_D$	34.1							mg/kg	1	A-T-019 TAR
Benzo(a)anthracene$_D$	32.4							mg/kg	4	A-T-019 TAR
Benzo(a)pyrene$_D$	20.5							mg/kg	4	A-T-019 TAR
Benzo(b)fluoranthene$_D$	22.9							mg/kg	5	A-T-019 TAR
Benzo(ghi)perylene$_D$	7.8							mg/kg	5	A-T-019 TAR
Benzo(k)fluoranthene$_D$	9.0							mg/kg	7	A-T-019 TAR
Chrysene$_D$	29.8							mg/kg	6	A-T-019 TAR
Coronene$_D$	2.3							mg/kg	1	A-T-019 TAR
Dibenzo(ah)anthracene$_D$	<4.0							mg/kg	4	A-T-019 TAR
Fluoranthene$_D$	95.2							mg/kg	8	A-T-019 TAR
Fluorene$_D$	18.9							mg/kg	1	A-T-019 TAR
Indeno(123-cd)pyrene$_D$	10.8							mg/kg	3	A-T-019 TAR
Naphthalene$_D$	<3.0							mg/kg	3	A-T-019 TAR
Phenanthrene$_D$	108.9							mg/kg	3	A-T-019 TAR
Pyrene$_D$	73.6							mg/kg	7	A-T-019 TAR
Total PAH-16MS plus Coronene (TAR)$_D$	484							mg/kg	1	A-T-019 TAR

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 20/01768
Issue Number: 1 **Date:** 27 February, 2020

Client: Norse Eastern Ltd t/a Norse Highways
280 Fifers Lane
Norwich
Norfolk
NR6 6EQ

Project Manager: Sharon Woods; Simon Holden
Project Name: Ringland A47-A1067 Western Link Road
Project Ref: PK1002D2
Order No: PN05002947
Date Samples Received: 21/02/20
Date Instructions Received: 21/02/20
Date Analysis Completed: 27/02/20

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 20/01768

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	20/01768/1	20/01768/2						Units	Limit of Detection	Method ref
Client Sample No	6	10								
Client Sample ID	013	019								
Depth to Top	1.00	2.00								
Depth To Bottom										
Date Sampled	06-Feb-20	10-Feb-20								
Sample Type	Solid	Solid								
Sample Matrix Code	7	7								
% Stones >10mm$_A$	<0.1	<0.1						% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	7.95	8.20						pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.02	0.02						g/l	0.01	A-T-026s
Cyanide (free)$_A$$^{M\#}$	<1	<1						mg/kg	1	A-T-042sFCN
Phenols - Total by HPLC$_A$	<0.2	<0.2						mg/kg	0.2	A-T-050s
Organic matter$_D$$^{M\#}$	0.5	0.1						% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	5	3						mg/kg	1	A-T-024s
Boron (water soluble)$_D$$^{M\#}$	<1.0	<1.0						mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	<0.5	<0.5						mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	5	6						mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	151	141						mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1						mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	6	3						mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17						mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	98	110						mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1						mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	10	13						mg/kg	5	A-T-024s

Envirolab Job Number: 20/01768

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	20/01768/1	20/01768/2						Units	Limit of Detection	Method ref
Client Sample No	6	10								
Client Sample ID	013	019								
Depth to Top	1.00	2.00								
Depth To Bottom										
Date Sampled	06-Feb-20	10-Feb-20								
Sample Type	Solid	Solid								
Sample Matrix Code	7	7								
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_D^{\#}$	NAD	NAD								A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	N/A	N/A								A-T-045

Envirolab Job Number: 20/01768

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	20/01768/1	20/01768/2						Units	Limit of Detection	Method ref
Client Sample No	6	10								
Client Sample ID	013	019								
Depth to Top	1.00	2.00								
Depth To Bottom										
Date Sampled	06-Feb-20	10-Feb-20								
Sample Type	Solid	Solid								
Sample Matrix Code	7	7								
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02						mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05						mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05						mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07						mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06						mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08						mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07						mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08						mg/kg	0.01	A-T-019s

Envirolab Job Number: 20/01768

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	20/01768/1	20/01768/2						Units	Limit of Detection	Method ref
Client Sample No	6	10								
Client Sample ID	013	019								
Depth to Top	1.00	2.00								
Depth To Bottom										
Date Sampled	06-Feb-20	10-Feb-20								
Sample Type	Solid	Solid								
Sample Matrix Code	7	7								
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C21-C35$_A$	<1	3						mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	3						mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C10-C12$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	<1						mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	<1	3						mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s

REPORT NOTES

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Analytical results reflect the quality of the sample at the time of analysis only.
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If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

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Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 20/01458
Issue Number: 1 **Date:** 27 February, 2020

Client: Norse Eastern Ltd t/a Norse Highways
280 Fifers Lane
Norwich
Norfolk
NR6 6EQ

Project Manager: Scott Viner/Sharon Woods; Simon Holden
Project Name: Ringland A47-A1067 Western Link Road
Project Ref: PK1002D2
Order No: PN05002729
Date Samples Received: 13/02/20
Date Instructions Received: 13/02/20
Date Analysis Completed: 27/02/20

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Danielle Brierley
Client Manager

