Our Ref: 13-422.05L

8th October 2015

Michelle Hogg
Environmental Protection Officer
South Tyneside Council
Town Hall & Civic Offices
Westoe Road, South Shields
Tyne & Wear
NE33 2RL

Arc Environmental Ltd
Solum House
1 Elliott Court
St Johns Road
Meadowfield
Durham
DH7 8PN

Planning application reference: ST/0342/15/VC

Dear Michelle,

Re: Former Greenfields School, Hebburn – Windsor Care Home

The following technical reports should be read in conjunction with this document;

- Phase 1: Desk Top Study Report, reference 2012-443, dated February 2013 – prepared by GEO Environmental Engineering.
- Phase 2: Ground Investigation Report, reference 13-422, dated March 2014 – prepared by Arc Environmental Limited.
- Remediation Statement & Validation Proposal Sheets, reference 13-422, dated November 2014 – prepared by Arc Environmental Limited.
- Letter Report, reference 13-422.04L, dated September 2015 – prepared by Arc Environmental Limited.

1.0 Introduction:-

Post completion of the Remediation Statement & Validation Proposal Sheets, the proposed development plans were revised by Mario Minchella Architects where a large part of the site located to the east of the new Care Home building extension has been reserved for future redevelopment in the near future. In an attempt to minimise the overall cost to their client we understand that it was decided by Mario Minchella Architects not to implement the recommendations contained within the Remediation Statement & Validation Proposal Sheets produced for the site by Arc Environmental Limited (ARC). However, access on to this part of the site has been prevented by the erection of fencing (c.1.80m in height). In addition, a thin layer of recycled road plainings has also been emplaced over a large portion of this designated site area.

Since only a small number of samples were recovered and analysed from this part of the site during the initial Phase 2: Ground Investigation Works undertaken by ARC, it was recommended that further samples of soil should be obtained to allow for subsequent laboratory contamination analysis, in order to determine the risks with more certainty, posed to the site end-users from this part of the site as it stands in its current condition, particularly as a single isolated asbestos fibre was recorded at one sampling location.

Re: Former Greenfields School, Hebburn – Windsor Care Home (Cont'd)

1.0 Introduction (Cont'd):-

A site meeting was held on Friday 2nd of October where representatives from ARC, South Tyneside Council, Mario Minchella Architects as well as the client were present. The ground contamination issues associated with this part of the site were discussed in detail and a program of supplementary sampling and analysis was agreed.

2.0 Supplementary Investigation Works:-

Following on from the site meeting a representative from ARC visited site on Monday 5th of October in order to obtain representative samples of soil from within this area of the site. Shallow trial pits were manually excavated at 8 no. designated locations in order to visually identify and confirm the risks posed to the site end-users from the soil deposits present within this part of the development site by way of laboratory analysis. A description of the soil deposits recorded at each sampling location can be seen in Table 1 below.

Table 1

Sample Location	Soil Description
TPA	0.00m-0.10m – Unmanaged grass overlying dark brown, sandy, gravelly soil. 0.10m-0.50m – Dark brown, slightly clayey soil containing fragments of brick, sandstone and pieces of glass.
TPB	0.00m-0.50m – Dark brown clay containing occasional fragments of dolostone.
TPC	0.00m-0.10m – Unmanaged grass overlying dark brown, sandy, gravelly soil. 0.10m-0.50m – Dark brown, soily rubble containing fragments of brick and concrete.
TPD	0.00m-0.25m – Concrete. 0.25m-0.50m – Dark brown, sandy, gravelly clay containing occasional fragments of brick.
TPE	0.00m-0.10m – Unmanaged grass overlying dark brown, sandy, gravelly soil. 0.10m-0.50m – Dark brown / black, gravelly, clayey soil containing occasional fragments of brick and sandstone.
TPF	0.00m-0.10m – Unmanaged grass overlying dark brown, sandy, gravelly soil. 0.10m-0.50m – Dark brown, slightly clayey soil containing fragments of brick, sandstone and pieces of glass.
TPG	0.00m-0.10m – Tarmac. 0.10-0.25m – Dolostone subbase. 0.25m-0.50m – Dark brown, slightly clayey soil containing fragments of brick and sandstone. There was no visual staining or olfactory evidence of organic contamination at this location.
TPH	0.00m-0.25m – Concrete (reinforced). 0.25m-0.50m – Dark brown, sandy, gravelly clay containing occasional fragments of brick. There was no visual staining or olfactory evidence of organic contamination at this location.

NOTES: TPC targeted the location of BHB where a single isolated asbestos fibre was previously recorded. TP's G & H were excavated adjacent to an existing relic boiler house type structure. TPF was positioned at the location of a former stockpile of material.

