APPENDIX VIII

Laboratory Analysis

ALcontrol Geochem Analytical Services
Sample Descriptions

Job Number: 04/12920/02/01
Client: Abatech International Ltd
Client Ref : **4208**

Grain sizes

<0.063mm	Very Fine
0.1mm - 0.063mm	Fine
0.1mm - 2mm	Medium
2mm - 10mm	Coarse
>10mm	Very Coarse

Sample Identity	Depth (m)	Colour	Grain Size	Description	Batch
WS1	0.25	Dark Brown	<0.063mm	Sand with some Stones	1
WS1	2.3	Dark Grey	<0.063mm	Sandy Clay	1
WS2	0.6	Light Brown	<0.063mm	Sandy Clay	1
WS2	1.8	Light Brown	<0.063mm	Clay	1
WS3	0.5	Dark Brown	<0.063mm	Sandy Clay	1
WS4	0.5	Dark Brown	<0.063mm	Sandy Clay	1
WS4	2.0	Dark Grey	<0.063mm	Clay with some Stones	1
WS4	4.5	Brown	<0.063mm	Clay	1
WS5	0.6	Dark Grey	<0.063mm	Sandy Clay with some Stones	1
WS6	0.7	Black	<0.063mm	Sand	1
WS6	2.5	Brown	<0.063mm	Sandy Clay	1
WS7	0.6	Dark Grey	<0.063mm	Sandy Clay	1

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ALcontrol Geochem Analytical Services
Table Of Results

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Job Number: 04/12920/02/01 **Matrix:** SOLID
Client: Abatech International Ltd **Location:** CLARK DRAIN YAXLEY
Client Ref. No.: 04208 **Client Contact:** Mark Lewis

Sample Identity	WS1	WS1	WS2	WS2	WS3	WS4	WS4	WS4	WS5	Method Code	LoD/Units
Depth (m)	0.25	2.3	0.6	1.8	0.5	0.5	2.0	4.5	0.6		
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
Sampled Date	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04		
Sample Received Date	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04		
Batch	1	1	1	1	1	1	1	1	1		
Sample Number(s)	1-3	4-6	9-11	12-14	18-20	24-26	27-28	29-30	31-33		
Arsenic	8	-	11	7	-	-	-	-	13	TM129#	<1 mg/kg
Cadmium	<1	-	<1	<1	-	-	-	-	<1	TM129#	<1 mg/kg
Chromium	23	-	36	45	-	-	-	-	654	TM129#	<1 mg/kg
Copper	46	-	23	14	-	-	-	-	72	TM129#	<1 mg/kg
Lead	146	-	18	11	-	-	-	-	464	TM129#	<1 mg/kg
Mercury	<1	-	<1	<1	-	-	-	-	2	TM129#	<1 mg/kg
Nickel	12	-	32	21	-	-	-	-	33	TM129#	<1 mg/kg
Selenium	<1	-	<1	<1	-	-	-	-	<1	TM129#	<1 mg/kg
Zinc	985	-	157	180	-	-	-	-	196	TM129#	<1 mg/kg
Total Sulphate	1327	-	1465	536	-	-	-	-	1737	TM148	<50 mg/kg
Boron (Water Soluble)	2	-	2	3	-	-	-	-	<1	TM129#	<1 mg/kg
Water Soluble Sulphate as SO4	0.147	-	0.381	0.068	-	-	-	-	0.036	TM098#	<0.003 g/l
Acid Soluble Sulphide	39	-	<5	<5	-	-	-	-	46	TM105#	<5 mg/kg
Hexavalent Chromium	0.4	-	<0.3	<0.3	-	-	-	-	2.5	TM151#	<0.3 mg/kg
Phenols Total Monohydric	0.01	-	0.04	<0.01	-	-	-	-	<0.01	TM062#	<0.01 mg/kg
Thiocyanate	<1	-	<1	<1	-	-	-	-	<1	TM153#M	<1 mg/kg
Total Cyanide	<1	-	<1	<1	-	-	-	-	<1	TM153#M	<1 mg/kg
Free Cyanide	<1	-	<1	<1	-	-	-	-	<1	TM153#M	<1 mg/kg
Asbestos Presence Screen	nfd	-	-	-	nfd	-	nfd	-	nfd	TM001	NONE
pH Value In Soil	8.06	-	7.58	7.86	-	-	-	-	8.21	TM133#	<1.00 pH Units
Total Organic Carbon	-	-	0.75	-	15.37	5.29	-	-	4.23	TM050#	<0.01 %
Total Sulphur	0.07	-	0.02	<0.01	-	-	-	-	0.15	TM051#	<0.01 %
EPH (DRO) (C10-C40)	-	73	502	-	928	-	446	-	622	TM061#M	<1 mg/kg
PRO (C4-C10)	-	<10	3116	-	<10	-	-	<10	<10	TM089#	<10 ug/kg

All results expressed on a dry weight basis.

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Table Of Results

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Job Number: 04/12920/02/01 **Matrix:** SOLID
Client: Abatech International Ltd **Location:** CLARK DRAIN YAXLEY
Client Ref. No.: 04208 **Client Contact:** Mark Lewis

Sample Identity	WS1	WS1	WS2	WS2	WS3	WS4	WS4	WS4	WS5	Method Code	LoD/Units
Depth (m)	0.25	2.3	0.6	1.8	0.5	0.5	2.0	4.5	0.6		
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
Sampled Date	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04		
Sample Received Date	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04		
Batch	1	1	1	1	1	1	1	1	1		
Sample Number(s)	1-3	4-6	9-11	12-14	18-20	24-26	27-28	29-30	31-33		
PAH by GCMS											
Naphthalene	619	-	922	<10	-	-	-	-	641	TM074#	<10 ug/kg
Acenaphthylene	11	-	47	<5	-	-	-	-	182	TM074#	<5 ug/kg
Acenaphthene	225	-	1716	<14	-	-	-	-	95	TM074#	<14 ug/kg
Fluorene	295	-	1816	<12	-	-	-	-	122	TM074#	<12 ug/kg
Phenanthrene	1171	-	8050	<21	-	-	-	-	1600	TM074#	<21 ug/kg
Anthracene	208	-	2376	<9	-	-	-	-	619	TM074#	<9 ug/kg
Fluoranthene	1712	-	10853	<25	-	-	-	-	5028	TM074#	<25 ug/kg
Pyrene	1765	-	6750	<22	-	-	-	-	4861	TM074#	<22 ug/kg
Benz(a)anthracene	1276	-	3606	<12	-	-	-	-	3373	TM074#	<12 ug/kg
Chrysene	1386	-	3172	<10	-	-	-	-	3089	TM074#	<10 ug/kg
Benzo(b)fluoranthene	1268	-	2499	<16	-	-	-	-	2287	TM074#	<16 ug/kg
Benzo(k)fluoranthene	594	-	1313	<25	-	-	-	-	1248	TM074#	<25 ug/kg
Benzo(a)pyrene	1172	-	2695	<12	-	-	-	-	2129	TM074#	<12 ug/kg
Indeno(123cd)pyrene	1124	-	1099	<11	-	-	-	-	1090	TM074#	<11 ug/kg
Dibenzo(ah)anthracene	339	-	346	<8	-	-	-	-	364	TM074#	<8 ug/kg
Benzo(ghi)perylene	1283	-	1198	<10	-	-	-	-	1210	TM074#	<10 ug/kg
PAH 16 Total	14448	-	48458	<25	-	-	-	-	27938	TM074#	<25 ug/kg

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Table Of Results

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Job Number: 04/12920/02/01 **Matrix:** SOLID
Client: Abatech International Ltd **Location:** CLARK DRAIN YAXLEY
Client Ref. No.: 04208 **Client Contact:** Mark Lewis

Sample Identity	WS1	WS1	WS2	WS2	WS3	WS4	WS4	WS4	WS5	Method Code	LoD/Units
Depth (m)	0.25	2.3	0.6	1.8	0.5	0.5	2.0	4.5	0.6		
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
Sampled Date	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04		
Sample Received Date	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04		
Batch	1	1	1	1	1	1	1	1	1		
Sample Number(s)	1-3	4-6	9-11	12-14	18-20	24-26	27-28	29-30	31-33		
PCBs (vs Aroclor 1254)	<1	-	<1	-	<1	<1	-	-	-	TM070#	<1 ug/kg

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Table Of Results

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Job Number: 04/12920/02/01 **Matrix:** SOLID
Client: Abatech International Ltd **Location:** CLARK DRAIN YAXLEY
Client Ref. No.: 04208 **Client Contact:** Mark Lewis

Sample Identity	WS1	WS1	WS2	WS2	WS3	WS4	WS4	WS4	WS5	Method Code	LoD/Units
Depth (m)	0.25	2.3	0.6	1.8	0.5	0.5	2.0	4.5	0.6		
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
Sampled Date	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04		
Sample Received Date	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04		
Batch	1	1	1	1	1	1	1	1	1		
Sample Number(s)	1-3	4-6	9-11	12-14	18-20	24-26	27-28	29-30	31-33		
SVOC											
Phenol	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
2-Chlorophenol	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
2-Methylphenol	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
4-Methylphenol	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
2-Nitrophenol	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
4-Nitrophenol	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
2,4-Dichlorophenol	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
2,4-Dimethylphenol	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
4-Chloro-3-methylphenol	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
2,4,6-Trichlorophenol	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
2,4,5-Trichlorophenol	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Pentachlorophenol	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
1,3-Dichlorobenzene	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
1,4-Dichlorobenzene	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
1,2-Dichlorobenzene	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
1,2,4-Trichlorobenzene	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Nitrobenzene	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Azobenzene	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Hexachlorobenzene	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Naphthalene	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Acenaphthylene	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Acenaphthene	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Fluorene	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Phenanthrene	-	<100	455	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Anthracene	-	<100	153	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Fluoranthene	-	<100	2005	-	<100	-	<100	-	697	TM143	<100 µg/kg
Pyrene	-	<100	1786	-	<100	-	<100	-	714	TM143	<100 µg/kg
Benzo(a)anthracene	-	<100	1851	-	<100	-	<100	-	599	TM143	<100 µg/kg
Chrysene	-	<100	1563	-	<100	-	<100	-	548	TM143	<100 µg/kg
Benzo(b)fluoranthene	-	<100	1482	-	<100	-	<100	-	800	TM143	<100 µg/kg

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ALcontrol Geochem Analytical Services
Table Of Results

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Job Number: 04/12920/02/01 **Matrix:** SOLID
Client: Abatech International Ltd **Location:** CLARK DRAIN YAXLEY
Client Ref. No.: 04208 **Client Contact:** Mark Lewis

Sample Identity	WS1	WS1	WS2	WS2	WS3	WS4	WS4	WS4	WS5	Method Code	LoD/Units
Depth (m)	0.25	2.3	0.6	1.8	0.5	0.5	2.0	4.5	0.6		
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
Sampled Date	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04		
Sample Received Date	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04		
Batch	1	1	1	1	1	1	1	1	1		
Sample Number(s)	1-3	4-6	9-11	12-14	18-20	24-26	27-28	29-30	31-33		
SVOC (cont)											
Benzo(k)fluoranthene	-	<100	1569	-	<100	-	<100	-	761	TM143	<100 µg/kg
Benzo(a)pyrene	-	<100	1814	-	<100	-	<100	-	743	TM143	<100 µg/kg
Indeno(1,2,3-cd)pyrene	-	<100	921	-	<100	-	<100	-	671	TM143	<100 µg/kg
Dibenzo(a,h)anthracene	-	<100	170	-	<100	-	<100	-	151	TM143	<100 µg/kg
Benzo(ghi)perylene	-	<100	756	-	<100	-	<100	-	503	TM143	<100 µg/kg
2-Chloronaphthalene	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
2-Methylnaphthalene	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Carbazole	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Isophorone	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Dibenzofuran	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Dimethyl phthalate	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Diethyl phthalate	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Di-n-butyl phthalate	-	<100	<100	-	<100	-	<100	-	208	TM143	<100 µg/kg
Di-n-Octyl phthalate	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Bis(2-ethylhexyl) phthalate	-	615	<100	-	473	-	2608	-	1715	TM143	<100 µg/kg
Butylbenzyl phthalate	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
4-Chloroaniline	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
2-Nitroaniline	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
3-Nitroaniline	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
4-Nitroaniline	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
2,4-Dinitrotoluene	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
2,6-Dinitrotoluene	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Bis(2-chloroethyl)ether	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
4-Bromophenylphenylether	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
4-Chlorophenylphenylether	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Hexachloroethane	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Hexachlorobutadiene	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Hexachlorocyclopentadiene	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
Bis(2-chloroethoxy)methane	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg
N-nitrosodi-n-propylamine	-	<100	<100	-	<100	-	<100	-	<100	TM143	<100 µg/kg