Envirolab Job Number: 20/01458

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	20/01458/1	20/01458/2	20/01458/3					Units	Limit of Detection	Method ref
Client Sample No	1	1	2							
Client Sample ID	110	110	110							
Depth to Top	0.30	0.60	1.10							
Depth To Bottom										
Date Sampled	11-Feb-20	11-Feb-20	11-Feb-20							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	5A	4A							
% Stones >10mm$_A$	12.2	2.1	<0.1					% w/w	0.1	A-T-044
pH$_D^{M\#}$	8.47	8.84	8.97					pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	<0.01	<0.01	<0.01					g/l	0.01	A-T-026s
Cyanide (free)$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-042sFCN
Phenols - Total by HPLC$_A$	<0.2	<0.2	<0.2					mg/kg	0.2	A-T-050s
Organic matter$_D^{M\#}$	0.5	1.5	<0.1					% w/w	0.1	A-T-032 OM
Arsenic$_D^{M\#}$	4	13	8					mg/kg	1	A-T-024s
Boron (water soluble)$_D^{M\#}$	<1.0	<1.0	<1.0					mg/kg	1	A-T-027s
Cadmium$_D^{M\#}$	<0.5	<0.5	<0.5					mg/kg	0.5	A-T-024s
Copper$_D^{M\#}$	4	<1	3					mg/kg	1	A-T-024s
Chromium$_D^{M\#}$	11	3	15					mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1					mg/kg	1	A-T-040s
Lead$_D^{M\#}$	11	<1	4					mg/kg	1	A-T-024s
Mercury$_D$	<0.17	0.89	<0.17					mg/kg	0.17	A-T-024s
Nickel$_D^{M\#}$	5	3	8					mg/kg	1	A-T-024s
Selenium$_D^{M\#}$	<1	<1	<1					mg/kg	1	A-T-024s
Zinc$_D^{M\#}$	22	16	15					mg/kg	5	A-T-024s
Leachate Prep BS EN 12457-2 (10:1)$_A$	*	-	-							A-T-001
Ammonium / Ammoniacal Nitrogen as NH4 (leachable)$_A$	0.027	-	-					mg/l	0.026	A-T-033w
Phenols (total by HPLC) (leachable)$_A$	<0.01	-	-					mg/l	0.01	A-T-050w
Arsenic (leachable)$_A^{\#}$	4	-	-					µg/l	1	A-T-025w
Boron (leachable)$_A^{\#}$	32	-	-					µg/l	10	A-T-025w
Cadmium (leachable)$_A^{\#}$	<1	-	-					µg/l	1	A-T-025w
Copper (leachable)$_A^{\#}$	4	-	-					µg/l	1	A-T-025w
Chromium (leachable)$_A^{\#}$	2	-	-					µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_A$	<0.05	-	-					mg/l	0.05	A-T-040w
Lead (leachable)$_A^{\#}$	8	-	-					µg/l	1	A-T-025w
Mercury (leachable)$_A^{\#}$	<0.1	-	-					µg/l	0.1	A-T-025w
Nickel (leachable)$_A^{\#}$	1	-	-					µg/l	1	A-T-025w
Selenium (leachable)$_A^{\#}$	<1	-	-					µg/l	1	A-T-025w
Zinc (leachable)$_A^{\#}$	17	-	-					µg/l	1	A-T-025w

Envirolab Job Number: 20/01458

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	20/01458/1	20/01458/2	20/01458/3					Units	Limit of Detection	Method ref
Client Sample No	1	1	2							
Client Sample ID	110	110	110							
Depth to Top	0.30	0.60	1.10							
Depth To Bottom										
Date Sampled	11-Feb-20	11-Feb-20	11-Feb-20							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	5A	4A							
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_D^{\#}$	NAD	NAD	NAD							A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	N/A	N/A	N/A							A-T-045

Envirolab Job Number: 20/01458

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	20/01458/1	20/01458/2	20/01458/3					Units	Limit of Detection	Method ref
Client Sample No	1	1	2							
Client Sample ID	110	110	110							
Depth to Top	0.30	0.60	1.10							
Depth To Bottom										
Date Sampled	11-Feb-20	11-Feb-20	11-Feb-20							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	5A	4A							
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02					mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04					mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04					mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05					mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05					mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07					mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06					mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04					mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08					mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03					mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03					mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03					mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07					mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08	<0.08					mg/kg	0.01	A-T-019s

Envirolab Job Number: 20/01458

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	20/01458/1	20/01458/2	20/01458/3					Units	Limit of Detection	Method ref
Client Sample No	1	1	2							
Client Sample ID	110	110	110							
Depth to Top	0.30	0.60	1.10							
Depth To Bottom										
Date Sampled	11-Feb-20	11-Feb-20	11-Feb-20							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	5A	4A							
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	<0.02	-	-					µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	<0.02	-	-					µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	<0.02	-	-					µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	<0.02	-	-					µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	<0.02	-	-					µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	<0.02	-	-					µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	<0.02	-	-					µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	<0.02	-	-					µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	<0.02	-	-					µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	<0.02	-	-					µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	<0.02	-	-					µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	<0.02	-	-					µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	<0.02	-	-					µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	0.67	-	-					µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	<0.02	-	-					µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	<0.02	-	-					µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	0.67	-	-					µg/l	0.02	A-T-019w

Envirolab Job Number: 20/01458

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	20/01458/1	20/01458/2	20/01458/3					Units	Limit of Detection	Method ref
Client Sample No	1	1	2							
Client Sample ID	110	110	110							
Depth to Top	0.30	0.60	1.10							
Depth To Bottom										
Date Sampled	11-Feb-20	11-Feb-20	11-Feb-20							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	5A	4A							
Speciated PCB-EC7										
PCB BZ $28_A^{M\#}$	<0.002	-	-					mg/kg	0.002	A-T-004s
PCB BZ $52_A^{M\#}$	<0.002	-	-					mg/kg	0.002	A-T-004s
PCB BZ $101_A^{M\#}$	<0.004	-	-					mg/kg	0.004	A-T-004s
PCB BZ $118_A^{M\#}$	<0.007	-	-					mg/kg	0.007	A-T-004s
PCB BZ $138_A^{M\#}$	<0.006	-	-					mg/kg	0.006	A-T-004s
PCB BZ $153_A^{M\#}$	<0.004	-	-					mg/kg	0.004	A-T-004s
PCB BZ $180_A^{M\#}$	<0.004	-	-					mg/kg	0.004	A-T-004s
Total Speciated PCB-$EC7_A^{M\#}$	<0.007	-	-					mg/kg	0.002	A-T-004s

Envirolab Job Number: 20/01458

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	20/01458/1	20/01458/2	20/01458/3					Units	Limit of Detection	Method ref
Client Sample No	1	1	2							
Client Sample ID	110	110	110							
Depth to Top	0.30	0.60	1.10							
Depth To Bottom										
Date Sampled	11-Feb-20	11-Feb-20	11-Feb-20							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	5A	4A							
SVOC										
Hexachlorobenzene$_A$	<100	-	-					µg/kg	100	A-T-052s
Diethyl phthalate$_A$	<100	-	-					µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	<100	-	-					µg/kg	100	A-T-052s
Dibenzofuran$_A$	<100	-	-					µg/kg	100	A-T-052s
Carbazole$_A$	<100	-	-					µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	<100	-	-					µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	<500	-	-					µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	<100	-	-					µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	<100	-	-					µg/kg	100	A-T-052s
4-Nitrophenol$_A$	<1000	-	-					µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	<100	-	-					µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	<100	-	-					µg/kg	100	A-T-052s
2-Nitrophenol$_A$	<100	-	-					µg/kg	100	A-T-052s
2-Methylphenol$_A$	<100	-	-					µg/kg	100	A-T-052s
2-Chlorophenol$_A$	<100	-	-					µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	<100	-	-					µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	<100	-	-					µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	<100	-	-					µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	<100	-	-					µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	<100	-	-					µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	<100	-	-					µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	<100	-	-					µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	<100	-	-					µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	<100	-	-					µg/kg	100	A-T-052s
Phenol$_A$	<100	-	-					µg/kg	100	A-T-052s
Pentachlorophenol (SVOC)$_A$	<100	-	-					µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	<100	-	-					µg/kg	100	A-T-052s
n-Dioctylphthalate$_A$	<500	-	-					µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	<100	-	-					µg/kg	100	A-T-052s
Nitrobenzene$_A$	<100	-	-					µg/kg	100	A-T-052s
Isophorone$_A$	<100	-	-					µg/kg	100	A-T-052s
Hexachloroethane$_A$	<100	-	-					µg/kg	100	A-T-052s