Representative samples of the made ground deposits recovered from the supplementary trial pits were screened for the following range of analytes;

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2.0 Supplementary Investigation Works (Cont'd):-

- All 8 no. samples recovered from the trial pit excavations (TP's A – H) were screened for Arsenic, Cadmium, Chromium (III & VI), Copper, Lead, Mercury, Nickel, Selenium, Zinc, Sulphur, Cyanide and Total Organic Carbon, Asbestos fibres, Speciated Polycyclic Aromatic Hydrocarbons (PAH's), based on the current USEPA 16 PAH's + Benzo(j)Fluoranthene, Speciated Total Petroleum Hydrocarbons (TPH's – Aliphatic & Aromatic split), Benzene, Toluene, Ethlbenzene & Xylene (BTEX).
- The samples recovered from TP's G & H (2 no. samples) were also screened for PCB Congeners (ICES 7 & WHO 12).

A summary of the results, based on the soil concentrations recorded can be seen in Table 2 below and continues on the following page. The results can also be seen attached in the Chemtech Environmental Analytical Test Report, reference, 57089.

Table 2

Analyte	Critical Conc. (C_C) mg/kg	No. of Samples Screened	Max. Conc. (C_M) recorded (mg/kg)
Generic			
Arsenic	40[1]	8	23
Cadmium	85[1]	8	0.7
Chromium III	910[1]	8	84
Chromium VI	6[1]	8	<1
Copper	7,100[1]	8	228
Lead	**310[2]**	**8**	**373 (TPA)**
Mercury	56[1]	8	<0.5
Nickel	180[1]	8	52
Selenium	430[1]	8	2
Zinc	40,000[1]	8	309
Cyanide	34[3]	8	<2
Asbestos	Presence	8	None identified
Speciated PAH's			
Acenaphthene	6,000[1]	8	0.73
Acenaphthylene	6,000[1]	8	0.07
Anthracene	37,000[1]	8	1.86
Benzo(a)anthracene	15[1]	8	3.70
Benzo(a)pyrene	**3.2[1]**	**8**	**3.40 (TP's A & H)**
Benzo(b)fluoranthene	**4.0[1]**	**8**	**4.46 (TPA)**
Benzo(ghi)perylene	360[1]	8	2.09
Benzo(k)fluoranthene	110[1]	8	1.80
Chrysene	32[1]	8	3.48
Dibenz(ah)anthracene	**0.32[1]**	**8**	**0.70 (TPA)**
Fluoranthene	1,600[1]	8	8.16
Fluorene	4,500[1]	8	0.84
Indeno(123cd)pyrene	46[1]	8	2.67
Naphthalene	13[1]	8	0.69
Phenanthrene	440[1]	8	6.20
Pyrene	2,000[1]	8	6.49

[1] = The LQM / CIEH Suitable 4 Use Levels – Residential without homegrown produce, [2] = CL:AIRE Category 4 Screening Levels – Residential with homegrown produce, [3] = ATRISK^{SOIL} Soil Screening Values (2009)

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Re: Former Greenfields School, Hebburn (Windsor Care Home) (Cont'd)

2.0 Supplementary Investigation Works (Cont'd):-

Table 2 (Cont'd)