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ALcontrol Geochem Analytical Services
Table Of Results

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Job Number: 04/12920/02/01 **Matrix:** SOLID
Client: Abatech International Ltd **Location:** CLARK DRAIN YAXLEY
Client Ref. No.: 04208 **Client Contact:** Mark Lewis

Sample Identity	WS1	WS1	WS2	WS2	WS3	WS4	WS4	WS4	WS5	Method Code	LoD/Units
Depth (m)	0.25	2.3	0.6	1.8	0.5	0.5	2.0	4.5	0.6		
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
Sampled Date	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04		
Sample Received Date	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04		
Batch	1	1	1	1	1	1	1	1	1		
Sample Number(s)	1-3	4-6	9-11	12-14	18-20	24-26	27-28	29-30	31-33		
VOC											
Dichlorodifluoromethane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Chloromethane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Vinyl Chloride	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Bromomethane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Chloroethane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Trichlorofluoromethane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
trans-1-2-Dichloroethene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Dichloromethane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Carbon Disulphide	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.1-Dichloroethene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.1-Dichloroethane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Methyl Tertiary Butyl Ether	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
cis-1-2-Dichloroethene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Bromochloromethane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Chloroform	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
2.2-Dichloropropane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.2-Dichloroethane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.1.1-Trichloroethane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.1-Dichloropropene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Benzene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Carbontetrachloride	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Dibromomethane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.2-Dichloropropane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Bromodichloromethane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Trichloroethene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
cis-1-3-Dichloropropene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
trans-1-3-Dichloropropene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.1.2-Trichloroethane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Toluene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.3-Dichloropropane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg

All results expressed on a dry weight basis.

Date 14.09.2004

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ALcontrol Geochem Analytical Services
Table Of Results

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Job Number: 04/12920/02/01 **Matrix:** SOLID
Client: Abatech International Ltd **Location:** CLARK DRAIN YAXLEY
Client Ref. No.: 04208 **Client Contact:** Mark Lewis

Sample Identity	WS1	WS1	WS2	WS2	WS3	WS4	WS4	WS4	WS5	Method Code	LoD/Units
Depth (m)	0.25	2.3	0.6	1.8	0.5	0.5	2.0	4.5	0.6		
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
Sampled Date	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04		
Sample Received Date	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04		
Batch	1	1	1	1	1	1	1	1	1		
Sample Number(s)	1-3	4-6	9-11	12-14	18-20	24-26	27-28	29-30	31-33		
VOC (cont)											
Dibromochloromethane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.2-Dibromoethane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Tetrachloroethene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.1.1.2-Tetrachloroethane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Chlorobenzene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Ethylbenzene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
p/m-Xylene	-	<1	<1	-	<1	-	-	5	<1	TM116#	<1 ug/kg
Bromoform	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Styrene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.1.2.2-Tetrachloroethane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
o-Xylene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.2.3-Trichloropropane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Isopropylbenzene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Bromobenzene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
2-Chlorotoluene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Propylbenzene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
4-Chlorotoluene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.2.4-Trimethylbenzene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
4-Isopropyltoluene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.3.5-Trimethylbenzene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.2-Dichlorobenzene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.4-Dichlorobenzene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
sec-Butylbenzene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
tert-Butylbenzene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.3-Dichlorobenzene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
n-Butylbenzene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.2-Dibromo-3-chloropropane	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.2.4-Trichlorobenzene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
Naphthalene	-	<1	17	-	<1	-	-	<1	<1	TM116#	<1 ug/kg
1.2.3-Trichlorobenzene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg

All results expressed on a dry weight basis.

Date 14.09.2004

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ALcontrol Geochem Analytical Services
Table Of Results

ISO 17025 accredited
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Job Number: 04/12920/02/01 **Matrix:** SOLID
Client: Abatech International Ltd **Location:** CLARK DRAIN YAXLEY
Client Ref. No.: 04208 **Client Contact:** Mark Lewis

Sample Identity	WS1	WS1	WS2	WS2	WS3	WS4	WS4	WS4	WS5	Method Code	LoD/Units
Depth (m)	0.25	2.3	0.6	1.8	0.5	0.5	2.0	4.5	0.6		
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
Sampled Date	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04	19.08.04		
Sample Received Date	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04	21.08.04		
Batch	1	1	1	1	1	1	1	1	1		
Sample Number(s)	1-3	4-6	9-11	12-14	18-20	24-26	27-28	29-30	31-33		
VOC (cont)											
Hexachlorobutadiene	-	<1	<1	-	<1	-	-	<1	<1	TM116#	<1 ug/kg

All results expressed on a dry weight basis.

Date 14.09.2004

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ALcontrol Geochem Analytical Services
Table Of Results

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* Subcontracted test
» Shown on prev. report

Job Number: 04/12920/02/01 **Matrix:** SOLID
Client: Abatech International Ltd **Location:** CLARK DRAIN YAXLEY
Client Ref. No.: 04208 **Client Contact:** Mark Lewis

Sample Identity	WS6	WS6	WS7							Method Code	LoD/Units
Depth (m)	0.7	2.5	0.6								
Sample Type	SOIL	SOIL	SOIL								
Sampled Date	19.08.04	19.08.04	19.08.04								
Sample Received Date	21.08.04	21.08.04	21.08.04								
Batch	1	1	1								
Sample Number(s)	36-38	39-40	44-46								
Arsenic	-	14	88							TM129#	<1 mg/kg
Cadmium	-	<1	1							TM129#	<1 mg/kg
Chromium	-	61	718							TM129#	<1 mg/kg
Copper	-	67	709							TM129#	<1 mg/kg
Lead	-	115	160							TM129#	<1 mg/kg
Mercury	-	<1	<1							TM129#	<1 mg/kg
Nickel	-	46	139							TM129#	<1 mg/kg
Selenium	-	<1	<1							TM129#	<1 mg/kg
Zinc	-	196	382							TM129#	<1 mg/kg
Total Sulphate	-	1141	2088							TM148	<50 mg/kg
Boron (Water Soluble)	-	3	2							TM129#	<1 mg/kg
Water Soluble Sulphate as SO4	-	0.125	0.086							TM098#	<0.003 g/l
Acid Soluble Sulphide	-	316	21							TM105#	<5 mg/kg
Hexavalent Chromium	-	<0.3	<0.3							TM151#	<0.3 mg/kg
Phenols Total Monohydric	-	<0.01	0.01							TM062#	<0.01 mg/kg
Thiocyanate	-	<1	<1							TM153#M	<1 mg/kg
Total Cyanide	-	<1	<1							TM153#M	<1 mg/kg
Free Cyanide	-	<1	<1							TM153#M	<1 mg/kg
Asbestos Presence Screen	nfd	-	nfd							TM001	NONE
pH Value In Soil	-	7.58	7.88							TM133#	<1.00 pH Units
Total Organic Carbon	4.89	-	4.91							TM050#	<0.01 %
Total Sulphur	-	0.04	0.19							TM051#	<0.01 %
EPH (DRO) (C10-C40)	197	-	-							TM061#M	<1 mg/kg
PRO (C4-C10)	<10	-	-							TM089#	<10 ug/kg

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Date 14.09.2004

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Preliminary ☐

ALcontrol Geochem Analytical Services
Table Of Results

ISO 17025 accredited
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* Subcontracted test
» Shown on prev. report

Job Number: 04/12920/02/01 **Matrix:** SOLID
Client: Abatech International Ltd **Location:** CLARK DRAIN YAXLEY
Client Ref. No.: 04208 **Client Contact:** Mark Lewis

Sample Identity	WS6	WS6	WS7							Method Code	LoD/Units
Depth (m)	0.7	2.5	0.6								
Sample Type	SOIL	SOIL	SOIL								
Sampled Date	19.08.04	19.08.04	19.08.04								
Sample Received Date	21.08.04	21.08.04	21.08.04								
Batch	1	1	1								
Sample Number(s)	36-38	39-40	44-46								
PAH by GCMS											
Naphthalene	-	98	616							TM074#	<10 ug/kg
Acenaphthylene	-	14	33							TM074#	<5 ug/kg
Acenaphthene	-	42	<70							TM074#	<14 ug/kg
Fluorene	-	45	83							TM074#	<12 ug/kg
Phenanthrene	-	422	871							TM074#	<21 ug/kg
Anthracene	-	100	198							TM074#	<9 ug/kg
Fluoranthene	-	554	1314							TM074#	<25 ug/kg
Pyrene	-	479	1206							TM074#	<22 ug/kg
Benz(a)anthracene	-	321	838							TM074#	<12 ug/kg
Chrysene	-	341	987							TM074#	<10 ug/kg
Benzo(b)fluoranthene	-	246	813							TM074#	<16 ug/kg
Benzo(k)fluoranthene	-	121	452							TM074#	<25 ug/kg
Benzo(a)pyrene	-	209	617							TM074#	<12 ug/kg
Indeno(123cd)pyrene	-	168	381							TM074#	<11 ug/kg
Dibenzo(ah)anthracene	-	76	145							TM074#	<8 ug/kg
Benzo(ghi)perylene	-	189	458							TM074#	<10 ug/kg
PAH 16 Total	-	3425	9012							TM074#	<25 ug/kg

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Date 14.09.2004

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ALcontrol Geochem Analytical Services
Table Of Results

ISO 17025 accredited
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* Subcontracted test
» Shown on prev. report

Job Number: 04/12920/02/01 **Matrix:** SOLID
Client: Abatech International Ltd **Location:** CLARK DRAIN YAXLEY
Client Ref. No.: 04208 **Client Contact:** Mark Lewis

Sample Identity	WS6	WS6	WS7							Method Code	LoD/Units
Depth (m)	0.7	2.5	0.6								
Sample Type	SOIL	SOIL	SOIL								
Sampled Date	19.08.04	19.08.04	19.08.04								
Sample Received Date	21.08.04	21.08.04	21.08.04								
Batch	1	1	1								
Sample Number(s)	36-38	39-40	44-46								
PCBs (vs Aroclor 1254)	<1	-	<1							TM070#	<1 ug/kg

All results expressed on a dry weight basis.