Envirolab Job Number: 20/01458

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	20/01458/1	20/01458/2	20/01458/3					Units	Limit of Detection	Method ref
Client Sample No	1	1	2							
Client Sample ID	110	110	110							
Depth to Top	0.30	0.60	1.10							
Depth To Bottom										
Date Sampled	11-Feb-20	11-Feb-20	11-Feb-20							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	5A	4A							
Hexachlorocyclopentadiene$_A$	<100	-	-					µg/kg	100	A-T-052s
Perylene$_A$	<100	-	-					µg/kg	100	A-T-052s

Envirolab Job Number: 20/01458

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	20/01458/1	20/01458/2	20/01458/3					Units	Limit of Detection	Method ref
Client Sample No	1	1	2							
Client Sample ID	110	110	110							
Depth to Top	0.30	0.60	1.10							
Depth To Bottom										
Date Sampled	11-Feb-20	11-Feb-20	11-Feb-20							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	5A	4A							
VOC										
Dichlorodifluoromethane$_{A}$	<1	-	-					µg/kg	1	A-T-006s
Chloromethane$_{A}$	<10	-	-					µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Dichloromethane$_{A}$	<5	-	-					µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	*<1*	-	-					µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	<5	-	-					µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	*<2*	-	-					µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	<10	-	-					µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	<3	-	-					µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s

Envirolab Job Number: 20/01458

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	20/01458/1	20/01458/2	20/01458/3					Units	Limit of Detection	Method ref
Client Sample No	1	1	2							
Client Sample ID	110	110	110							
Depth to Top	0.30	0.60	1.10							
Depth To Bottom										
Date Sampled	11-Feb-20	11-Feb-20	11-Feb-20							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	5A	4A							
Chlorobenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	<1	-	-					µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	<1	-	-					µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	<2	-	-					µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	<1	-	-					µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	<2	-	-					µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	<3	-	-					µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	<1	-	-					µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	<3	-	-					µg/kg	3	A-T-006s

Envirolab Job Number: 20/01458

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	20/01458/1	20/01458/2	20/01458/3					Units	Limit of Detection	Method ref
Client Sample No	1	1	2							
Client Sample ID	110	110	110							
Depth to Top	0.30	0.60	1.10							
Depth To Bottom										
Date Sampled	11-Feb-20	11-Feb-20	11-Feb-20							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	5A	4A							
TPH CWG (leachable)										
Ali >C5-C6 (leachable)$_A$	<1	-	-					µg/l	1	A-T-022w
Ali >C6-C8 (leachable)$_A$	<1	-	-					µg/l	1	A-T-022w
Ali >C8-C10 (leachable)$_A$	<10	-	-					µg/l	10	A-T-055w
Ali >C10-C12 (leachable)$_A$	<10	-	-					µg/l	10	A-T-055w
Ali >C12-C16 (leachable)$_A$	<10	-	-					µg/l	10	A-T-055w
Ali >C16-C21 (leachable)$_A$	<10	-	-					µg/l	10	A-T-055w
Ali >C21-C35 (leachable)$_A$	<20	-	-					µg/l	20	A-T-055w
Total Aliphatics (leachable)$_A$	<10	-	-					µg/l	10	A-T-055w
Aro >C5-C7 (leachable)$_A$	<1	-	-					µg/l	1	A-T-022w
Aro >C7-C8 (leachable)$_A$	<1	-	-					µg/l	1	A-T-022w
Aro >C8-C10 (leachable)$_A$	<10	-	-					µg/l	10	A-T-055w
Aro >C10-C12 (leachable)$_A$	<10	-	-					µg/l	10	A-T-055w
Aro >C12-C16 (leachable)$_A$	<10	-	-					µg/l	10	A-T-055w
Aro >C16-C21 (leachable)$_A$	<10	-	-					µg/l	10	A-T-055w
Total Aromatics (leachable)$_A$	<20	-	-					µg/l	20	A-T-055w
TPH (Ali & Aro >C5-C35) (leachable)$_A$	<20	-	-					µg/l	20	A-T-055w
BTEX - Benzene (leachable)$_A$	<1	-	-					µg/l	1	A-T-022w
BTEX - Toluene (leachable)$_A$	<1	-	-					µg/l	1	A-T-022w
BTEX - Ethyl Benzene (leachable)$_A$	<1	-	-					µg/l	1	A-T-022w
BTEX - o Xylene (leachable)$_A$	<1	-	-					µg/l	1	A-T-022w
BTEX - m & p Xylene (leachable)$_A$	<1	-	-					µg/l	1	A-T-022w
MTBE (leachable)$_A$	<1	-	-					µg/l	1	A-T-022w
Aro >C21-C35 (leachable)$_A$	<20	-	-					µg/l	20	A-T-055w

Envirolab Job Number: 20/01458

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	20/01458/1	20/01458/2	20/01458/3					Units	Limit of Detection	Method ref
Client Sample No	1	1	2							
Client Sample ID	110	110	110							
Depth to Top	0.30	0.60	1.10							
Depth To Bottom										
Date Sampled	11-Feb-20	11-Feb-20	11-Feb-20							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	5A	4A							
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C21-C35$_A$	<1	2	<1					mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	2	<1					mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1	<1					mg/kg	1	A-T-055s
Aro >C10-C12$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1	<1					mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	1	<1					mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	1	<1					mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	3	3	<1					mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 20/02164
Issue Number: 1 **Date:** 10 March, 2020

Client: Norse Eastern Ltd t/a Norse Highways
280 Fifers Lane
Norwich
Norfolk
NR6 6EQ

Project Manager: Scott Viner/Sharon Woods; Simon Holden
Project Name: Ringland A47-A1067 Western Link Road
Project Ref: PK1002D2
Order No: PN05003321
Date Samples Received: 04/03/20
Date Instructions Received: 04/03/20
Date Analysis Completed: 10/03/20