Analyte	Critical Conc. (C_C) mg/kg	No. of Samples Screened	Max. Conc. (C_M) recorded (mg/kg)
Speciated TPH			
TPH Aliphatic (EC5-EC6)	160(1)	8	<0.1
TPH Aliphatic (EC6-EC8)	530(1)	8	<0.1
TPH Aliphatic (EC8-EC10)	150(1)	8	0.7
TPH Aliphatic (EC10-EC12)	770(1)	8	18
TPH Aliphatic (EC12-EC16)	4,400(1)	8	77
TPH Aliphatic (EC16-EC35)	110,000(1)	8	794
TPH Aliphatic (EC35-EC44)	110,000(1)	8	464
TPH Aromatic (EC5-EC7)	1,400(1)	8	<0.01
TPH Aromatic (EC7-EC8)	3,900(1)	8	<0.01
TPH Aromatic (EC8-EC10)	270(1)	8	<0.01
TPH Aromatic (EC10-EC12)	1,200(1)	8	<1
TPH Aromatic (EC12-EC16)	2,500(1)	8	1
TPH Aromatic (EC16-EC21)	1,900(1)	8	25
TPH Aromatic (EC21-EC35)	1,900(1)	8	24
TPH Aromatic (EC35-EC44)	1,900(1)	8	3
BTEX			
Benzene	1.4(1)	8	<0.01
Toluene	3,900(1)	8	<0.01
Ethylbenzene	440(1)	8	<0.01
m & p-Xylene	430(1)	8	<0.02
o-Xylene	480(1)	8	<0.01
PCB (ICES 7)			
PCB Congener 28	0.004(2)	2	<0.004
PCB Congener 52	0.004(2)	2	<0.004
PCB Congener 101	0.008(2)	2	<0.008
PCB Congener 118	0.006(2)	2	<0.006
PCB Congener 138	0.006(2)	2	<0.006
PCB Congener 153	0.009(2)	2	<0.009
PCB Congener 180	0.008(2)	2	<0.008
PCB (WHO 12)			
PCB Congener 77	0.006(2)	2	<0.006
PCB Congener 81	0.006(2)	2	<0.006
PCB Congener 105	0.006(2)	2	<0.006
PCB Congener 114	0.006(2)	2	<0.006
PCB Congener 118	0.006(2)	2	<0.006
PCB Congener 123	0.006(2)	2	<0.006
PCB Congener 126	0.006(2)	2	<0.006
PCB Congener 156	0.006(2)	2	<0.006
PCB Congener 157	0.006(2)	2	<0.006
PCB Congener 167	0.006(2)	2	<0.006
PCB Congener 169	0.006(2)	2	<0.006
PCB Congener 189	0.006(2)	2	<0.006

(1) = The LQM / CIEH Suitable 4 Use Levels – Residential without homegrown produce, based on 6% SOM, (2) = Laboratory analytical detection limit

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Re: Former Greenfields School, Hebburn (Windsor Care Home) (Cont'd)

2.0 Supplementary Investigation Works (Cont'd):-

Based on the supplementary sampling and laboratory ground contamination analysis undertaken, it has been confirmed that the made ground deposits contained below this part of the site will represent a potential risk towards the site end-users where exposure pathways will be available, due to the slightly elevated levels of Lead and individual PAH's (Benzo(a)pyrene, Benzo(b)fluoranthene & Dibenz(ah)anthracene) recorded. No asbestos fibres were noted within any of the supplementary samples recovered for analysis.

3.0 Conclusions & Recommendations:-

Slightly elevated levels of Lead, Benzo(a)pyrene and Benzo(b)fluoranthene have been identified at the location of TPA only. In addition slightly elevated levels of Benzo(a)pyrene have been recorded at the location of TP's A & H. As a result, and as previously recommended a breakage in the source-pathway-receptor model will be necessary for this part of the site in order to reduce the overall risks posed to the site end-users.

No asbestos fibres were noted within any of the supplementary samples chosen for analysis. Trial pit labelled TPC was positioned at the location of BHB where asbestos fibres were previously identified. Based on the absence of asbestos fibres identified within the supplementary samples it is felt that the asbestos previously identified at the location of BHB is representative of a single isolated fibre and from this the risks posed to the site end-users associated with asbestos fibres becoming airborne is felt to be negligible.

Whilst the remediation measures previously recommended for this part of the site by ARC have not been implemented, when considering the nature of the contamination identified within the soils, at this time it is considered that the c.1.80m wooden fence which is prohibiting access on to the site will sufficiently break the source-pathway-receptor pollutant linkage. As a result, until such a time comes to redevelop this part of the site we feel the site can remain as current without representing a significant risk towards the site end-users and the wider environment.

We trust the contents of this report are to your satisfaction, and if you require any further information or clarification, please do not hesitate to contact us.

Yours sincerely,

……

For and on behalf of Arc Environmental Limited
Terry McMenam BSc (Hons) CEnv CSci MIEnvSc FGS MCMI MIoD
Director

C.c Mario Minchella – Mario Minchella Arcitects
Dr. Peter Vinayaks

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Supplementary Investigation Plan