Date 14.09.2004

Validated ✓
Preliminary

ALcontrol Geochem Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 04/12920/02/01 **Matrix:** SOLID
Client: Abatech International Ltd **Location:** CLARK DRAIN YAXLEY
Client Ref. No.: 04208 **Client Contact:** Mark Lewis

Sample Identity	WS6	WS6	WS7							Method Code	LoD/Units
Depth (m)	0.7	2.5	0.6								
Sample Type	SOIL	SOIL	SOIL								
Sampled Date	19.08.04	19.08.04	19.08.04								
Sample Received Date	21.08.04	21.08.04	21.08.04								
Batch	1	1	1								
Sample Number(s)	36-38	39-40	44-46								
SVOC											
Phenol	<100	-	-							TM143	<100 µg/kg
2-Chlorophenol	<100	-	-							TM143	<100 µg/kg
2-Methylphenol	<100	-	-							TM143	<100 µg/kg
4-Methylphenol	<100	-	-							TM143	<100 µg/kg
2-Nitrophenol	<100	-	-							TM143	<100 µg/kg
4-Nitrophenol	<100	-	-							TM143	<100 µg/kg
2,4-Dichlorophenol	<100	-	-							TM143	<100 µg/kg
2,4-Dimethylphenol	<100	-	-							TM143	<100 µg/kg
4-Chloro-3-methylphenol	<100	-	-							TM143	<100 µg/kg
2,4,6-Trichlorophenol	<100	-	-							TM143	<100 µg/kg
2,4,5-Trichlorophenol	<100	-	-							TM143	<100 µg/kg
Pentachlorophenol	<100	-	-							TM143	<100 µg/kg
1,3-Dichlorobenzene	<100	-	-							TM143	<100 µg/kg
1,4-Dichlorobenzene	<100	-	-							TM143	<100 µg/kg
1,2-Dichlorobenzene	<100	-	-							TM143	<100 µg/kg
1,2,4-Trichlorobenzene	<100	-	-							TM143	<100 µg/kg
Nitrobenzene	<100	-	-							TM143	<100 µg/kg
Azobenzene	<100	-	-							TM143	<100 µg/kg
Hexachlorobenzene	<100	-	-							TM143	<100 µg/kg
Naphthalene	<100	-	-							TM143	<100 µg/kg
Acenaphthylene	<100	-	-							TM143	<100 µg/kg
Acenaphthene	<100	-	-							TM143	<100 µg/kg
Fluorene	<100	-	-							TM143	<100 µg/kg
Phenanthrene	192	-	-							TM143	<100 µg/kg
Anthracene	<100	-	-							TM143	<100 µg/kg
Fluoranthene	454	-	-							TM143	<100 µg/kg
Pyrene	406	-	-							TM143	<100 µg/kg
Benzo(a)anthracene	166	-	-							TM143	<100 µg/kg
Chrysene	175	-	-							TM143	<100 µg/kg
Benzo(b)fluoranthene	135	-	-							TM143	<100 µg/kg

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Date 14.09.2004

Validated ☑
Preliminary ☐

ALcontrol Geochem Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 04/12920/02/01 **Matrix:** SOLID
Client: Abatech International Ltd **Location:** CLARK DRAIN YAXLEY
Client Ref. No.: 04208 **Client Contact:** Mark Lewis

Sample Identity	WS6	WS6	WS7							Method Code	LoD/Units
Depth (m)	0.7	2.5	0.6								
Sample Type	SOIL	SOIL	SOIL								
Sampled Date	19.08.04	19.08.04	19.08.04								
Sample Received Date	21.08.04	21.08.04	21.08.04								
Batch	1	1	1								
Sample Number(s)	36-38	39-40	44-46								
SVOC (cont)											
Benzo(k)fluoranthene	121	-	-							TM143	<100 µg/kg
Benzo(a)pyrene	<100	-	-							TM143	<100 µg/kg
Indeno(1,2,3-cd)pyrene	<100	-	-							TM143	<100 µg/kg
Dibenzo(a,h)anthracene	<100	-	-							TM143	<100 µg/kg
Benzo(ghi)perylene	<100	-	-							TM143	<100 µg/kg
2-Chloronaphthalene	<100	-	-							TM143	<100 µg/kg
2-Methylnaphthalene	<100	-	-							TM143	<100 µg/kg
Carbazole	<100	-	-							TM143	<100 µg/kg
Isophorone	<100	-	-							TM143	<100 µg/kg
Dibenzofuran	<100	-	-							TM143	<100 µg/kg
Dimethyl phthalate	<100	-	-							TM143	<100 µg/kg
Diethyl phthalate	<100	-	-							TM143	<100 µg/kg
Di-n-butyl phthalate	142	-	-							TM143	<100 µg/kg
Di-n-Octyl phthalate	<100	-	-							TM143	<100 µg/kg
Bis(2-ethylhexyl) phthalate	601	-	-							TM143	<100 µg/kg
Butylbenzyl phthalate	<100	-	-							TM143	<100 µg/kg
4-Chloroaniline	<100	-	-							TM143	<100 µg/kg
2-Nitroaniline	<100	-	-							TM143	<100 µg/kg
3-Nitroaniline	<100	-	-							TM143	<100 µg/kg
4-Nitroaniline	<100	-	-							TM143	<100 µg/kg
2,4-Dinitrotoluene	<100	-	-							TM143	<100 µg/kg
2,6-Dinitrotoluene	<100	-	-							TM143	<100 µg/kg
Bis(2-chloroethyl)ether	<100	-	-							TM143	<100 µg/kg
4-Bromophenylphenylether	<100	-	-							TM143	<100 µg/kg
4-Chlorophenylphenylether	<100	-	-							TM143	<100 µg/kg
Hexachloroethane	<100	-	-							TM143	<100 µg/kg
Hexachlorobutadiene	<100	-	-							TM143	<100 µg/kg
Hexachlorocyclopentadiene	<100	-	-							TM143	<100 µg/kg
Bis(2-chloroethoxy)methane	<100	-	-							TM143	<100 µg/kg
N-nitrosodi-n-propylamine	<100	-	-							TM143	<100 µg/kg

All results expressed on a dry weight basis.

Date 14.09.2004

Validated ☑
Preliminary ☐

ALcontrol Geochem Analytical Services
Table Of Results

ISO 17025 accredited
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* Subcontracted test
» Shown on prev. report

Job Number: 04/12920/02/01 **Matrix:** SOLID
Client: Abatech International Ltd **Location:** CLARK DRAIN YAXLEY
Client Ref. No.: 04208 **Client Contact:** Mark Lewis

Sample Identity	WS6	WS6	WS7							Method Code	LoD/Units
Depth (m)	0.7	2.5	0.6								
Sample Type	SOIL	SOIL	SOIL								
Sampled Date	19.08.04	19.08.04	19.08.04								
Sample Received Date	21.08.04	21.08.04	21.08.04								
Batch	1	1	1								
Sample Number(s)	36-38	39-40	44-46								
VOC											
Dichlorodifluoromethane	<1	-	-							TM116#	<1 ug/kg
Chloromethane	<1	-	-							TM116#	<1 ug/kg
Vinyl Chloride	<1	-	-							TM116#	<1 ug/kg
Bromomethane	<1	-	-							TM116#	<1 ug/kg
Chloroethane	<1	-	-							TM116#	<1 ug/kg
Trichlorofluoromethane	<1	-	-							TM116#	<1 ug/kg
trans-1-2-Dichloroethene	<1	-	-							TM116#	<1 ug/kg
Dichloromethane	<1	-	-							TM116#	<1 ug/kg
Carbon Disulphide	<1	-	-							TM116#	<1 ug/kg
1.1-Dichloroethene	<1	-	-							TM116#	<1 ug/kg
1.1-Dichloroethane	<1	-	-							TM116#	<1 ug/kg
Methyl Tertiary Butyl Ether	<1	-	-							TM116#	<1 ug/kg
cis-1-2-Dichloroethene	<1	-	-							TM116#	<1 ug/kg
Bromochloromethane	<1	-	-							TM116#	<1 ug/kg
Chloroform	<1	-	-							TM116#	<1 ug/kg
2.2-Dichloropropane	<1	-	-							TM116#	<1 ug/kg
1.2-Dichloroethane	<1	-	-							TM116#	<1 ug/kg
1.1.1-Trichloroethane	<1	-	-							TM116#	<1 ug/kg
1.1-Dichloropropene	<1	-	-							TM116#	<1 ug/kg
Benzene	<1	-	-							TM116#	<1 ug/kg
Carbontetrachloride	<1	-	-							TM116#	<1 ug/kg
Dibromomethane	<1	-	-							TM116#	<1 ug/kg
1.2-Dichloropropane	<1	-	-							TM116#	<1 ug/kg
Bromodichloromethane	<1	-	-							TM116#	<1 ug/kg
Trichloroethene	<1	-	-							TM116#	<1 ug/kg
cis-1-3-Dichloropropene	<1	-	-							TM116#	<1 ug/kg
trans-1-3-Dichloropropene	<1	-	-							TM116#	<1 ug/kg
1.1.2-Trichloroethane	<1	-	-							TM116#	<1 ug/kg
Toluene	2	-	-							TM116#	<1 ug/kg
1.3-Dichloropropane	<1	-	-							TM116#	<1 ug/kg

All results expressed on a dry weight basis.

Date 14.09.2004

Validated ☑
Preliminary ☐

ALcontrol Geochem Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 04/12920/02/01 **Matrix:** SOLID
Client: Abatech International Ltd **Location:** CLARK DRAIN YAXLEY
Client Ref. No.: 04208 **Client Contact:** Mark Lewis

Sample Identity	WS6	WS6	WS7							Method Code	LoD/Units
Depth (m)	0.7	2.5	0.6								
Sample Type	SOIL	SOIL	SOIL								
Sampled Date	19.08.04	19.08.04	19.08.04								
Sample Received Date	21.08.04	21.08.04	21.08.04								
Batch	1	1	1								
Sample Number(s)	36-38	39-40	44-46								
VOC (cont)											
Dibromochloromethane	<1	-	-							TM116#	<1 ug/kg
1.2-Dibromoethane	<1	-	-							TM116#	<1 ug/kg
Tetrachloroethene	<1	-	-							TM116#	<1 ug/kg
1.1.1.2-Tetrachloroethane	<1	-	-							TM116#	<1 ug/kg
Chlorobenzene	<1	-	-							TM116#	<1 ug/kg
Ethylbenzene	<1	-	-							TM116#	<1 ug/kg
p/m-Xylene	<1	-	-							TM116#	<1 ug/kg
Bromoform	<1	-	-							TM116#	<1 ug/kg
Styrene	<1	-	-							TM116#	<1 ug/kg
1.1.2.2-Tetrachloroethane	<1	-	-							TM116#	<1 ug/kg
o-Xylene	<1	-	-							TM116#	<1 ug/kg
1.2.3-Trichloropropane	<1	-	-							TM116#	<1 ug/kg
Isopropylbenzene	<1	-	-							TM116#	<1 ug/kg
Bromobenzene	<1	-	-							TM116#	<1 ug/kg
2-Chlorotoluene	<1	-	-							TM116#	<1 ug/kg
Propylbenzene	<1	-	-							TM116#	<1 ug/kg
4-Chlorotoluene	<1	-	-							TM116#	<1 ug/kg
1.2.4-Trimethylbenzene	<1	-	-							TM116#	<1 ug/kg
4-Isopropyltoluene	<1	-	-							TM116#	<1 ug/kg
1.3.5-Trimethylbenzene	<1	-	-							TM116#	<1 ug/kg
1.2-Dichlorobenzene	<1	-	-							TM116#	<1 ug/kg
1.4-Dichlorobenzene	<1	-	-							TM116#	<1 ug/kg
sec-Butylbenzene	<1	-	-							TM116#	<1 ug/kg
tert-Butylbenzene	<1	-	-							TM116#	<1 ug/kg
1.3-Dichlorobenzene	<1	-	-							TM116#	<1 ug/kg
n-Butylbenzene	<1	-	-							TM116#	<1 ug/kg
1.2-Dibromo-3-chloropropane	<1	-	-							TM116#	<1 ug/kg
1.2.4-Trichlorobenzene	<1	-	-							TM116#	<1 ug/kg
Naphthalene	<1	-	-							TM116#	<1 ug/kg
1.2.3-Trichlorobenzene	<1	-	-							TM116#	<1 ug/kg

All results expressed on a dry weight basis.