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 20/02164

Client Project Name: Ringland A47-A1067 Western Link Road

Client Project Ref: PK1002D2

Lab Sample ID	20/02164/1							Units	Limit of Detection	Method ref
Client Sample No	7									
Client Sample ID	005									
Depth to Top	2.00									
Depth To Bottom										
Date Sampled	09-Oct-19									
Sample Type	Soil - ES									
Sample Matrix Code	4A									
% Stones >10mm$_A$	0.3							% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	7.89							pH	0.01	A-T-031s
Ammonium NH4 BRE (water sol 2:1)$_D$	2.54							mg/l	1	A-T-033s
Chloride BRE, SO4 equiv. (water sol 2:1)$_D$$^{M\#}$	<7							mg/l	7	A-T-026s
Nitrate BRE, SO4 equiv. (water sol 2:1)$_D$	1.2							mg/l	0.4	A-T-026s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	15							mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D$$^{M\#}$	<0.02							% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	<0.01							% w/w	0.01	A-T-024s
Magnesium BRE (water sol 2:1)$_D$	2							mg/l	1	A-T-SOLMETS

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
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Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

envirolab
Units 7 & 8, Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

Final Test Report

Envirolab Job Number:	19/08491
Issue Number:	1
Date:	18-Sep-19

Client: Norfolk Partnership Laboratory
Environment, Transport and Development Department
Norfolk County Council
County Hall
Norwich
Norfolk, NR1 2SG

Project Manager:	Sharon Woods; Simon Holden
Project Name:	Ringland A47-A1067 Western Link Road
Project Ref:	PK1002D2
Order No:	643804
Date Samples Received:	5-Sep-19
Date Instructions Received:	10-Sep-19
Date Analysis Completed:	18-Sep-19

Notes - Soil analysis

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

This report shall not be reproduced, except in full, without written approval from Envirolab.

Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples from outside the European Union and this supercedes any "D" subscripts

For complex, multi-compound analysis, quality control results do not always fall within chart limits for every compound and we have criteria for reporting in these situations.

If results are in italic font they are associated with such quality control failures and may be unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid

Predominant Matrix Codes: 1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample

Secondary Matrix Codes: A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis, NDP indicates No Determination Possible and NAD indicates No Asbestos Detected.

Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Holly Neary-King
Client Manager

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details								Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	19/08491/2						
Client Sample Number				3				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				3						
Depth to Top				0.9						
Depth to Bottom										
Date Sampled				30/08/2019						
Sample Type				Soil - ES						
Sample Matrix Code				4AE						
Solid Waste Analysis										
pH (pH Units)$_D$	A-T-031	N	N	**7.43**				-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**<0.01**				-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**<0.01**				-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**4.5**				-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**1.37**				3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**<0.08**				100	-	-
Mineral Oil (mg/kg)$_A$	A-T-007	N	N	**<10**				500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**				1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**				6	-	-
Eluate Analysis				**2:1**	**8:1**	**2:1**	**Cumulative 10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
				mg/l		**mg/kg**				
Arsenic	A-T-025	N	N	0.002	0.002	0.004	**0.020**	0.5	2	25
Barium	A-T-025	N	N	0.008	0.006	0.019	**0.060**	20	100	300
Cadmium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	0.001	<0.001	0.002	**<0.01**	0.5	10	70
Copper	A-T-025	N	N	0.004	0.002	0.008	**0.020**	2	50	100
Mercury	A-T-025	N	N	<0.0005	<0.0005	<0.001	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	30
Nickel	A-T-025	N	N	0.002	0.002	0.006	**0.020**	0.4	10	40
Lead	A-T-025	N	N	0.003	0.002	0.006	**0.020**	0.5	10	50
Antimony	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.008	0.010	0.017	**0.100**	4	50	200
Chloride	A-T-026	N	N	3	1	8	**13**	800	15000	25000
Fluoride	A-T-026	N	N	0.2	0.3	0.6	**3.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	11	3	25	**36**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	68	<20	158	**<200**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	<0.01	<0.02	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<20.0	<20.0	<40	**<200**	500	800	1000
Leach Test Information										
pH (pH Units)	A-T-031	N	N	6.2	6.7					
Conductivity (µS/cm)	A-T-037	N	N	136	18					
Mass Sample (kg)				0.232						
Dry Matter (%)	A-T-044	N	N	75.5						
Stage 1										
Volume Leachant, L_2 (l)	A-T-046			0.350						
Filtered Eluate Volume, VE_1 (l)	A-T-046			0.150						
Stage 2										
Volume Leachant, L_8 (l)	A-T-046			1.400						

Stated acceptance limits are for guidance only and Envirolab cannot be held responsible for any discrepancies with current legislation

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details								Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	19/08491/6						
Client Sample Number				3				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				4						
Depth to Top				2						
Depth to Bottom										
Date Sampled				30/08/2019						
Sample Type				Soil - ES						
Sample Matrix Code				4A						
Solid Waste Analysis										
pH (pH Units)$_D$	A-T-031	N	N	**7.62**				-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**<0.01**				-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**<0.01**				-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**0.9**				-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**<0.03**				3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**<0.08**				100	-	-
Mineral Oil (mg/kg)$_A$	A-T-007	N	N	**<10**				500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**				1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**				6	-	-
Eluate Analysis				**2:1**	**8:1**	**2:1**	**Cumulative 10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
				mg/l		**mg/kg**				
Arsenic	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	2	25
Barium	A-T-025	N	N	0.006	0.007	0.013	**0.070**	20	100	300
Cadmium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	70
Copper	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	2	50	100
Mercury	A-T-025	N	N	<0.0005	<0.0005	<0.001	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	30
Nickel	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.4	10	40
Lead	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	50
Antimony	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.004	0.004	0.008	**0.040**	4	50	200
Chloride	A-T-026	N	N	2	<1.00	5	**<10**	800	15000	25000
Fluoride	A-T-026	N	N	0.1	0.2	0.3	**2.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	<1.00	4	<2	**<10**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	63	<20	136	**<200**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	<0.01	<0.02	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<20.0	<20.0	<40	**<200**	500	800	1000
Leach Test Information										
pH (pH Units)	A-T-031	N	N	5.8	6.4					
Conductivity (µS/cm)	A-T-037	N	N	125	29					
Mass Sample (kg)				0.204						
Dry Matter (%)	A-T-044	N	N	86						
Stage 1										
Volume Leachant, L_2 (l)	A-T-046			0.350						
Filtered Eluate Volume, VE_1 (l)	A-T-046			0.150						
Stage 2										
Volume Leachant, L_8 (l)	A-T-046			1.400						