Ground Contamination Results

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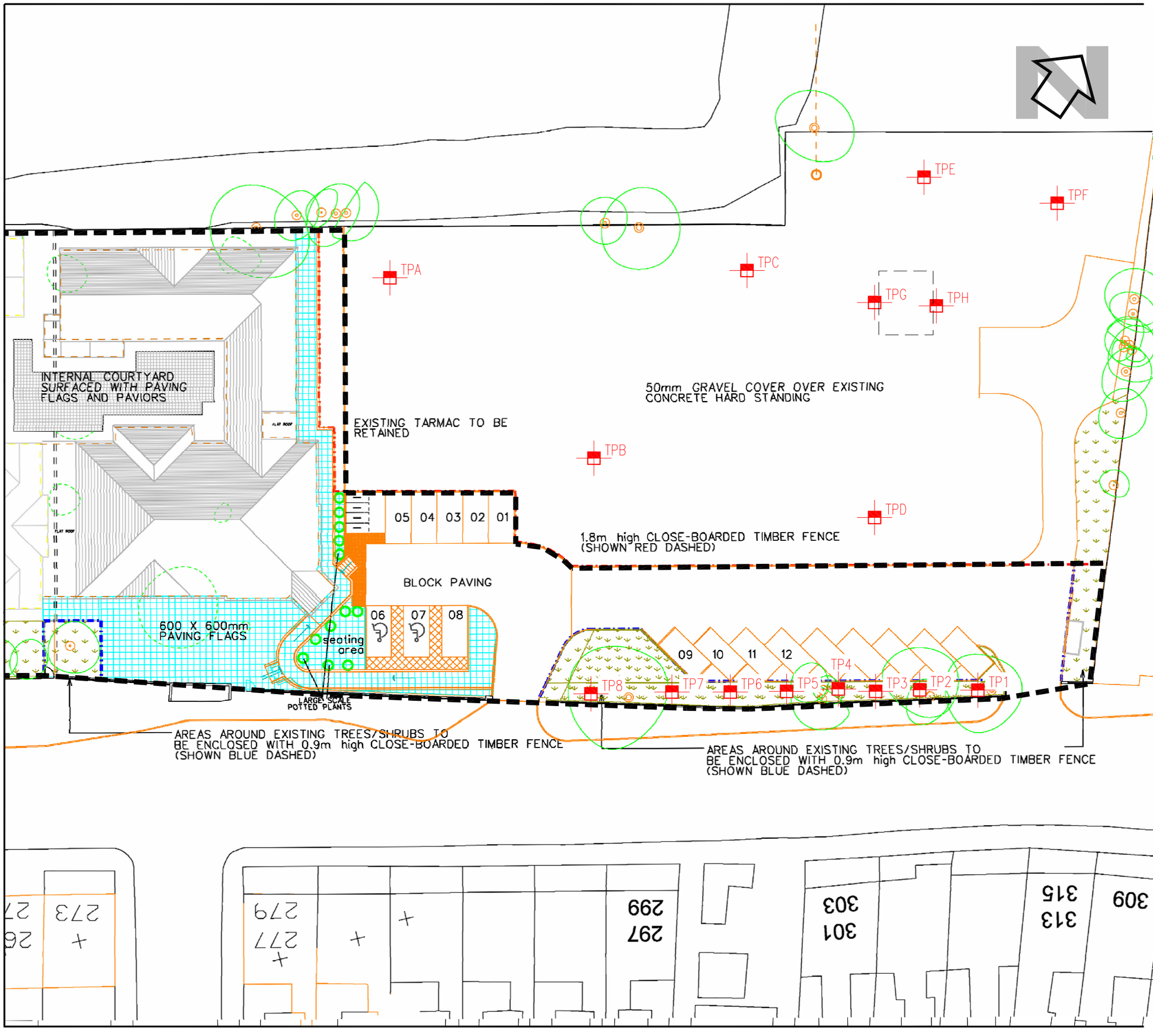

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The contractor shall check all dimensions on site before commencement of any works. No dimensions to be scaled off this drawing.
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LEGEND	
- - - -	DEVELOPMENT SITE BOUNDARY
+	MANUALLY EXCAVATED TRIAL PIT POSITION

rev.	date	amendments	drawn	chckd

Client:
MARIO MINCHELLA ARCHITECTS

Project Title:
Proposed Extension at Windsor Nursing Home
Victoria Road
Hebburn, NE31 1YQ

Drawing Title:
Supplementary Investigation Plan

Scale at A3:	Date:	Drawn by:	Approved by:
NTS @ A3	23.09.1.5	P.D	T.M

Job Ref:	Drg no:	Rev:
13-422	–	–

2531

ANALYTICAL TEST REPORT

Contract no: 57089

Contract name: Former Greenfields School, Hebburn

Client reference: 13-422

Clients name: ARC Environmental

Clients address: Solum House
Unit 1 Elliott Court, St Johns Road
Meadowfield
DH7 8PN

Samples received: 05 October 2015

Analysis started: 06 October 2015

Analysis completed 07 October 2015

Report issued: 07 October 2015

Notes:

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, withour prior written approval.

Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

BTEX compounds are identified by retention time only and may include interference from co-eluting compounds.