Date 14.09.2004

Validated ☑
Preliminary ☐

ALcontrol Geochem Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 04/12920/02/01 **Matrix:** SOLID
Client: Abatech International Ltd **Location:** CLARK DRAIN YAXLEY
Client Ref. No.: 04208 **Client Contact:** Mark Lewis

Sample Identity	WS6	WS6	WS7							Method Code	LoD/Units
Depth (m)	0.7	2.5	0.6								
Sample Type	SOIL	SOIL	SOIL								
Sampled Date	19.08.04	19.08.04	19.08.04								
Sample Received Date	21.08.04	21.08.04	21.08.04								
Batch	1	1	1								
Sample Number(s)	36-38	39-40	44-46								
VOC (cont)											
Hexachlorobutadiene	<1	-	-							TM116#	<1 ug/kg

All results expressed on a dry weight basis.

Date 14.09.2004

ALcontrol Geochem

Extractable Petroleum Hydrocarbons (EPH) By GC-FID

Carbon Range C10-C40

Job Number : 04/12920/02/01

Client : Abatech International Ltd

Client Ref : 04208

Matrix [Units] : SOLID [mg/kg]

All results expressed on a dry weight basis.

Sample No	Sample Identity	Depth	EPH	Interpretation
5	WS1	2.3	73	Biodegraded Diesel/Humic Acids
10	WS2	0.6	502	Biodegraded Diesel/Humic Acids
19	WS3	0.5	928	Biodegraded Diesel
28	WS4	2.0	446	Lube Oil
32	WS5	0.6	622	Naturally Occurring Humic Acids
37	WS6	0.7	197	UNKNOWN

Extractable Petroleum Hydrocarbons (formally Diesel Range Organics) :- Any compound extractable in n-hexane within the carbon range C10-C40, includes Aliphatic (Min Oil), Aromatic (PAHs) and naturally occurring compounds.

APPENDIX IX

CLEA Statistical Outputs

CONTAMINATED LAND EXPOSURE ASSESSMENT MODEL 2002

Prepared by the Centre for Research into the Built Environment, for the Environment Agency (1993 - 2002)

Summary of Results

User Name:	**Super User**	*Report Date:*	**20/09/2004**
Contaminant :	**BENZO(A)PYRENE**	*Simulation Date:*	**20/09/2004**
Soil Concentration (mg/Kg):	**37.167**	*Chemical Type :*	**Organic / Non-Threshold**
Health Criteria Value:	**Index Dose**	*Details:*	**04208 Clark Drain, Yaxley**
(mg/Kg bw / day):	**2E-5**		
Background (mg/day):	**Not Applicable**		

Model Parameters

Entry Route:	**Oral**		
Applied Dose Data To:	**Oral Route Only**		
No. of tterations:	**5000**		
Scenario Type :	**Commercial / Industrial**		
Receptor Used :	**Female height / weight database**	*Age Class:*	**17 To 17**
Averaging Method :	**Elapsed exposure time**	*Soil Type :*	**Clay**
Dermal Uptake Routine :	**N/A**	*Soil PH :*	**7.86**
Plant Uptake Routine :	**N/A**	*Soil Organic Matter (%):*	**5.9**
Building Type :	**N/A**	*Molecular Weight (g) :*	**252.3**
Flow Type:	**N/A**	*Air Diffusivity (m2 /s) :*	**5E-6**

Exposure Routes Analysis

Route 1 : Soil ingestion pathway
Route 2 : Ingestion of indoor dust

Average Contribution of Each Exposure Route to ADE

Exposure route	*Contributions for each exposure route*			
	Mean (%)	*Standard Dev (%)*	*Minimum (%)*	*Maximum (%)*
1	**100.0**	**0.0**	**100.0**	**100.0**

CONTAMINATED LAND EXPOSURE ASSESSMENT MODEL 2002

Prepared by the Centre for Research into the Built Environment, for the Environment Agency (1993 - 2002)

Summary of Results

Contaminant : **BENZO(A)PYRENE**

Report Date: **20/09/2004**
Simulation Date: **20/09/2004**

Total Average Daily Exposure (mg/Kg bodyweight / day)

Ratio of ADE/TDI at 95th percentile : **1.000**

Ageclass	*Percentiles*			
	99 th	*95 th*	*90 th*	*50 th*
17	**2.44E-5**	**2.00E-5**	**1.82E-5**	**1.37E-5**

CONTAMINATED LAND EXPOSURE ASSESSMENT MODEL 2002

Prepared by the Centre for Research into the Built Environment, for the Environment Agency (1993 - 2002)

Contaminant BENZO(A)PYRENE

Report Date: **20/09/2004**
Simulation Date: **20/09/2004**

Oral Settings

Tolerable Daily Intake (mg.kg-1.bw.day-1)	**N/A**
Index Dose (mg.kg-1.bw.day-1)	**2E-5**
Adult Background Value (mg.day-1)	**N/A**

Inhalation Settings

Tolerable Daily Intake (mg.kg-1.bw.day-1)	**N/A**
Index Dose (mg.kg-1.bw.day-1)	**N/A**
Adult Background Value (mg.day-1)	**N/A**

Dermal Settings

Tolerable Daily Intake (mg.kg-1.bw.day-1)	**N/A**
Index Dose (mg.kg-1.bw.day-1)	**N/A**
Adult Background Value (mg.day-1)	**N/A**

Miscellaneous Settings

Skin Permeability (cm.hr-1)	**0.108**
Air Diffusion Coefficient (m2.s-1)	**5E-6**
Water Diffusion Coefficient (m2.s-1)	**5E-10**
Water Solubility (mg.l-1)	**0.0038**
Experimental Organic Carbon Distribution Coefficient (l.kg-1)	**1140000**
Experimental Octanol-Water Partition Coefficient (log, dimensionless)	**6.06**
Relative Molecular Weight (g.mol-1)	**252.3**
Vapour Pressure at 20'C (Pa)	**7E-7**
Henry's Constant (Pa.m3.mol-1)	**0.157**
Henry's Constant (Dimensionless)	**6.46E-5**
Experimental Soil Water Distribution Coefficient (l.kg-1)	**N/A**

CLEA Statistical Tests Derived from CLR7

Project Name	Clark Drain, Yaxley
Project Number	04208
Sample Category	Metals

Arsenic	
Upper Bound Value	
Mean	23.50
Number of samples	6.00
Standard Deviation	31.72
T Value	2.015
UBV	**49.59**
Maximum Value Test	
Mean	NA
Maximum Value	NA
Standard Deviation	NA
Outlier Critical Value	NA
10% Value	NA

Chromium	
Upper Bound Value	
Mean	256.17
Number of samples	6.00
Standard Deviation	333.79
T Value	2.015
UBV	**530.75**
Maximum Value Test	
Mean	NA
Maximum Value	NA
Standard Deviation	NA
Outlier Critical Value	NA
10% Value	NA

Cadmium	
Upper Bound Value	
Mean	1.00
Number of samples	6.00
Standard Deviation	0.00
T Value	2.015
UBV	**1.00**
Maximum Value Test	
Mean	NA
Maximum Value	NA
Standard Deviation	NA
Outlier Critical Value	NA
10% Value	NA

Nickel	
Upper Bound Value	
Mean	47.17
Number of samples	6.00
Standard Deviation	46.45
T Value	2.015
UBV	**85.38**
Maximum Value Test	
Mean	NA
Maximum Value	NA
Standard Deviation	NA
Outlier Critical Value	NA
10% Value	NA

Lead	
Upper Bound Value	
Mean	152.33
Number of samples	6.00
Standard Deviation	165.32
T Value	2.015
UBV	**288.33**
Maximum Value Test	
Mean	NA
Maximum Value	NA
Standard Deviation	NA
Outlier Critical Value	NA
10% Value	NA

Mercury	
Upper Bound Value	
Mean	1.17
Number of samples	6.00
Standard Deviation	0.41
T Value	2.015
UBV	**1.50**
Maximum Value Test	
Mean	NA
Maximum Value	NA
Standard Deviation	NA
Outlier Critical Value	NA
10% Value	NA

Selenium	
Upper Bound Value	
Mean	1.00
Number of samples	6.00
Standard Deviation	0.00
T Value	2.015
UBV	**1.00**
Maximum Value Test	
Mean	NA
Maximum Value	NA
Standard Deviation	NA
Outlier Critical Value	NA
10% Value	NA

CLEA Statistical Tests Derived from CLR7

Project Name	Clark Drain, Yaxley
Project Number	04208
Sample Category	Organics

BaP	
Upper Bound Value	
Mean	0.72
Number of samples	10.00
Standard Deviation	0.97
T Value	1.833
UBV	**1.28**
Maximum Value Test	
Mean	NA
Maximum Value	NA
Standard Deviation	NA
Outlier Critical Value	NA
10% Value	**NA**

APPENDIX X

Gas Monitoring

MONITORING OF SOIL GASES & GROUNDWATER

Abatech International Ltd,
Consulting Engineers
Abatech House, Bull Close Road, Lenton,
Nottingham NG7 2UL
Tel. 0115 986 5022

CONTRACT N° : 04208

CONTRACT : Galvanising Plant Investigation, Station Road, Yaxley

CLIENT : Clark-Drain Ltd

DATE : Tuesday 24th August 2004

CONDITIONS : Overcast
Atmospheric Pressure: 998 mb

SPECIFICATIONS : Waste Management Paper No 27
And BS 5930: 1999 'Code of Practice for Site Investigations'

OPERATOR : D Simpson

EQUIPMENT : GA94 – Infrared gas analyser

RESULTS

Borehole No./Ref.	LEL %	Methane (CH_4) %	Carbon Dioxide (CO_2) %	Oxygen (O_2) %	Gas Flow Rate (l/hr)	Depth to Groundwater (mbgl) / Depth of well	Observations
WS2	0	0.0	0.5	17.5	0.0	0.60 / 4.70	
WS3	0	0.0	0.9	15.4	0.0	1.55 / 3.20	
WS6	0	0.0	2.8	8.7	0.0	2.15 / 4.25	

Notes
L.E.L = Lower Explosive Limit (100% L.E.L. = 5% Flammable Gas)
% = By Volume

Signed (Operator) .....

Signed .....Mark Lewis.....

MONITORING OF SOIL GASES & GROUNDWATER

Abatech International Ltd,
Consulting Engineers
Abatech House, Bull Close Road, Lenton,
Nottingham NG7 2UL
Tel. 0115 986 5022

CONTRACT N° : 04208

CONTRACT : Galvanizing Plant Investigation, Station Road, Yaxley

CLIENT : Clark-Drain Ltd

DATE : Wednesday 1st September 2004

CONDITIONS : Overcast
Atmospheric Pressure: 1009 mb

SPECIFICATIONS : Waste Management Paper No 27
And BS 5930: 1999 'Code of Practice for Site Investigations'

OPERATOR : D Simpson

EQUIPMENT : GA94 – *Infrared gas analyser*

RESULTS

Borehole No./Ref.	LEL %	Methane (CH_4) %	Carbon Dioxide (CO_2) %	Oxygen (O_2) %	Gas Flow Rate (l/hr)	Depth to Groundwater (mbgl) / Depth of well	Observations
WS2	0	0.0	1.3	17.7	0.0	1.00 / 4.70	
WS3	0	0.0	0.7	17.4	0.2	1.60 / 3.20	
WS6	0	0.0	1.4	17.4	0.0	2.32 / 4.25	

Notes
L.E.L = Lower Explosive Limit (100% L.E.L. = 5% Flammable Gas)
% = By Volume

Signed (Operator) .....

Signed .....Mark Lewis.....