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details								Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	19/08491/9						
Client Sample Number				3				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				103						
Depth to Top				3						
Depth to Bottom										
Date Sampled				30/08/2019						
Sample Type				Soil - ES						
Sample Matrix Code				4A						
Solid Waste Analysis										
pH (pH Units)$_D$	A-T-031	N	N	**8.46**				-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.01**				-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.01**				-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**1.1**				-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**0.03**				3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**<0.08**				100	-	-
Mineral Oil (mg/kg)$_A$	A-T-007	N	N	**<10**				500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**				1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**				6	-	-
Eluate Analysis				**2:1**	**8:1**	**2:1**	**Cumulative 10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
				mg/l		**mg/kg**				
Arsenic	A-T-025	N	N	0.003	0.002	0.006	**0.020**	0.5	2	25
Barium	A-T-025	N	N	0.050	0.014	0.109	**0.180**	20	100	300
Cadmium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	0.001	0.001	0.003	**0.010**	0.5	10	70
Copper	A-T-025	N	N	0.005	0.002	0.011	**0.020**	2	50	100
Mercury	A-T-025	N	N	<0.0005	<0.0005	<0.001	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	30
Nickel	A-T-025	N	N	0.002	0.003	0.004	**0.030**	0.4	10	40
Lead	A-T-025	N	N	0.008	0.003	0.018	**0.040**	0.5	10	50
Antimony	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.06	0.7	5
Selenium	A-T-025	N	N	0.001	<0.001	0.003	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.009	0.010	0.020	**0.100**	4	50	200
Chloride	A-T-026	N	N	3	3	6	**35**	800	15000	25000
Fluoride	A-T-026	N	N	0.2	0.1	0.5	**1.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	15	24	33	**236**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	25	<20	55	**<200**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	<0.01	<0.02	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<20.0	<20.0	<40	**<200**	500	800	1000
Leach Test Information										
pH (pH Units)	A-T-031	N	N	6.3	6.4					
Conductivity (µS/cm)	A-T-037	N	N	51	20					
Mass Sample (kg)				0.207						
Dry Matter (%)	A-T-044	N	N	84.5						
Stage 1										
Volume Leachant, L_2 (l)	A-T-046			0.350						
Filtered Eluate Volume, VE_1 (l)	A-T-046			0.150						
Stage 2										
Volume Leachant, L_8 (l)	A-T-046			1.400						

Stated acceptance limits are for guidance only and Envirolab cannot be held responsible for any discrepancies with current legislation

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details									Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	19/08491/11							
Client Sample Number				3							
Client Sample ID				401A							
Depth to Top				1							
Depth to Bottom									Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Date Sampled				27/08/2019							
Sample Type				Soil - ES							
Sample Matrix Code				4A							
Solid Waste Analysis											
pH (pH Units)$_D$	A-T-031	N	N	**9.65**					-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.03**					-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**<0.01**					-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**1.4**					-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**0.08**					3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**<0.08**					100	-	-
Mineral Oil (mg/kg)$_A$	A-T-007	N	N	**<10**					500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**					1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**					6	-	-
Eluate Analysis				**2:1**	**8:1**	**2:1**	**Cumulative 10:1**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
				mg/l		**mg/kg**					
Arsenic	A-T-025	N	N	0.002	0.001	0.003	**0.010**		0.5	2	25
Barium	A-T-025	N	N	0.007	0.007	0.015	**0.070**		20	100	300
Cadmium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**		0.04	1	5
Chromium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**		0.5	10	70
Copper	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**		2	50	100
Mercury	A-T-025	N	N	<0.0005	<0.0005	<0.001	**<0.005**		0.01	0.2	2
Molybdenum	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**		0.5	10	30
Nickel	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**		0.4	10	40
Lead	A-T-025	N	N	<0.001	0.001	<0.002	**<0.01**		0.5	10	50
Antimony	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**		0.06	0.7	5
Selenium	A-T-025	N	N	0.001	0.001	0.003	**0.010**		0.1	0.5	7
Zinc	A-T-025	N	N	0.001	0.002	0.002	**0.020**		4	50	200
Chloride	A-T-026	N	N	7	4	13	**42**		800	15000	25000
Fluoride	A-T-026	N	N	0.3	<0.10	0.7	**<1**		10	150	500
Sulphate as SO_4	A-T-026	N	N	39	28	79	**292**		1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	29	<20	59	**<200**		4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	<0.01	<0.02	**<0.1**		1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<20.0	<20.0	<40	**<200**		500	800	1000
Leach Test Information											
pH (pH Units)	A-T-031	N	N	6.4	6.5						
Conductivity (µS/cm)	A-T-037	N	N	57	21						
Mass Sample (kg)				0.181							
Dry Matter (%)	A-T-044	N	N	96.6							
Stage 1											
Volume Leachant, L_2 (l)	A-T-046			0.350							
Filtered Eluate Volume, VE_1 (l)	A-T-046			0.150							
Stage 2											
Volume Leachant, L_8 (l)	A-T-046			1.400							

Stated acceptance limits are for guidance only and Envirolab cannot be held responsible for any discrepancies with current legislation

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details								Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	19/08491/14						
Client Sample Number				5				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				402A						
Depth to Top				2						
Depth to Bottom										
Date Sampled				27/08/2019						
Sample Type				Soil - ES						
Sample Matrix Code				4AE						
Solid Waste Analysis										
pH (pH Units)$_D$	A-T-031	N	N	**8.32**				-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**<0.01**				-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**<0.01**				-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**<0.6**				-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**0.04**				3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**<0.08**				100	-	-
Mineral Oil (mg/kg)$_A$	A-T-007	N	N	**<10**				500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**				1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**				6	-	-
Eluate Analysis				**2:1**	**8:1**	**2:1**	**Cumulative 10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
				mg/l		**mg/kg**				
Arsenic	A-T-025	N	N	0.002	0.001			0.5	2	25
Barium	A-T-025	N	N	0.007	0.007			20	100	300
Cadmium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	70
Copper	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	2	50	100
Mercury	A-T-025	N	N	<0.0005	<0.0005	<0.001	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	30
Nickel	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.4	10	40
Lead	A-T-025	N	N	<0.001	0.001	<0.002	**<0.01**	0.5	10	50
Antimony	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.06	0.7	5
Selenium	A-T-025	N	N	0.001	0.001			0.1	0.5	7
Zinc	A-T-025	N	N	0.001	0.002			4	50	200
Chloride	A-T-026	N	N	4	<1.00	9	**<10**	800	15000	25000
Fluoride	A-T-026	N	N	0.2	0.2	0.3	**2.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	16	5	33	**58**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	<20	<20	<40	**<200**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	<0.01	<0.02	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<20.0	<20.0	<40	**<200**	500	800	1000
Leach Test Information										
pH (pH Units)	A-T-031	N	N	6.6	6.6					
Conductivity (µS/cm)	A-T-037	N	N	26	17					
Mass Sample (kg)				0.182						
Dry Matter (%)	A-T-044	N	N	96.3						
Stage 1										
Volume Leachant, L_2 (l)	A-T-046			0.350						
Filtered Eluate Volume, VE_1 (l)	A-T-046			0.150						
Stage 2										
Volume Leachant, L_8 (l)	A-T-046			1.400						

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Units 7 & 8, Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

Final Test Report

Envirolab Job Number:	19/08001
Issue Number:	1
Date:	19-Sep-19

Client:
Norfolk Partnership Laboratory
Environment, Transport and Development Department
Norfolk County Council
County Hall
Norwich
Norfolk, NR1 2SG

Project Manager:	Sharon Woods; Simon Holden
Project Name:	Ringland A47-A1067 Western Link Road
Project Ref:	PK1002D2
Order No:	642593
Date Samples Received:	22-Aug-19
Date Instructions Received:	28-Aug-19
Date Analysis Completed:	19-Sep-19

Notes - Soil analysis

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

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Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples from outside the European Union and this supercedes any "D" subscripts

For complex, multi-compound analysis, quality control results do not always fall within chart limits for every compound and we have criteria for reporting in these situations.