Key:

U UKAS accredited test

M MCERTS & UKAS accredited test

$ Test carried out by an approved subcontractor

I/S Insufficient sample to carry out test

N/S Sample not suitable for testing

NAD No Asbestos Detected

Approved by:

J. Campbell

Karan Campbell	John Campbell	Dave Bowerbank
Director	Director	Customer Services Co-ordinator

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.
Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
57089-1	TPA	0.30-0.50	Sandy Clay	-	-	13.2
57089-2	TPB	0.10-0.50	Clay	-	-	16.9
57089-3	TPC	0.20-0.50	Loam	-	-	10.2
57089-4	TPD	0.30-0.50	Sandy Clay	-	-	12.3
57089-5	TPE	0.10-0.50	Loamy Clay	-	-	14.2
57089-6	TPF	0.20-0.50	Loam	-	-	15.0
57089-7	TPG	0.10-0.50	Sandy Clay with Gravel	-	-	15.7
57089-8	TPH	0.30-0.50	Sandy Clay with Gravel	-	-	9.0

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SOILS

Lab number			57089-1	57089-2	57089-3	57089-4	57089-5	57089-6
Sample id			TPA	TPB	TPC	TPD	TPE	TPF
Depth (m)			0.30-0.50	0.10-0.50	0.20-0.50	0.30-0.50	0.10-0.50	0.20-0.50
Date sampled			05/10/2015	05/10/2015	05/10/2015	05/10/2015	05/10/2015	05/10/2015
Test	**Method**	**Units**						
Arsenic (total)	CE127 M	mg/kg As	23	6.9	11	6.7	14	17
Cadmium (total)	CE127 M	mg/kg Cd	0.7	<0.2	0.2	<0.2	0.4	0.4
Chromium (total)	CE127 M	mg/kg Cr	81	84	55	63	65	59
Chromium (III)	-	mg/kg CrIII	81	84	55	63	65	59
Chromium (VI)	CE050	mg/kg CrVI	<1	<1	<1	<1	<1	<1
Copper (total)	CE127 M	mg/kg Cu	228	27	39	15	56	61
Lead (total)	CE127 M	mg/kg Pb	373	36	105	38	171	277
Mercury (total)	CE127 M	mg/kg Hg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel (total)	CE127 M	mg/kg Ni	39	52	36	26	24	26
Selenium (total)	CE127 M	mg/kg Se	2.0	1.3	1.2	1.1	1.3	1.6
Zinc (total)	CE127 M	mg/kg Zn	309	60	119	51	172	146
pH	CE004 M	units	7.5	7.7	7.9	11.2	8.1	7.4
Sulphate (2:1 water soluble)	CE061 M	mg/l SO_4	72	32	125	197	1962	319
Cyanide (free)	CE077	mg/kg CN	<2	<2	<2	<2	<2	<2
Total Organic Carbon (TOC)	CE072 M	% w/w C	10.10	1.82	4.44	0.97	5.27	6.11
PAH								
Naphthalene	CE087 M	mg/kg	0.69	0.01	0.06	0.02	0.10	0.03
Acenaphthylene	CE087 M	mg/kg	0.07	<0.01	<0.01	<0.01	0.03	<0.01
Acenaphthene	CE087 M	mg/kg	0.73	<0.01	<0.01	0.17	0.10	<0.01
Fluorene	CE087 U	mg/kg	0.84	<0.01	0.02	0.03	0.10	0.01
Phenanthrene	CE087 M	mg/kg	6.20	0.07	0.22	0.99	1.27	0.17
Anthracene	CE087 U	mg/kg	1.86	<0.02	0.04	0.13	0.24	0.03
Fluoranthene	CE087 M	mg/kg	8.16	0.11	0.39	0.70	2.57	0.36
Pyrene	CE087 M	mg/kg	6.49	0.09	0.31	0.49	1.94	0.28
Benzo(a)anthracene	CE087 U	mg/kg	3.70	0.06	0.19	0.35	1.24	0.17
Chrysene	CE087 M	mg/kg	3.48	0.07	0.21	0.35	1.23	0.17
Benzo(b)fluoranthene	CE087 M	mg/kg	4.46	0.10	0.33	0.50	1.76	0.22
Benzo(k)fluoranthene	CE087 M	mg/kg	1.80	0.03	0.11	0.19	0.69	0.08
Benzo(a)pyrene	CE087 U	mg/kg	3.40	0.06	0.21	0.31	1.21	0.17
Indeno(123cd)pyrene	CE087 M	mg/kg	2.67	0.06	0.17	0.27	1.02	0.12
Dibenz(ah)anthracene	CE087 M	mg/kg	0.70	<0.02	0.03	0.07	0.26	<0.02
Benzo(ghi)perylene	CE087 M	mg/kg	2.09	0.06	0.16	0.22	0.77	0.10
PAH (total of USEPA 16)	CE087	mg/kg	47.3	0.73	2.44	4.80	14.6	1.91
Benzo(j)fluoranthene	CE087	mg/kg	0.56	0.01	0.03	0.05	0.21	0.03
PAH (total of OIL 8)	CE087	mg/kg	20.8	0.40	1.28	2.09	7.63	0.96
BTEX & TPH								
Benzene	CE057 U	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Toluene	CE057 U	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ethylbenzene	CE057 U	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
m & p-Xylene	CE057 U	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
o-Xylene	CE057 U	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