MONITORING OF SOIL GASES & GROUNDWATER

Abatech International Ltd,
Consulting Engineers
Abatech House, Bull Close Road, Lenton,
Nottingham NG7 2UL
Tel. 0115 986 5022

CONTRACT N° : 04208

CONTRACT : Galvanizing Plant Investigation, Station Road, Yaxley

CLIENT : Clark-Drain Ltd

DATE : Friday 17th September 2004

CONDITIONS : Clear
Atmospheric Pressure: 1011 mb

SPECIFICATIONS : Waste Management Paper No 27
And BS 5930: 1999 'Code of Practice for Site Investigations'

OPERATOR : M. Lewis

EQUIPMENT : GA94 – Infrared gas analyser

RESULTS

Borehole No./Ref.	LEL %	Methane (CH_4) %	Carbon Dioxide (CO_2) %	Oxygen (O_2) %	Gas Flow Rate (l/hr)	Depth to Groundwater (mbgl) / Depth of well	Observations
WS2	0	0.0	0.8	18.7	0.0	0.80 / 4.70	
WS3	0	0.0	0.7	18.5	0.0	1.62 / 3.20	
WS6	0	0.0	2.2	16.8	0.0	2.20 / 4.25	

Notes
L.E.L = Lower Explosive Limit (100% L.E.L. = 5% Flammable Gas)
% = By Volume

Signed (Operator) .....

Signed .....Mark Lewis.....

MONITORING OF SOIL GASES & GROUNDWATER

Abatech International Ltd,
Consulting Engineers
Abatech House, Bull Close Road, Lenton,
Nottingham NG7 2UL
Tel. 0115 986 5022

CONTRACT N° : 04208

CONTRACT : Galvanizing Plant Investigation, Station Road, Yaxley

CLIENT : Clark-Drain Ltd

DATE : Tuesday 21st September 2004

CONDITIONS : Overcast
Atmospheric Pressure: 1016 mb

SPECIFICATIONS : Waste Management Paper No 27
And BS 5930: 1999 'Code of Practice for Site Investigations'

OPERATOR : M. Lewis

EQUIPMENT : GA94 – Infrared gas analyser

RESULTS

Borehole No./Ref.	LEL %	Methane (CH_4) %	Carbon Dioxide (CO_2) %	Oxygen (O_2) %	Gas Flow Rate (l/hr)	Depth to Groundwater (mbgl) / Depth of well	Observations
WS2	0	0.0	3.5	15.0	0.0	NR	
WS3	0	0.0	1.4	14.8	0.0	NR	
WS6	0	0.0	2.3	16.3	0.0	NR	

Notes
L.E.L = Lower Explosive Limit (100% L.E.L. = 5% Flammable Gas)
% = By Volume

Signed (Operator) .....

Signed .....Mark Lewis.....

APPENDIX XI

Hazard Data and Guidance

mg/kg	Arsenic (As)	Cadmium (Cd)	Hexavalent Chromium	Chromium (Cr)	Mercury (Hg)	Lead (Pb)	Nickel (Ni)	Selenium (Se)	Boron (water soluble)	Copper (Cu)	Zinc (Zn)	Polyaromatic Hydrocarbons	Phenols	Free Cyanide	Complex Cyanides	Thiocyanate	Sulphate	Sulphide	Elemental Sulphur	Acidity (pH less than
CLEA Soil Guidance Valves - SGVs																				
Residential Gardens	20	1-8		130	8	450	50	35	-	-	-	*	-	-	-	-	-	-	-	-
Allotments	*20*	*1-8*	-	*130*	*8*	*450*	*50*	*35*	-	-	-	*	-	-	-	-	-	-	-	-
Residential (No Gardens)	20	30	-	200	15	450	75	260	-	-	-	*	-	-	-	-	-	-	-	-
Industrial	*500*	*1400*	-	*5000*	*480*	*750*	*5000*	*8000*	-	-	-	*	-	-	-	-	-	-	-	-
ICRCL																				
Group A -Contaminants which may pose hazards to health																				
Domestic gardens, allotments	10	3	25	600	1	500	-	3	-	-	-	-	-	-	-	-	-	-	-	-
Parks Playing Fields, Open Spaces	40	15	-	1000	20	2000	-	6	-	-	-	-	-	-	-	-	-	-	-	-
Group B - Contaminants which phytotoxic																				
Any uses where plants are grown	-	-	-	-	-	-	70	-	3	130	300	-	-	-	-	-	-	-	-	-
Contaminants associated with former coal carbonisation plants																				
Domestic Gardens, Allotments	-	-	-	-	-	-	-	-	-	-	-	50 *(500)*	5 *(20)*	25 *(500)*	250 *(1000)*	50 *(NL)*	2000 *(10000)*	250 *(1000)*	5000 *(20000)*	pH5 *(pH3)*
Landscaped Areas	-	-	-	-	-	-	-	-	-	-	-	1000 *(10000)*	5 *(20)*	25 *(500)*	250 *(5000)*	50 *(NL)*	2000 *(50000)*	250 *(1000)*	5000 *(20000)*	pH5 *(pH3)*
Buildings, hard cover	-	-	-	-	-	-	-	-	-	-	-	1000 *(10000)*	5 *(1000)*	100 *(500)*	250 *NL*	50 *(NL)*	2000 *(NL)*	250 *(1000)*	5000 *(20000)*	pH5 *(pH3)*

NL = No limit set
Figures in brackets relate to trigger valves
* Tox report for benz(a)pyrene now released

CLEA (Contaminated Land Exposure Assessment)

(From EA website)

In the 1980s, the UK was one of the first countries to propose 'trigger' concentrations of certain contaminants in soil, which if exceeded, would prompt further investigation. In 1992 and in response to a House of Commons Select Committee on the Environment report, the then Department of the Environment initiated research to develop a scientific framework for assessing the risks to human health from land contamination.

The first outputs of this research programme were launched on the 14th March 2002. The package consists of four main reports (CLR 7, 8, 9 and 10) and supporting toxicology reviews and Soil Guideline Values for individual substances. Together, they provide a coherent, consistent approach for assessing risks to human health from contaminated soil. This approach can be used to support Part IIA of the Environmental Protection Act 1990 and the Town and Country Planning Acts. Decisions regarding contaminated land and brownfield sites can now be based on sound science, thus removing doubt and potential blight from many sites.

The development of the CLEA model and the Soil Guideline Values is an on-going programme of work supported by the Department for Environment, Food and Rural Affairs, the Environment Agency, and the Scottish Environmental Protection Agency. Future publications will include evolution of the CLEA model, its technical basis and algorithms, as well as further individual toxicology reviews and Soil Guideline Values to expand the list of substances for which information is already available (see table below).

Soil Guideline Values

When dealing with potentially contaminated sites, the key question is:

does the soil concentration of contaminant X pose a significant risk to human health or the environment?

The new Soil Guideline Values will help to answer this question. They are a tool that can be used to assess the risks posed to human health from exposure to soil contamination resulting from land use. They represent 'intervention values', which indicate to an assessor that soil concentrations above this level could pose an unacceptable risk to the health of site users and that

further investigation and/or remediation is required. Soil Guideline Values combine both authoritative science and policy judgements.

Soil Guideline Values have been derived using the CLEA model (CLEA stands for Contaminated Land Exposure Assessment) according to three typical land uses:

- residential (with and without vegetable growing)
- allotments
- commercial / industrial

Where applied appropriately, exceeding a Soil Guideline Value suggests the need for either further investigation and/or remediation.

Soil Guideline Values can be used in connection with the formal requirements of Part IIA of the Environmental Protection Act 1990 ("the contaminated land regime"). However, they will also be relevant to many situations where the effect of land contamination on human health is an issue such as in planning applications when judging the need for action to ensure that a new use of land does not pose unacceptable risks to health. Soil Guideline Values will supersede ICRCL values (ICRCL stands for the Interdepartmental Committee on the Redevelopment of Contaminated Land) in respect of assessing risks to human health

The Contaminated Land Reports (CLR) 7, 8, 9 & 10

The four main reports launched on the 14th March 2002 have been made available by the Department for Environment, Food and Rural Affairs and the Environment Agency to support the implementation of Soil Guideline Values. Toxicological reviews and Soil Guideline Value reports for a number of potential contaminants are also being published.

The reports are written for technical professionals who are familiar with the assessment and management of the risks posed by land contamination, but who are not necessarily experts in risk assessment. The four reports are published as part of the CLR series of documents (CLR stands for Contaminated Land Reports) and are briefly introduced below.

CLR7 ***Assessment of Risks to Human Health from Land Contamination: An Overview of the Development of Soil Guideline Values and Related Research.***

CLR7 serves as an introduction to the other reports in this series. It sets out the legal framework, in particular the statutory definition of contaminated land under Part IIA of the Environmental Protection Act (EPA) 1990; the development and use of Soil Guideline Values; and references to related research.

CLR8 ***Priority Contaminants for the Assessment of Land.***

This identifies priority contaminants (or families of contaminants), selected on the basis that they are likely to be present on many current or former sites affected by industrial or waste management activity in the United Kingdom in sufficient concentrations to cause harm; and that they pose a risk, to either human health, buildings, water resources or ecosystems. It also indicates which contaminants are likely to be associated with particular industries.

CLR9 ***Contaminants in Soil: Collation of Toxicological Data and Intake Values for Humans.***

This report sets out the approach to the selection of tolerable daily intakes and Index Doses for contaminants to support the derivation of Soil Guideline Values.

CLR10 ***The Contaminated Land Exposure Assessment Model (CLEA): Technical Basis and Algorithms.***

This report describes the conceptual exposure models for each standard land-use that are used to derive the Soil Guideline Values. It sets out the technical basis for modelling exposure and provides a comprehensive reference to all default parameters and algorithms used.

Dutch Guidelines for Contaminated Land 1994

The Dutch Guidelines published in May 1994 are not directly comparable with the previous version (i.e. Moen *et al.*). The more recent guidelines use 'target' values and 'intervention' values to categorise soil and groundwater based on both human and ecological toxicity. The Dutch have developed exposure models, these now used in commercially available risk assessment software (Risc Human). The latter has been used in this report (with reference also to CLEA, which is at present in the early stages of implementation).

The principal change is that where sufficient data is available the new guidelines take account of the soil type in respect of its organic content and its clay content. Using these two components, values for a standard soil (the standard soil being 10% organic and 25% clay) are converted to values for the soil under consideration. There is a cautionary note, however, in that a soil type correction may not be possible unless detailed sampling and testing is carried out for organic and clay content.

The adjustment is different for inorganic and organic contaminants in soil. No adjustment is required for groundwater.

Concentrations above the 'intervention' values indicate serious contamination, i.e. serious reduction in the functional properties of the soil and groundwater in respect of humans, flora and fauna. Exceedance of the 'intervention' values implies that clean up is necessary. In order to determine the urgency of clean up, the actual risks at the location have to be assessed. The 'target' values are the concentrations below which the functional quality of the soil and groundwater is assured. By implication these are also the values, which should be achieved in order to restore the functional properties of the soil and groundwater.

The mid value to replace the old B value is the average of the adjusted 'target' and 'intervention' values. If the results of a preliminary investigation are being assessed, the exceedence of the mid value indicates that a further investigation is required.

The values are related to scale, with a requirement of 25 m^3 of soil or 100 m^3 of water to be contaminated beyond any limit in order for a classification to be made. Thus at least this quantity of material or water must have contamination exceeding the 'intervention' values for clean up to be considered necessary.

Inorganic Contaminants in Soil/Sediment

To obtain the 'adjusted' values for metallic contaminants, including arsenic, against which contamination is judged, a factor is applied to the figures given in the attached Table - Dutch 1. This factor is based on the following formula :

$$I_A = I_S \times \frac{A + (B \times \% \text{ Clay}) + (C \times \% \text{ Organic})}{A + (B \times 25) + (C \times 10)}$$

where

I_A = Intervention Value (adjusted)

I_S = Intervention Value (from Table - Dutch 1)

A, B, C = Constants (from table below)

Metals	Constants		
	A	B	C
Arsenic	15	0.4	0.4
Barium	30	4	0
Cadmium	0.4	0.007	0.021
Chromium	50	2	0
Cobalt	2	0.28	0
Copper	15	0.6	0.6
Mercury	0.2	0.0034	0.0017
Lead	50	1	1
Molybdenum	1	0	0
Nickel	10	1	0
Zinc	50	3	1.5

The clay content in the above formula refers to the weight percentage of mineral constituents that are smaller than 2 □m in relation to total dry soil weight.