If results are in italic font they are associated with such quality control failures and may be unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid

Predominant Matrix Codes: 1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample

Secondary Matrix Codes: A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis, NDP indicates No Determination Possible and NAD indicates No Asbestos Detected.

Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details								Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	19/08001/3						
Client Sample Number				2				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				1						
Depth to Top				1						
Depth to Bottom										
Date Sampled				20/08/2019						
Sample Type				Soil - ES						
Sample Matrix Code				5a						
Solid Waste Analysis										
pH (pH Units)$_D$	A-T-031	N	N	**8.44**				-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**8.43**				-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.19**				-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**3.2**				-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**0.16**				3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**<0.08**				100	-	-
Mineral Oil (mg/kg)$_A$	A-T-007	N	N	**<10**				500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**				1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**				6	-	-
Eluate Analysis				**2:1**	**8:1**	**2:1**	**Cumulative 10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
				mg/l		**mg/kg**				
Arsenic	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	2	25
Barium	A-T-025	N	N	0.005	0.002	0.010	**0.020**	20	100	300
Cadmium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	70
Copper	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	2	50	100
Mercury	A-T-025	N	N	<0.0005	<0.0005	<0.001	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	0.002	0.003	0.003	**0.030**	0.5	10	30
Nickel	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.4	10	40
Lead	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	50
Antimony	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.003	0.003	0.008	**0.030**	4	50	200
Chloride	A-T-026	N	N	2	<1.00	4	**<10**	800	15000	25000
Fluoride	A-T-026	N	N	0.6	0.4	1.3	**5.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	4	<1.00	8	**<10**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	75	34	165	**382**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	<0.01	<0.02	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<20.0	<20.0	<40	**<200**	500	800	1000
Leach Test Information										
pH (pH Units)	A-T-031	N	N	7.1	7.2					
Conductivity (µS/cm)	A-T-037	N	N	151	69					
Mass Sample (kg)				0.209						
Dry Matter (%)	A-T-044	N	N	83.6						
Stage 1										
Volume Leachant, L_2 (l)	A-T-046			0.350						
Filtered Eluate Volume, VE_1 (l)	A-T-046			0.150						
Stage 2										
Volume Leachant, L_8 (l)	A-T-046			1.400						

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Units 7 & 8, Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

Final Test Report

Envirolab Job Number:	19/08001
Issue Number:	1
Date:	19-Sep-19

Client:
Norfolk Partnership Laboratory
Environment, Transport and Development Department
Norfolk County Council
County Hall
Norwich
Norfolk, NR1 2SG

Project Manager:	Sharon Woods; Simon Holden
Project Name:	Ringland A47-A1067 Western Link Road
Project Ref:	PK1002D2
Order No:	642593
Date Samples Received:	22-Aug-19
Date Instructions Received:	28-Aug-19
Date Analysis Completed:	19-Sep-19

Notes - Soil analysis

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

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Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples from outside the European Union and this supercedes any "D" subscripts

For complex, multi-compound analysis, quality control results do not always fall within chart limits for every compound and we have criteria for reporting in these situations.

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A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid

Predominant Matrix Codes: 1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample

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Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details								Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	19/08001/3						
Client Sample Number				2				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				1						
Depth to Top				1						
Depth to Bottom										
Date Sampled				20/08/2019						
Sample Type				Soil - ES						
Sample Matrix Code				5a						
Solid Waste Analysis										
pH (pH Units)$_D$	A-T-031	N	N	**8.44**				-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**8.43**				-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.19**				-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**3.2**				-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**0.16**				3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**<0.08**				100	-	-
Mineral Oil (mg/kg)$_A$	A-T-007	N	N	**<10**				500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**				1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**				6	-	-
Eluate Analysis				**2:1**	**8:1**	**2:1**	**Cumulative 10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
				mg/l		**mg/kg**				
Arsenic	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	2	25
Barium	A-T-025	N	N	0.005	0.002	0.010	**0.020**	20	100	300
Cadmium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	70
Copper	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	2	50	100
Mercury	A-T-025	N	N	<0.0005	<0.0005	<0.001	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	0.002	0.003	0.003	**0.030**	0.5	10	30
Nickel	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.4	10	40
Lead	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	50
Antimony	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.003	0.003	0.008	**0.030**	4	50	200
Chloride	A-T-026	N	N	2	<1.00	4	**<10**	800	15000	25000
Fluoride	A-T-026	N	N	0.6	0.4	1.3	**5.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	4	<1.00	8	**<10**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	75	34	165	**382**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	<0.01	<0.02	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<20.0	<20.0	<40	**<200**	500	800	1000
Leach Test Information										
pH (pH Units)	A-T-031	N	N	7.1	7.2					
Conductivity (µS/cm)	A-T-037	N	N	151	69					
Mass Sample (kg)				0.209						
Dry Matter (%)	A-T-044	N	N	83.6						
Stage 1										
Volume Leachant, L_2 (l)	A-T-046			0.350						
Filtered Eluate Volume, VE_1 (l)	A-T-046			0.150						
Stage 2										
Volume Leachant, L_8 (l)	A-T-046			1.400						

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Units 7 & 8, Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

Final Test Report

Envirolab Job Number:	19/09361		
Issue Number:	1	Date:	14-Oct-19

Client: Norse Eastern Ltd t/a Norse Highways
280 Fifers Lane
Norwich
Norfolk
NR6 6EQ

Project Manager:	Scott Viner/Sharon Woods; Simon Holden
Project Name:	Ringland A47-A1067 Western Link Road
Project Ref:	PK1002D2
Order No:	PN05000126
Date Samples Received:	23-Sep-19
Date Instructions Received:	7-Oct-19
Date Analysis Completed:	14-Oct-19

Notes - Soil analysis

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis.

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Please contact us if you need any further information.