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SOILS

Lab number			57089-1	57089-2	57089-3	57089-4	57089-5	57089-6
Sample id			TPA	TPB	TPC	TPD	TPE	TPF
Depth (m)			0.30-0.50	0.10-0.50	0.20-0.50	0.30-0.50	0.10-0.50	0.20-0.50
Date sampled			05/10/2015	05/10/2015	05/10/2015	05/10/2015	05/10/2015	05/10/2015
Test	**Method**	**Units**						
TPH Aliphatic EC5-EC6	CE068	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TPH Aliphatic EC6-EC8	CE068	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TPH Aliphatic EC8-EC10	CE068	mg/kg	<0.1	<0.1	<0.1	0.2	0.7	<0.1
TPH Aliphatic EC10-EC12	CE068	mg/kg	18	9	2	4	2	<1
TPH Aliphatic EC12-EC16	CE068	mg/kg	77	9	8	8	9	4
TPH Aliphatic EC16-EC35	CE068	mg/kg	794	165	85	56	176	65
TPH Aliphatic EC35-EC44	CE068	mg/kg	106	106	34	17	61	29
TPH Aromatic EC5-EC7	CE068	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TPH Aromatic EC7-EC8	CE068	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TPH Aromatic EC8-EC10	CE068	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TPH Aromatic EC10-EC12	CE068	mg/kg	<1	<1	<1	<1	<1	<1
TPH Aromatic EC12-EC16	CE068	mg/kg	1	<1	<1	<1	<1	<1
TPH Aromatic EC16-EC21	CE068	mg/kg	25	<1	1	3	7	1
TPH Aromatic EC21-EC35	CE068	mg/kg	24	<1	2	3	10	1
TPH Aromatic EC35-EC44	CE068	mg/kg	3	<1	<1	<1	1	<1
PCB								
PCB Congener 28	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 52	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 101	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 118	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 138	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 153	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 180	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 77	CE137	mg/kg	-	-	-	-	-	-
PCB Congener 81	CE137	mg/kg	-	-	-	-	-	-
PCB Congener 105	CE137	mg/kg	-	-	-	-	-	-
PCB Congener 114	CE137	mg/kg	-	-	-	-	-	-
PCB Congener 118	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 123	CE137	mg/kg	-	-	-	-	-	-
PCB Congener 126	CE137	mg/kg	-	-	-	-	-	-
PCB Congener 156	CE137	mg/kg	-	-	-	-	-	-
PCB Congener 157	CE137	mg/kg	-	-	-	-	-	-
PCB Congener 167	CE137	mg/kg	-	-	-	-	-	-
PCB Congener 169	CE137	mg/kg	-	-	-	-	-	-
PCB Congener 189	CE137	mg/kg	-	-	-	-	-	-
Subcontracted analysis								
Asbestos (qualitative)	$	-	NAD	NAD	NAD	NAD	NAD	NAD