In the case of molybdenum no soil type correction is applied.

The appropriate 'target' values are obtained using the same formula and constants.

For the remaining inorganic compounds (Section II in Table - Dutch 1) the 'intervention' and 'target' values are not related to soil characteristics and therefore the values in Table - Dutch 1 apply to all soil types.

Organic Contaminants in Soil/Sediment

For organic contaminants such as pesticides, solvents etc a different calculation is used to adjust the values given in Table - Dutch 1, as follows:

$$I_A = I_S \times \frac{\% \text{ Organic}}{10}$$

The lowest value of organic material that can be used in the equation is 2%. Similarly, the highest value that can be used is 30%. Thus, for soil that contains measured organic material in excess of 30% and less than 2%, concentrations of 30 and 2% respectively should be used. Also, if the adjusted lower target value is less than the detection limit for the material being tested, then the detection limit is used as the lower target value.

Additionally, for PAHs, chlorobenzenes and chlorophenols the group totals can be used to establish, if action is required or not. This is done by adding up all the adjusted totals for the 'intervention' values for the group and adding up the values obtained from the soil testing results. Then the total of the values from testing are divided by the total of the 'intervention' values. If the result is greater than one then the group fails. Thus, it is possible to have one or more individual elements of the group fail but have the group as a whole pass.

The appropriate 'target' values are obtained using the same formula and constants.

Intervention Values for Non-listed Chemicals

To assess chemical not mentioned in Table - Dutch I, a comparison should be made with those chemicals in the table, which are chemically and toxicologically similar.

For individual chlorinated, aliphatic hydrocarbons not included in the table, an 'intervention' value for soil/sediment of 50 mg/kg dry weight is applicable. The 'intervention' values for individual organochlorine pesticides and non-chlorinated pesticides in soil/sediment are 5 and 10 mg/kg dry weight respcetively.

Groundwater

'Target' and 'intervention' values for organic and inorganic compounds in groundwater are considered to be independent of soil type and therefore no adjustment is made.

The combined effects of a group of chemicals in groundwater can be considered by using the following formula. The overall 'intervention' value is exceeded if the summation is greater than or equal to unity.

$$\sum_i \frac{C_i}{I_i} \geq 1$$

Where C_i = measured concentration of a chemical from the specific group

I_i = 'intervention' value for the considered chemical

References

Moen J E T, Cornet J P and Evers C W A : 1986 : **Soil protection and remedial actions, criteria for decision-making and standardisation of requirements**. First International TNO Conference on Contaminated Soil, Utrecht, The Netherlands, pp 441-448.

Dutch Ministry of Housing, Physical Planning and Environment: 1994: **Leidraad Bodembescherming, Ministerie van Volkshuisvesting**, Ruimtelijke Ordening en Milieubeheer, Directoraat - General voor de Milieuhygiene, Directie Drinkwater, Water, Bodem, The Netherlands.

TABLE - Dutch 1

Indicative values for concentration levels. For soils the values in this table should be adjusted as appropriate (see text of this appendix). No adjustment is required for groundwater.

Presence in:	Soil (mg/kg dry weight)		Groundwater (µg/l)	
Substance	**T**	**I**	**T**	**I**
I Metals				
Chromium	100	380	-	30
Cobalt	20	240	20	100
Nickel	35	210	15	75
Copper	36	190	15	75
Zinc	140	720	65	800
Arsenic	29	55	10	60
Molybdenum	10	200	5	300
Cadmium	0.8	12	0.4	6
Barium	200	625	50	625
Mercury	3	10	0.05	0.3
Lead	85	530	15	75
II Inorganic pollutants				
Cyanides (free)	1	20	5	1500
Cyanides (complex pH<5)	5	650	10	1500
Cyanides (complex pH>5)	5	50	10	1500
Thiocyanate		20		1500
III Aromatic compounds				
Benzene	0.05(d)	1	0.2	30
Ethylbenzene	0.05(d)	50	0.2	150
Phenol	0.05(d)	40	0.2	2000
Cresols	-	5	-(d)	200
Toluene	0.05(d)	130	0.2	1000
Xylene	0.05(d)	25	0.2	70
Catechol		20	-(d)	1250
Resorcinol		10		600
Hydroquinone		10		800
IV Polycyclic aromatic hydrocarbons (PAH)				
PAH (sum of 10)	1	40	-	-
Naphthalene			0.1	70
Anthracene			0.02	5
Phenanthrene			0.02	5
Fluoranthene			0.005	1
Benzo(a)anthracene			0.002	0.5
Chrysene			0.002	0.05
Benzo(a)pyrene			0.001	0.05
Benzo(ghi)perylene			0.0002	0.05
Benzo(k)fluoranthene			0.001	0.05
Indeno(1,2,3-cd)pyrene			0.0004	0.05

(d) = detection limit

Indicative values: T - Target value
I - Intervention value

TABLE - Dutch 1 Continued

Indicative values for concentration levels. For soils the values in this table should be adjusted as appropriate (see text of this appendix). No adjustment is required for groundwater.

Presence in:	Soil (mg/kg dry weight)		Groundwater (µg/l)	
Substance	**T**	**I**	**T**	**I**
V Chlorinated hydrocarbons				
Dichloromethane	-(d)	20	0.01(d)	1000
Trichloromethane	0.001	10	0.01(d)	400
Tetrachloromethane	0.001	1	0.001(d)	10
1,2-dichloroethane		4	0.01(d)	400
Trichloroethene	0.001	60	0.01(d)	500
Tetrachloroethene	0.01	4	0.01(d)	40
Vinyl chloride		0.1		0.7
Chlorobenzenes (total)		30		-
Monochlorobenzene	(d)	-	0.01(d)	180
Dichlorobenzene (total)	0.01	-	0.01(d)	50
Trichlorobenzene (total)	0.01	-	0.01(d)	10
Tetrachlorobenzene (total)	0.01	-	0.01(d)	2.5
Pentachlorobenzene	0.0025	-	0.01(d)	1
Hexachlorobenzene	0.0025	-	0.01(d)	0.5
Chlorophenols (total)		10		-
Monochlorophenol (total)	0.0025	-	0.25	100
Dichlorophenol (total)	0.003	-	0.08	30
Trichlorophenol (total)	0.001	-	0.025	10
Tetrachlorophenol (total)	0.001	-	0.01	10
Pentachlorophenol	0.002	5	0.02	3
Chloronaphthalene		10		6
Polychlorinated biphenyls (sum of)	0.02	1	0.01(d)	0.01
VI Pesticides				
DDT + DDD + DDE (sum)	0.0025	4	(d)	0.01
Drins (sum of 3)		4		0.1
HCH-compounds (sum of 4)		2		1
Carbaryl		5	0.01(d)	0.1
Carbofuran		2	0.01(d)	0.1
Maneb		35	(d)	0.1
Atrazine	0.05 µg/kg	6	0.0075	150
Aldrin	0.0025		(d)	
Dieldrin	0.0005		0.02 µg/kg	
Endrin	0.001		(d)	
VII Miscellaneous substances				
Cyclohexanone	0.1	270	0.5	15000
Phthalates (total)	0.1	60	0.5	5
Mineral oils	50	5000	50	600
Pyridine	0.1	1	0.5	3
Styrene	0.1	100	0.5	300
Tetrahydrofuran	0.1	0.4	0.5	1
Tetrahydrothiophene	0.1	90	0.5	30

Source: Soil Clean-up Guideline, 1983

(d) = detection limit

Indicative values: T - Target value
I - Intervention value

ICRCL Trigger Concentrations for the Assessment of Contaminated Land

These guidelines (now superseded by CLEA), were issued by the Interdepartmental Committee on the Redevelopment of Contaminated Land (ICRCL Guidance Note 59/83: 1987) and introduced the concept of "trigger" concentrations ("threshold" and "action") to assist in determining the extent to which a site is contaminated. Assigned "trigger" concentrations vary depending upon the proposed end use of the land.

For domestic developments where risks of direct ingestion of soil or consumption of contaminated food grown on the site exist, the acceptable levels are lower than for commercial or industrial development where these risks are reduced. Where ICRCL do not give "trigger" levels for buildings, "trigger" levels for open spaces have instead been used for guidance.

ICRCL Guidance Note 59/83 defines three possible concentration zones as indicated below which assist in deciding whether the land is suitable for its intended end use or whether remedial measures are required.

(i) Below the "threshold trigger" concentration, contamination can normally be regarded as presenting no risk for a particular end use even though the level of the contaminant may be higher than the background level typical of the area. No remedial action is therefore required.

(ii) Between the "threshold trigger" and "action trigger" levels the degree of contamination may not necessarily present a risk for a particular end use but evaluation of any potential risk is required in order to determine whether or not any remedial action should be undertaken.

(iii) Above the "action trigger" level the degree of contamination is such that its presence is undesirable or even unacceptable and remedial action should be taken. The site should be regarded as contaminated.

If the remediation options for a particular end-use are unacceptable then a re-assessment may be necessary in order to examine alternative uses of the site.

The tentative trigger levels for contaminant concentrations proposed in the ICRCL Guidelines are shown in the attached Tables ICRCL 1 and ICRCL 2. ICRCL distinguish between Group A contaminants,

which may pose hazards to human health, and Group B contaminants which are phytotoxic (i.e. they are toxic to plants) but not normally hazardous to human health. The note also covers a range of other inorganic and organic contaminants commonly associated with former gas works sites.

It should be noted that not all contaminants are covered by Guidance Note 59/83. Also, "action trigger" levels are not given for many of the contaminants that are covered.

References

ICRCL: 1987: **Guidance on the assessment and redevelopment of contaminated land.** ICRCL 59/83. Interdepartmental Committee on the Redevelopment of Contaminated Land, DoE, London.

BRE: 1996: **Sulphate and acid resistance of concrete in the ground. BRE Digest 363.** Building Research Establishment. – (now superceded by BRE Special Digest 1)

TABLE - ICRCL 1

Tentative 'Trigger Concentrations' for selected inorganic contaminants (reproduced from ICRCL 59/83)

Contaminant	Proposed Uses	Trigger Concentrations	
Group A: Contaminants which may pose hazards to health.		**Threshold** (mg/kg air - dried soil)	**Action**
Arsenic	Domestic gardens, allotments	10	*
	Parks, playing fields, open space	40	*
Cadmium	Domestic gardens, allotments	3	*
	Parks, playing fields, open space	15	*
Chromium (hexavalent) (note 1)	Domestic gardens, allotments	25	*
	Parks, playing fields, open space	25	*
Chromium (total)	Domestic gardens, allotments	600	*
	Parks, playing fields, open space	1000	*
Lead	Domestic gardens, allotments	500	*
	Parks, playing fields, open space	2000	*
Mercury	Domestic gardens, allotments	1	*
	Parks, playing fields, open space	20	*
Selenium	Domestic gardens, allotments	3	*
	Parks, playing fields, open space	6	*

Group B: Contaminants, which are phytotoxic but not normally hazards to health.			**Threshold** (mg/kg air - dried soil)	**Action**
Boron (water - soluble)	(note 3)	Any uses where plants are to be grown (note 2, 6)	3	*
Copper (total)	(note 4,5)	Any uses where plants are to be grown (note 2, 6)	130	*
Nickel (total)	(note 4,5)	Any uses where plants are to be grown (note 2, 6)	70	*
Zinc (total)	(note 4,5)	Any uses where plants are to be grown (note 2, 6)	300	*

Notes

i) All values are for concentrations determined on "spot" samples based on an adequate site investigation carried out prior to development. They do not apply to analysis of averaged, bulked or composited samples, nor to sites which have already been developed. All proposed values are tentative.

ii) The values in Group B are those above which phytotoxicity is possible.

iii) Notes on Table ICRCL 1:

* Action concentrations will be specified in the next edition of ICRCL 59/83.