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

envirolab

Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details								Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	19/09361/1						
Client Sample Number				1				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				107						
Depth to Top				0.5						
Depth to Bottom										
Date Sampled				19/09/2019						
Sample Type				Soil - ES						
Sample Matrix Code				4AE						
Solid Waste Analysis										
pH (pH Units)$_D$	A-T-031	N	N	**6.80**				-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.03**				-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**<0.01**				-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**2.6**				-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**0.73**				3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**<0.08**				100	-	-
Mineral Oil (mg/kg)$_A$	A-T-007	N	N	**<10**				500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**				1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**				6	-	-
Eluate Analysis				**2:1**	**8:1**	**2:1**	**Cumulative 10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
				mg/l		**mg/kg**				
Arsenic	A-T-025	N	N	0.006	0.003	0.012	**0.030**	0.5	2	25
Barium	A-T-025	N	N	0.099	0.020	0.201	**0.270**	20	100	300
Cadmium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	0.004	<0.001	0.007	**<0.01**	0.5	10	70
Copper	A-T-025	N	N	0.022	0.006	0.044	**0.080**	2	50	100
Mercury	A-T-025	N	N	<0.0005	<0.0005	<0.001	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	30
Nickel	A-T-025	N	N	0.005	0.001	0.010	**0.020**	0.4	10	40
Lead	A-T-025	N	N	0.023	0.006	0.048	**0.080**	0.5	10	50
Antimony	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.067	0.024	0.136	**0.280**	4	50	200
Chloride	A-T-026	N	N	12	1	24	**19**	800	15000	25000
Fluoride	A-T-026	N	N	0.4	0.3	0.8	**3.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	49	12	100	**151**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	54	<20	110	**<200**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	<0.01	<0.02	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	45.1	<20.0	92	**<200**	500	800	1000
Leach Test Information										
pH (pH Units)	A-T-031	N	N	7.0	6.8					
Conductivity (µS/cm)	A-T-037	N	N	108	27					
Mass Sample (kg)				0.181						
Dry Matter (%)	A-T-044	N	N	96.5						
Stage 1										
Volume Leachant, L_2 (l)	A-T-046			0.350						
Filtered Eluate Volume, VE_1 (l)	A-T-046			0.150						
Stage 2										
Volume Leachant, L_8 (l)	A-T-046			1.400						

Stated acceptance limits are for guidance only and Envirolab cannot be held responsible for any discrepancies with current legislation

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details								Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	19/09361/4						
Client Sample Number				3				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				108						
Depth to Top				1.2						
Depth to Bottom										
Date Sampled				19/09/2019						
Sample Type				Soil - ES						
Sample Matrix Code				4A						
Solid Waste Analysis										
pH (pH Units)$_D$	A-T-031	N	N	**6.96**				-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**<0.01**				-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**<0.01**				-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**1.3**				-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**0.09**				3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**<0.08**				100	-	-
Mineral Oil (mg/kg)$_A$	A-T-007	N	N	**<10**				500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**				1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**				6	-	-
Eluate Analysis				**2:1**	**8:1**	**2:1**	**Cumulative 10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
				mg/l		**mg/kg**				
Arsenic	A-T-025	N	N	0.006	0.002	0.013	**0.030**	0.5	2	25
Barium	A-T-025	N	N	0.148	0.014	0.307	**0.260**	20	100	300
Cadmium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	0.003	<0.001	0.006	**<0.01**	0.5	10	70
Copper	A-T-025	N	N	0.006	0.001	0.013	**0.020**	2	50	100
Mercury	A-T-025	N	N	<0.0005	<0.0005	<0.001	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	30
Nickel	A-T-025	N	N	0.006	0.002	0.012	**0.020**	0.4	10	40
Lead	A-T-025	N	N	0.022	0.002	0.045	**0.040**	0.5	10	50
Antimony	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.06	0.7	5
Selenium	A-T-025	N	N	0.001	<0.001	0.003	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.023	0.009	0.048	**0.100**	4	50	200
Chloride	A-T-026	N	N	11	2	23	**27**	800	15000	25000
Fluoride	A-T-026	N	N	0.2	0.2	0.5	**2.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	65	23	135	**265**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	24	<20	50	**<200**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	<0.01	<0.02	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	25.8	<20.0	53	**<200**	500	800	1000
Leach Test Information										
pH (pH Units)	A-T-031	N	N	7.1	7.0					
Conductivity (µS/cm)	A-T-037	N	N	49	14					
Mass Sample (kg)				0.187						
Dry Matter (%)	A-T-044	N	N	93.5						
Stage 1										
Volume Leachant, L_2 (l)	A-T-046			0.350						
Filtered Eluate Volume, VE_1 (l)	A-T-046			0.150						
Stage 2										
Volume Leachant, L_8 (l)	A-T-046			1.400						

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details								Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	19/09361/6						
Client Sample Number				2				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				109						
Depth to Top				0.8						
Depth to Bottom										
Date Sampled				19/09/2019						
Sample Type				Soil - ES						
Sample Matrix Code				4						
Solid Waste Analysis										
pH (pH Units)$_D$	A-T-031	N	N	**6.63**				-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.01**				-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**<0.01**				-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**1.2**				-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**0.09**				3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**<0.08**				100	-	-
Mineral Oil (mg/kg)$_A$	A-T-007	N	N	**<10**				500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**				1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**				6	-	-
Eluate Analysis				**2:1**	**8:1**	**2:1**	**Cumulative 10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
				mg/l		**mg/kg**				
Arsenic	A-T-025	N	N	0.007	0.002	0.014	**0.030**	0.5	2	25
Barium	A-T-025	N	N	0.156	0.021	0.326	**0.330**	20	100	300
Cadmium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	0.005	<0.001	0.011	**0.010**	0.5	10	70
Copper	A-T-025	N	N	0.007	0.001	0.015	**0.020**	2	50	100
Mercury	A-T-025	N	N	<0.0005	<0.0005	<0.001	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	30
Nickel	A-T-025	N	N	0.007	0.001	0.015	**0.020**	0.4	10	40
Lead	A-T-025	N	N	0.015	0.002	0.031	**0.030**	0.5	10	50
Antimony	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.024	0.013	0.050	**0.140**	4	50	200
Chloride	A-T-026	N	N	8	2	17	**24**	800	15000	25000
Fluoride	A-T-026	N	N	<0.10	<0.10	<0.2	**<1**	10	150	500
Sulphate as SO_4	A-T-026	N	N	39	26	82	**274**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	29	<20	61	**<200**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	<0.01	<0.02	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	27.7	<20.0	58	**<200**	500	800	1000
Leach Test Information										
pH (pH Units)	A-T-031	N	N	6.9	5.7					
Conductivity (µS/cm)	A-T-037	N	N	57	13					
Mass Sample (kg)				0.190						
Dry Matter (%)	A-T-044	N	N	92.1						
Stage 1										
Volume Leachant, L_2 (l)	A-T-046			0.350						
Filtered Eluate Volume, VE_1 (l)	A-T-046			0.150						
Stage 2										
Volume Leachant, L_8 (l)	A-T-046			1.400						

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Units 7 & 8, Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

Final Test Report

Envirolab Job Number:	19/10253
Issue Number:	1
Date:	11-Nov-19

Client: Norse Eastern Ltd t/a Norse Highways
280 Fifers Lane
Norwich
Norfolk
NR6 6EQ

Project Manager:	Scott Viner/Sharon Woods; Simon Holden
Project Name:	Ringland A47-A1067 Western Link Road
Project Ref:	PK1002D2
Order No:	PN05000481
Date Samples Received:	23-Oct-19
Date Instructions Received:	30-Oct-19
Date Analysis Completed:	11-Nov-19

Notes - Soil analysis

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples from outside the European Union and this supercedes any "D" subscripts

For complex, multi-compound analysis, quality control results do not always fall within chart limits for every compound and we have criteria for reporting in these situations.