Chemtech Environmental Limited

SOILS

Lab number			57089-7	57089-8
Sample id			TPG	TPH
Depth (m)			0.10-0.50	0.30-0.50
Date sampled			05/10/2015	05/10/2015
Test	**Method**	**Units**		
Arsenic (total)	CE127 M	mg/kg As	5.5	5.1
Cadmium (total)	CE127 M	mg/kg Cd	0.2	0.2
Chromium (total)	CE127 M	mg/kg Cr	61	58
Chromium (III)	-	mg/kg CrIII	61	58
Chromium (VI)	CE050	mg/kg CrVI	<1	<1
Copper (total)	CE127 M	mg/kg Cu	17	14
Lead (total)	CE127 M	mg/kg Pb	68	57
Mercury (total)	CE127 M	mg/kg Hg	<0.5	<0.5
Nickel (total)	CE127 M	mg/kg Ni	15	13
Selenium (total)	CE127 M	mg/kg Se	0.7	1.2
Zinc (total)	CE127 M	mg/kg Zn	87	66
pH	CE004 M	units	9.8	9.7
Sulphate (2:1 water soluble)	CE061 M	mg/l SO_4	231	218
Cyanide (free)	CE077	mg/kg CN	<2	<2
Total Organic Carbon (TOC)	CE072 M	% w/w C	2.31	2.14
PAH				
Naphthalene	CE087 M	mg/kg	0.07	0.16
Acenaphthylene	CE087 M	mg/kg	0.03	0.06
Acenaphthene	CE087 M	mg/kg	0.19	0.42
Fluorene	CE087 U	mg/kg	0.35	0.73
Phenanthrene	CE087 M	mg/kg	2.08	5.28
Anthracene	CE087 U	mg/kg	0.48	1.47
Fluoranthene	CE087 M	mg/kg	1.73	5.13
Pyrene	CE087 M	mg/kg	1.22	3.69
Benzo(a)anthracene	CE087 U	mg/kg	0.81	1.56
Chrysene	CE087 M	mg/kg	0.72	1.45
Benzo(b)fluoranthene	CE087 M	mg/kg	0.86	1.64
Benzo(k)fluoranthene	CE087 M	mg/kg	0.34	0.71
Benzo(a)pyrene	CE087 U	mg/kg	0.60	1.14
Indeno(123cd)pyrene	CE087 M	mg/kg	0.43	0.89
Dibenz(ah)anthracene	CE087 M	mg/kg	0.12	0.24
Benzo(ghi)perylene	CE087 M	mg/kg	0.35	0.71
PAH (total of USEPA 16)	CE087	mg/kg	10.4	25.3
Benzo(j)fluoranthene	CE087	mg/kg	0.10	0.22
PAH (total of OIL 8)	CE087	mg/kg	3.97	7.85
BTEX & TPH				
Benzene	CE057 U	mg/kg	<0.01	<0.01
Toluene	CE057 U	mg/kg	<0.01	<0.01
Ethylbenzene	CE057 U	mg/kg	<0.01	<0.01
m & p-Xylene	CE057 U	mg/kg	<0.02	<0.02
o-Xylene	CE057 U	mg/kg	<0.01	<0.01

Chemtech Environmental Limited

SOILS

Lab number			57089-7	57089-8
Sample id			TPG	TPH
Depth (m)			0.10-0.50	0.30-0.50
Date sampled			05/10/2015	05/10/2015
Test	**Method**	**Units**		
TPH Aliphatic EC5-EC6	CE068	mg/kg	<0.1	<0.1
TPH Aliphatic EC6-EC8	CE068	mg/kg	<0.1	<0.1
TPH Aliphatic EC8-EC10	CE068	mg/kg	0.6	0.3
TPH Aliphatic EC10-EC12	CE068	mg/kg	9	4
TPH Aliphatic EC12-EC16	CE068	mg/kg	24	26
TPH Aliphatic EC16-EC35	CE068	mg/kg	513	594
TPH Aliphatic EC35-EC44	CE068	mg/kg	369	464
TPH Aromatic EC5-EC7	CE068	mg/kg	<0.01	<0.01
TPH Aromatic EC7-EC8	CE068	mg/kg	<0.01	<0.01
TPH Aromatic EC8-EC10	CE068	mg/kg	<0.01	<0.01
TPH Aromatic EC10-EC12	CE068	mg/kg	<1	<1
TPH Aromatic EC12-EC16	CE068	mg/kg	<1	<1
TPH Aromatic EC16-EC21	CE068	mg/kg	6	18
TPH Aromatic EC21-EC35	CE068	mg/kg	7	15
TPH Aromatic EC35-EC44	CE068	mg/kg	<1	1
PCB				
PCB Congener 28	CE137 M	mg/kg	<0.004	<0.004
PCB Congener 52	CE137 M	mg/kg	<0.004	<0.004
PCB Congener 101	CE137 M	mg/kg	<0.008	<0.008
PCB Congener 118	CE137 M	mg/kg	<0.006	<0.006
PCB Congener 138	CE137 M	mg/kg	<0.006	<0.006
PCB Congener 153	CE137 M	mg/kg	<0.009	<0.009
PCB Congener 180	CE137 M	mg/kg	<0.008	<0.008
PCB Congener 77	CE137	mg/kg	<0.006	<0.006
PCB Congener 81	CE137	mg/kg	<0.006	<0.006
PCB Congener 105	CE137	mg/kg	<0.006	<0.006
PCB Congener 114	CE137	mg/kg	<0.006	<0.006
PCB Congener 118	CE137 M	mg/kg	<0.006	<0.006
PCB Congener 123	CE137	mg/kg	<0.006	<0.006
PCB Congener 126	CE137	mg/kg	<0.006	<0.006
PCB Congener 156	CE137	mg/kg	<0.006	<0.006
PCB Congener 157	CE137	mg/kg	<0.006	<0.006
PCB Congener 167	CE137	mg/kg	<0.006	<0.006
PCB Congener 169	CE137	mg/kg	<0.006	<0.006
PCB Congener 189	CE137	mg/kg	<0.006	<0.006
Subcontracted analysis				
Asbestos (qualitative)	$	-	NAD	NAD