1. Soluble hexavalent chromium extracted by 0.1M HCl at 37°C; solution adjusted to pH 1.0 if alkaline substances present.

2. The soil pH value is assumed to be about 6.5 and should be maintained at this value. If the pH falls, the toxic effects and the uptake of these elements will be increased.

3. Determined by standard ADAS method (soluble in hot water).

4. Total concentration (extractable by $HNO_3/HClO_4$).

5. The phytotoxic effects of copper, nickel and zinc may be additive. The trigger values given here are those applicable to the 'worst-case'; phytotoxic effects may occur at these concentrations in acid, sandy soils. In neutral or alkaline soils phytotoxic effects are unlikely at these concentrations.

6. Grass is more resistant to phytotoxic effects than are most other plants and its growth may not be adversely affected at these concentrations.

TABLE - ICRCL 2

Tentative 'Trigger Concentrations' for contaminants associated with former coal carbonisation sites (reproduced from ICRCL 59/83)

Contaminants	Proposed Uses	Trigger Concentrations	
		Threshold (mg/kg air - dried soil)	Action (mg/kg air - dried soil)
Polyaromatic hydrocarbons (note 1,2)	Domestic gardens, allotments play areas	50	500
	Landscaped areas, buildings, hard cover	1000	10000
Phenols	Domestic gardens, allotments	5	200
	Landscaped areas, buildings, hard cover	5	1000
Free cyanide	Domestic gardens, allotments Landscaped areas	25	500
	Buildings, hard cover	100	500
Complex cyanides	Domestic gardens, allotments	250	1000
	Landscaped areas	250	5000
	Buildings, hard cover	250	NL
Thiocyanate (note 2)	All proposed uses	50	NL
Sulphate	Domestic gardens, allotments Landscaped areas	2000	10000
	Buildings (note 3)	2000 (3)	50000 (3)
	Hard cover	2000	NL
Sulphide	All proposed uses	250	1000
Sulphur	All proposed uses	5000	20000
Acidity (pH less than)	Domestic gardens, allotments Landscaped areas	pH 5	pH 3
	Buildings, hard cover	NL	NL

Notes

i) All values are for concentrations determined on "spot" samples based on an adequate site investigation carried out prior to development. They do not apply to analysis of averaged, bulked or composited samples, nor to sites which have already been developed.

ii) Many of the values are preliminary. They should not be applied without reference to the current edition of the report "Problems Arising from the Redevelopment of Gas Works and Similar Sites".

iii) Notes on Table ICRCL 2 :

NL No limit set as the contaminant does not pose a particular risk for this use.

1. Used here as a marker for coal tar, for analytical reasons, see "Problems Arising from the Redevelopment of Gas Works and Similar Sites. Annex A1".

2. See "Problems Arising from the Redevelopment of Gas Works and Similar Sites" for details of analytical methods.

3. See also BRE Digest 363: 1996: Sulphate and acid resistance of concrete in the ground.

Guidelines (Dutch) for the Assessment of Contaminated Land after Moen et al 1986

In order to deal in a more uniform way with contaminated sites in Holland, the Dutch Ministry of Housing, Physical Planning and Environment published Soil Cleanup Guidelines in 1983. Details of these guidelines were published by J E T Moen and his co - authors at the First TNO Conference on Contaminated Soil which was held in Utrecht, The Netherlands.

The paper states that the guidelines offer a set of criteria for assessing the degree of contamination and the urgency for action. The key factors are :

- the nature and concentrations of the contaminating substances
- the local situation
- the use and function of the soil

No factors should be treated independently in judging the necessity of short term or maybe longer term action. The first two are most important for determining whether remedial action is necessary because the contamination poses a threat to human health or the environment. The third factor in combination with the first two determines the urgency of the problem.

In respect of the first factor, numerical index values are used. These are the A B C values where A denotes the reference value indicating uncontaminated soil, B indicates the need for investigation and C indicates a need for clean up.

These guidelines where revised in 1994 and new guidelines were issued. However, the new version requires knowledge of the clay and organic content of the soil in order to be able to adjust the tabulated values. No adjustment is required in respect of waters. In the absence of information on the soil, the Moen et al values can provide some indication of cleanup requirements although it should be recognised that they are no longer current.

Reference

Moen J E T, Cornet J P and Evers C W A : 1986 : **Soil protection and remedial actions, criteria for decision making and standardisation of requirements.** First TNO Conference on Contaminated Soil, Utrecht, The Netherlands, 1985.

TABLE - Moen 1

Examination framework for several soil pollutants : indicative values for concentration levels

Presence in:	Soil (mg/kg dry weight)			Groundwater (µg/l)		
Substance	**A**	**B**	**C**	**A**	**B**	**C**
I Metals						
Chromium	100	250	800	20	50	200
Cobalt	20	50	300	20	50	200
Nickel	50	100	500	20	50	200
Copper	50	100	500	20	50	200
Zinc	200	500	3000	50	200	800
Arsenic	20	30	50	10	30	100
Molybdenum	10	40	200	5	20	100
Cadmium	1	5	20	1	2.5	10
Tin	20	50	300	10	30	150
Barium	200	400	2000	50	100	500
Mercury	0.5	2	10	0.2	0.5	2
Lead	50	150	600	20	50	200
II Inorganic pollutants						
Ammonia (as N)	-	-	-	200	1000	3000
Fluorine (total)	200	400	2000	300	1200	4000
Cyanide (total free)	1	10	100	5	30	100
Cyanide (total complex)	5	50	500	10	50	200
Sulphur (total)	2	20	200	10	100	300
Bromine (total)	20	50	300	100	500	2000
Phosphate (as P)	-	-	-	50	200	700
III Aromatic compounds						
Benzene	0.01	0.5	5	0.2	1	5
Ethylbenzene	0.05	5	50	0.5	20	60
Toluene	0.05	3	30	0.5	15	50
Xylene	0.05	5	50	0.5	20	60
Phenols	0.02	1	10	0.5	15	50
Aromatics (total)	0.1	7	70	1	30	100
IV Polycyclic aromatic compounds (PCA's)						
Naphthalene	0.1	5	50	0.2	7	30
Anthracene	0.1	10	100	0.1	2	10
Phenanthrene	0.1	10	100	0.1	2	10
Fluoranthene	0.1	10	100	0.02	1	5
Pyrene	0.1	10	100	0.02	1	5
Benzo(a)pyrene	0.05	1	10	0.01	0.2	1
Total PCA's	0.1	20	200	0.2	10	40
V Chlorinated organics						
Aliphatic chlor. comp. (indiv.)	0.1	5	50	1	10	50
Aliphatic chlor. comp. (total)	0.1	7	70	1	15	70
Chlorobenzenes (indiv.)	0.05	1	10	0.02	0.5	2
Chlorobenzenes (total)	0.05	2	20	0.02	1	5
Chlorophenols (indiv.)	0.01	0.5	5	0.01	0.3	1.5
Chlorophenols (total)	0.01	1	10	0.01	0.5	2
Chlorinated PCA (total)	0.05	1	10	0.01	0.2	1
PCB (total)	0.05	1	10	0.01	0.2	1
EOCl (total)	0.1	8	80	1	15	70

Indicative values:
A - Reference value
B - Indicative value for further investigation
C - Indicative value for cleaning-up

TABLE - Moen 1 Continued

Examination framework for several soil pollutants : indicative values for concentration levels

Presence in:	Soil (mg/kg dry weight)			Groundwater (µg/l)		
Substance	**A**	**B**	**C**	**A**	**B**	**C**
VI Pesticides						
Organic chlorinated - (indiv.)	0.1	0.5	5	0.05	0.2	1
Org. chlorinated - (total)	0.1	1	10	0.1	0.5	2
Pesticides (total)	0.1	2	20	0.1	1	5
VII Other pollutants						
Tetrahydrofuran	0.1	4	40	0.5	20	60
Pyridine	0.1	2	20	0.5	10	30
Tetrahydrothiophene	0.1	5	50	0.5	20	60
Cyclohexanone	0.1	6	60	0.5	15	50
Styrene	0.1	5	50	0.5	20	60
Fuel	20	100	800	10	40	150
Mineral Oil	100	1000	5000	20	200	600

Indicative values:
A - Reference value
B - Indicative value for further investigation
C - Indicative value for cleaning-up

Notes:

* to be used only in relation with the local situation and the use and function of the soil as explained in the accompanying paper

** in the context of cleaning-up conditions.

Bibliography

Dutch Ministry of Housing Spatial Planning and Environment Intervention values – Soil Quality Standards

US EPA IRIS database

Total Petroleum Hydrocarbon Criteria Working Group Series (Vols. 1 to 5).

BRE (1991) Construction of new buildings on gas-contaminated land. BRE report 212.

CIRIA Report 149 – Protecting Development from Methane. G B Card (1995).

References

Wilson S A and Card G B 1999. Reliability and risk in gas protection design. Ground Engineering, February 1999.

Guidance documents

ICRCL Guidance note 59/83 – Guidance on the assessment and redevelopment of contaminated land.

Guidance for the safe development of Housing on Land Affected by Contamination. EA & NHBC (EA R & D Publication 66) 2000.

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District Council

 B6.3

ENGLISH NATURE

Bedfordshire & Cambridgeshire Team
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Peterborough PE2 5UR
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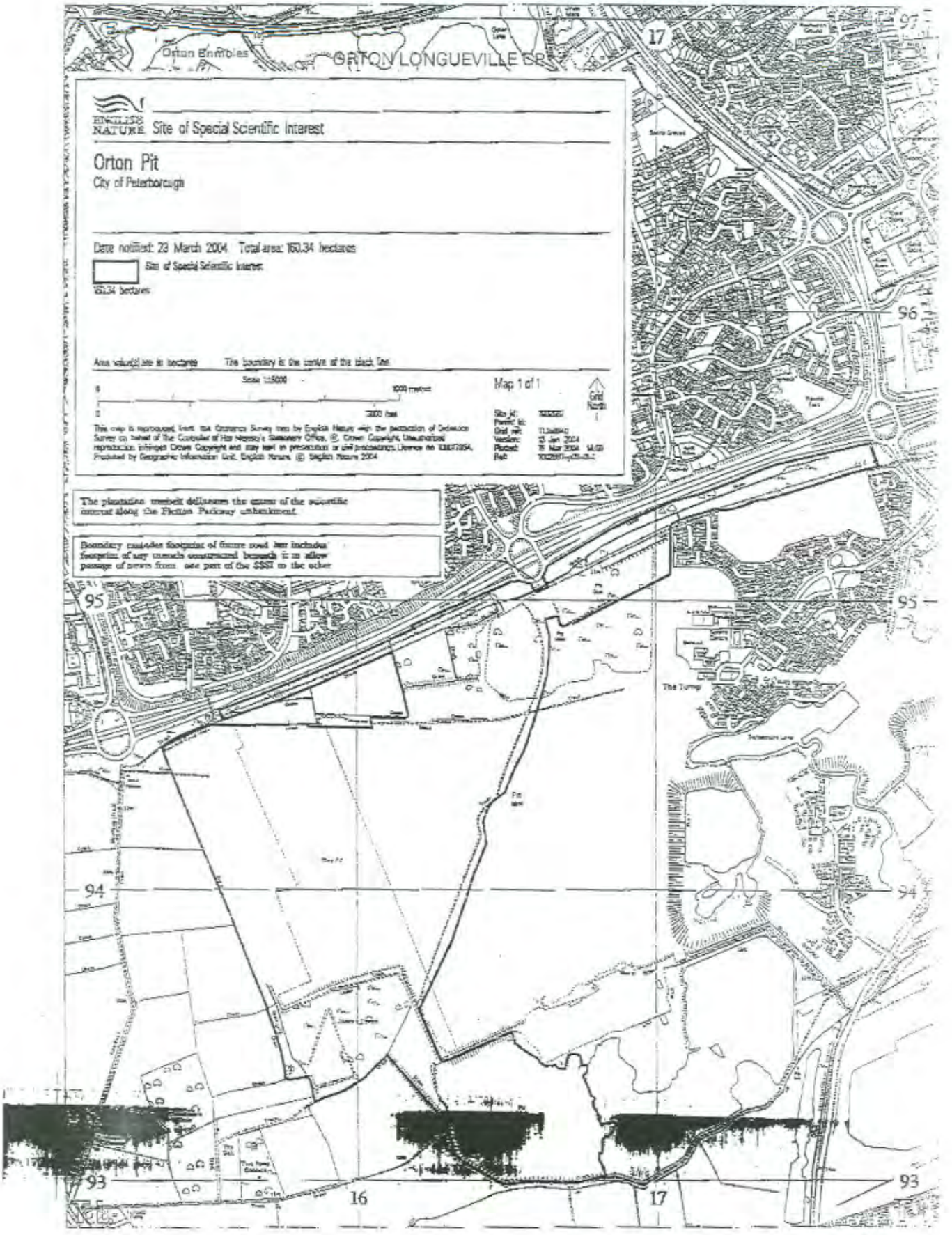
To: Mr GILBEY	**Date:** 14/6/04
Fax N°:	**N°. of pages (Including this one):** 4
From: JIM GAMMIE	