If results are in italic font they are associated with such quality control failures and may be unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid

Predominant Matrix Codes: 1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample

Secondary Matrix Codes: A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis, NDP indicates No Determination Possible and NAD indicates No Asbestos Detected.

Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Iain Haslock
Analytical Consultant

envirolab

Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details								Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	19/10253/2						
Client Sample Number				2				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				6						
Depth to Top				0.5						
Depth to Bottom										
Date Sampled				21/10/2019						
Sample Type				Soil - ES						
Sample Matrix Code				4A						
Solid Waste Analysis										
pH (pH Units)$_D$	A-T-031	N	N	**4.95**				-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.02**				-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**<0.01**				-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**1.1**				-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**0.11**				3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**<0.08**				100	-	-
Mineral Oil (mg/kg)$_A$	A-T-007	N	N	**<10**				500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**				1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**				6	-	-
Eluate Analysis				**2:1**	**8:1**	**2:1**	**Cumulative 10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
				mg/l		**mg/kg**				
Arsenic	A-T-025	N	N	0.005	0.002	0.010	**0.020**	0.5	2	25
Barium	A-T-025	N	N	0.032	0.011	0.067	**0.130**	20	100	300
Cadmium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	70
Copper	A-T-025	N	N	0.004	0.001	0.007	**0.010**	2	50	100
Mercury	A-T-025	N	N	<0.0005	<0.0005	<0.001	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	30
Nickel	A-T-025	N	N	0.001	<0.001	0.003	**<0.01**	0.4	10	40
Lead	A-T-025	N	N	0.004	0.002	0.007	**0.020**	0.5	10	50
Antimony	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.014	0.008	0.029	**0.090**	4	50	200
Chloride	A-T-026	N	N	2	<1.00	4	**<10**	800	15000	25000
Fluoride	A-T-026	N	N	0.2	0.2	0.5	**2.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	32	9	65	**112**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	<20	<20	<40	**<200**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	<0.01	<0.02	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<20.0	<20.0	<40	**<200**	500	800	1000
Leach Test Information										
pH (pH Units)	A-T-031	N	N	6.1	7.0					
Conductivity (µS/cm)	A-T-037	N	N	33	13					
Mass Sample (kg)				0.185						
Dry Matter (%)	A-T-044	N	N	94.4						
Stage 1										
Volume Leachant, L_2 (l)	A-T-046			0.350						
Filtered Eluate Volume, VE_1 (l)	A-T-046			0.150						
Stage 2										
Volume Leachant, L_8 (l)	A-T-046			1.400						

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Units 7 & 8, Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

Final Test Report

Envirolab Job Number:	20/01458		
Issue Number:	1	Date:	20-Feb-20

Client: Norse Eastern Ltd t/a Norse Highways
280 Fifers Lane
Norwich
Norfolk
NR6 6EQ

Project Manager:	Scott Viner/Sharon Woods; Simon Holden
Project Name:	Ringland A47-A1067 Western Link Road
Project Ref:	PK1002D2
Order No:	PN05002729
Date Samples Received:	13-Feb-20
Date Instructions Received:	13-Feb-20
Date Analysis Completed:	20-Feb-20

Notes - Soil analysis

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples from outside the European Union and this supercedes any "D" subscripts

For complex, multi-compound analysis, quality control results do not always fall within chart limits for every compound and we have criteria for reporting in these situations.

If results are in italic font they are associated with such quality control failures and may be unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid

Predominant Matrix Codes: 1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample

Secondary Matrix Codes: A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis, NDP indicates No Determination Possible and NAD indicates No Asbestos Detected.

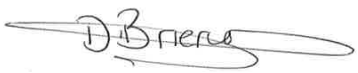
Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:



Danielle Brierley
Client Manager

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details								Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	20/01458/1						
Client Sample Number				1				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				110						
Depth to Top				0.3						
Depth to Bottom										
Date Sampled				11/02/2020						
Sample Type				Soil - ES						
Sample Matrix Code				4A						
Solid Waste Analysis										
pH (pH Units)$_D$	A-T-031	N	N	**8.47**				-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.09**				-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.03**				-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**1.8**				-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**0.3**				3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**<0.08**				100	-	-
Mineral Oil (mg/kg)$_A$	A-T-007	N	N	**<10**				500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**				1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**				6	-	-
Eluate Analysis				**2:1**	**8:1**	**2:1**	**Cumulative 10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
				mg/l		**mg/kg**				
Arsenic	A-T-025	N	N	0.006	0.004	0.013	**0.040**	0.5	2	25
Barium	A-T-025	N	N	0.035	0.011	0.074	**0.130**	20	100	300
Cadmium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	70
Copper	A-T-025	N	N	0.006	0.004	0.013	**0.040**	2	50	100
Mercury	A-T-025	N	N	<0.0005	<0.0005	<0.001	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.5	10	30
Nickel	A-T-025	N	N	0.001	<0.001	0.002	**<0.01**	0.4	10	40
Lead	A-T-025	N	N	0.010	0.003	0.021	**0.040**	0.5	10	50
Antimony	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	<0.001	<0.002	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.019	0.007	0.040	**0.080**	4	50	200
Chloride	A-T-026	N	N	3	<1.00	7	**<10**	800	15000	25000
Fluoride	A-T-026	N	N	0.6	0.3	1.3	**4.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	11	5	24	**54**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	70	33	148	**365**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	<0.01	<0.02	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<20.0	<20.0	<40	**<200**	500	800	1000
Leach Test Information										
pH (pH Units)	A-T-031	N	N	7.8	7.7					
Conductivity (µS/cm)	A-T-037	N	N	140	65					
Mass Sample (kg)				0.195						
Dry Matter (%)	A-T-044	N	N	89.6						
Stage 1										
Volume Leachant, L_2 (l)	A-T-046			0.350						
Filtered Eluate Volume, VE_1 (l)	A-T-046			0.150						
Stage 2										
Volume Leachant, L_8 (l)	A-T-046			1.400						

Stated acceptance limits are for guidance only and Envirolab cannot be held responsible for any discrepancies with current legislation