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE127	Chromium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cr
-	Chromium (III)	Calculation: Cr (total) - Cr (VI)	Dry		1	mg/kg CrIII
CE050	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	Wet	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	M	10	mg/l SO_4
CE077	Cyanide (free)	Extraction, Continuous Flow Colorimetry	Wet		1	mg/kg CN
CE072	Total Organic Carbon (TOC)	Removal of IC by acidification, Carbon Analyser	Dry	M	0.1	% w/w C
CE087	Acenaphthene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	Wet	U	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	Wet	U	0.02	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	Wet	U	0.02	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	Wet	U	0.01	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Naphthalene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	Wet		0.27	mg/kg
CE087	Benzo(j)fluoranthene	Solvent extraction, GC-MS	Wet		0.02	mg/kg
CE087	PAH (total of OIL 8)	Solvent extraction, GC-MS	Wet		0.15	mg/kg
CE057	Benzene	Headspace GC-FID	Wet	U	0.01	mg/kg
CE057	Toluene	Headspace GC-FID	Wet	U	0.01	mg/kg
CE057	Ethylbenzene	Headspace GC-FID	Wet	U	0.01	mg/kg
CE057	m & p-Xylene	Headspace GC-FID	Wet	U	0.02	mg/kg
CE057	o-Xylene	Headspace GC-FID	Wet	U	0.01	mg/kg
CE068	TPH Aliphatic/Aromatic fractions (C5-C10)	Headspace GC-FID	Wet		0.01-0.1	mg/kg
CE068	TPH Aliphatic/Aromatic fractions (C10-C44)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE137	PCB Congener 28	Solvent extraction, GC-MS	Wet	M	0.004	mg/kg
CE137	PCB Congener 52	Solvent extraction, GC-MS	Wet	M	0.004	mg/kg

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE137	PCB Congener 101	Solvent extraction, GC-MS	Wet	M	0.008	mg/kg
CE137	PCB Congener 118	Solvent extraction, GC-MS	Wet	M	0.006	mg/kg
CE137	PCB Congener 138	Solvent extraction, GC-MS	Wet	M	0.006	mg/kg
CE137	PCB Congener 153	Solvent extraction, GC-MS	Wet	M	0.009	mg/kg
CE137	PCB Congener 180	Solvent extraction, GC-MS	Wet	M	0.008	mg/kg
CE137	PCB Congener 77	Solvent extraction, GC-MS	Wet		0.006	mg/kg
CE137	PCB Congener 81	Solvent extraction, GC-MS	Wet		0.006	mg/kg
CE137	PCB Congener 105	Solvent extraction, GC-MS	Wet		0.006	mg/kg
CE137	PCB Congener 114	Solvent extraction, GC-MS	Wet		0.006	mg/kg
CE137	PCB Congener 118	Solvent extraction, GC-MS	Wet	M	0.006	mg/kg
CE137	PCB Congener 123	Solvent extraction, GC-MS	Wet		0.006	mg/kg
CE137	PCB Congener 126	Solvent extraction, GC-MS	Wet		0.006	mg/kg
CE137	PCB Congener 156	Solvent extraction, GC-MS	Wet		0.006	mg/kg
CE137	PCB Congener 157	Solvent extraction, GC-MS	Wet		0.006	mg/kg
CE137	PCB Congener 167	Solvent extraction, GC-MS	Wet		0.006	mg/kg
CE137	PCB Congener 169	Solvent extraction, GC-MS	Wet		0.006	mg/kg
CE137	PCB Congener 189	Solvent extraction, GC-MS	Wet		0.006	mg/kg
$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

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DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
A	Sampling date not provided
B	Sampling time not provided (waters only)
C	Sample exceeded holding time(s)
D	Sample not received in appropriate containers
E	Headspace present in sample container
F	Sample not chemically fixed (where appropriate)
G	Sample not cooled
H	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
57089-1	TPA	0.30-0.50	N	
57089-2	TPB	0.10-0.50	N	
57089-3	TPC	0.20-0.50	N	
57089-4	TPD	0.30-0.50	N	
57089-5	TPE	0.10-0.50	N	
57089-6	TPF	0.20-0.50	N	
57089-7	TPG	0.10-0.50	N	
57089-8	TPH	0.30-0.50	N	