Message:

Dear Mr Gilbey

Please find attached the citation and map for Otter Pit SSSI. This should provide you with the information relevant to this site. There are no other SSSI's within 2kms of your works site. Please get in touch if you require further information.

Jim Gammie


Orton Brimbles
ORTON LONGUEVILLE CP
ENGLISH NATURE
Site of Special Scientific Interest
Orton Pit
City of Peterborough
Date notified: 23 March 2004 Total area: 160.34 hectares
Site of Special Scientific Interest
160.34 hectares
Area value(s) are in hectares
The boundary is the centre of the black line
Scale 1:5000
1000 metres
3000 feet
Map 1 of 1
Grid North
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The plantation treebelt delineates the extent of the scientific interest along the Fletton Parkway embankment.
Boundary excludes footprint of future road but includes footprint of any tunnels constructed beneath it to allow passage of rivers from one part of the SSSI to the other
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17
The Turnip

Site name: Orton Pit **County:** City of Peterborough

District: City of Peterborough

Status: Site of Special Scientific Interest (SSSI) notified under section 28C of the Wildlife and Countryside Act 1981, as inserted by Schedule 9 to the Countryside & Rights of Way Act 2000.

Local Planning Authority: Peterborough City Council

National Grid Reference: TL 163940 **Area:** 160.34 ha

Ordnance Survey Sheet: 1:50,000: 142 **1:10,000:** TL 19 NE, SE

Date Notified: 23 March 2004

Reasons for Notification:

Orton Pit is of special scientific interest by reason of its population of great crested newts *Triturus cristatus*, a network of meso-eutrophic standing water habitats which support an assemblage of nationally rare and scarce charophyte (stonewort) species, and exposures of Middle Jurassic rocks, namely the sequence through the Peterborough Member of the Lower Oxford Clay.

General description:

Orton Pit contains extensive areas of former brick clay workings comprising a series of linear spoil heaps and pools referred to locally as 'ridge and furrow.' The method of clay working used has provided a varied topography which has encouraged the development of a mosaic of habitats, in particular both open and dense scrub, rough grassland, ruderal vegetation, emergent and aquatic vegetation and open water pools.

Great crested newts

The particular combination and distribution of aquatic and terrestrial habitats provide ideal breeding, foraging and hibernation conditions for the great crested newt. Numbers of newts recorded are unusually high and constitute the largest known population in Britain. The newts depend on water for breeding, which takes place in spring, and particularly favour moderately deep, well-vegetated pools without fish. The great number (over 300) and variety of pools on the site, which are rain-fed and hence of high water quality, provide extremely good conditions for newts. During the first two or three years of life before breeding starts, and outside the breeding season, great crested newts are dependent on terrestrial habitats to provide foraging areas and places to hibernate. The habitats which occur around the pools on this site are as important as the presence of suitable pools.

Standing open water

The standing open water habitats of the site are representative of a type of water body which is very rare throughout the British Isles. The manner in which the clay was extracted has resulted in a series of linear ponds created over a considerable period of time. The ponds are consequently of varying ages and represent a range of successional stages. Dissolved salts from the exposed clay substrate of the ponds have resulted in a water chemistry that mimics the slightly saline conditions more typically associated with coastal lagoons and lochs in the Northern and Western Isles of Scotland. Reflecting the range of hydro-chemical conditions, a corresponding aquatic flora has developed with communities according to Types 7 (meso-oligohaline) and 10 (eutro[illegible] British standing water classification system.

The open water of the ponds is [redacted] pondweeds *Potamogeton* species (fen pondweed *P. coloratus*, fennel [redacted] *natus*, lesser pondweed *P. pusillis* and broad-leaved pondweed *P. natans*) [redacted] of *Chara* species, mare's-tail *Hippuris vulgaris* and spiked water-milfoil [redacted] *spicatum*. The pond margins are typical of eutrophic or brackish conditions and comprise common reed *Phragmites australis*, common club-rush *Schoenoplectus lacustris*, grey club-rush *S. tabernaemontani*, lesser bulrush *Typha angustifolia* and bulrush *T. latifolia*.

Charophytes

The site is particularly noteworthy for the number of stonewort (charophyte) species present. The nationally rare bearded stonewort *Chara canescens*, once thought extinct in Great Britain and listed in Schedule 8 to the Wildlife and Countryside Act 1981 (as amended), is most associated with the youngest ponds on the site. Another nine species of stonewort occur on the site, four of which are nationally scarce – hedgehog stonewort *Chara aculeolata*, lesser bearded stonewort *C. curta*, smooth stonewort *Nitella flexilis* and clustered stonewort *Tolypella glomerata*.

Geology

This disused brickpit provides recorded evidence for part of the Peterborough Member of the Oxford Clay, of Middle Jurassic age. It is one of three sites in the Peterborough area that form the Peterborough Brickpits Geological Conservation Review (GCR) site. There are few exposures remaining at Orton Pit, but the site contains an unexcavated reserve of importance for future research. Research undertaken when the site was being actively worked showed that the clays and shales seen here contain a rich fossil fauna of ammonites, belemnites and bivalves. In addition, a number of significant specimens of fossil fish and reptiles have been found. The sequence of sediments and their associated fossils have been correlated with other sites in the area, forming an important analysis of this part of the Oxford Clay. The three sites forming the Peterborough Brickpits GCR site are taken as being representative of the Peterborough Member.

In addition to the reasons for notification described above, the site also supports high numbers of smooth newt *Triturus vulgaris* (an important prey species for great crested newt) and large populations of common toad *Bufo bufo*, common frog *Rana temporaria*, common lizard *Lacerta vivipara* and grass snake *Natrix natrix*. The site supports protected mammals including badger *Meles meles*, water vole *Arvicola terrestris* and foraging bats. Fifteen species of dragonfly and damselfly have been recorded, twelve of which have bred. Aquatic invertebrates recorded include thirteen nationally notable and one Red Data Book water beetle. Two nationally scarce vascular plants occur, namely fen pondweed *Potamogeton coloratus* and golden dock *Rumex maritimus*.

[redacted]

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LA-IPPC12/92 B5.2 GP18.

The Galvanising Process.

Galvanising is a process that after chemical cleaning, applies a zinc coating to iron or steel products and components, to prevent corrosion.

The cleaning operation involves immersing the items in a solution of Acid and Water, to this other chemicals are added to (a) prevent the acid eating away the product or component, (b) to remove oil and or other oil based contaminants.

Following the cleaning process the parts are then dipped in a water rinse tank followed by dipping in a zinc ammonium chloride "flux" solution.

At this stage the item is then ready for the galvanising operation, this involves immersing in molten zinc at a temperature of 450° Centigrade. The work is left immersed in the zinc until it reaches the temperature of the zinc, the immersion time is dependant on the size and thickness of the individual item.

The final stage of the galvanising operation is to cool or "quench" the items by dipping into a further solution mainly water, with an addition of a compound that enhances the appearance of the coating and prevents oxides forming.

Receiving and storing chemicals on site.

Bulk transported liquid chemicals are pumped directly into bunded* storage tanks.

Container Delivered chemicals are stored in locked storage containers and checked weekly for damage or deterioration.

Usage of chemicals.

When required the chemicals are poured or pumped into chemical resistant treatment tanks, that are also contained within a chemically resistant bund.

Fumes.

When parts are immersed into the molten zinc, fume is created that contains particulate matter. This fume is contained within an enclosure, around the galvanising bath, it is extracted and passed through a treatment system that filters out the particulates down to a maximum of 15 milligrams per metre^3.

* The term "bund" refers to a method of liquid storage in a tank or vessel, whereby the tank or vessel is situated inside a further chemically resistant containment area, this area can contain a minimum of 110% of the volume of the largest tank or vessel. This is so that in the event of the tank or vessel "failing" and liquid leaking it is contained and can not contaminate the environment.

CLARK-DRAIN
THE DRAINAGE COMPANY

GP19

Huntingdonshire
District Council

EPA 24/96

ENVIRONMENTAL PROTECTION ACT 1990, sect.10

NOTICE OF VARIATION OF AUTHORISATION

To Clarksteel Galvanising Limited

of Station Road, Yaxley, Peterborough PE7 3EG

The Huntingdonshire District Council ("the Council") has decided that the authorisation to carry out a prescribed process, namely the hot dip galvanising of mild steel components

at the premises known as Clarksteel Galvanising Ltd, Station Road, Yaxley, Peterborough

granted to you by the Council on the 21st day of December 19 92 under reference 12/92 should be varied in the following manner*

1. As detailed on the attached schedule 1 to this Notice

2. The authorisation as varied by this Notice is set out in Schedule 2.

The date(s) on which the variation(s) are to take effect are†

All variations have immediate effect unless otherwise specified.

continued overleaf

Delete any words in square brackets which do not apply

* Specify the variation(s) to the authorisation.
† Specify the effective dates for each variation.

~~YOU ARE REQUIRED, within a period of _____ from the date of service on you of this notice to notify the Council of the action (if any) which you propose to take to ensure that the process is carried on in accordance with the authorisation as varied by this notice.~~

~~[The Council also requires you to pay the sum of £_____ being the prescribed fee, within a period of _____ from the date of service of this notice on you.]~~

~~[In the opinion of the Council, the action to be taken by you in consequence of this variation notice will involve a substantial change** in the manner in which the process is being carried on.]~~

Dated 10th January 1997

(Signed) Elizabeth A Wilson

Designation DIRECTOR OF OPERATIONAL SERVICES

(the officer appointed for this purpose)

address for all communications:

Delete any words in square brackets which do not apply

NOTE

You have a right of appeal against this notice to the Secretary of State for [the Environment] [Wales]. If you wish to appeal you must do so in writing within a period of two months beginning with the date of this notice. You must set out the grounds for your appeal and send to the Secretary of State a copy of this notice, together with copies of all relevant documents and correspondence. You should also indicate whether you wish the appeal to be dealt with at a hearing or on the basis of written representations. A copy of your notice of appeal must also be sent to the Council.

** "Substantial change" is defined in section 10(7) of the Environmental Protection Act 1990 as "a substantial change in the substances released from the process or in the amount or any other characteristic of any substance so released"; and the Secretary of State may give directions to enforcing authorities as to what does or does not constitute a substantial change in relation to processes generally, any description of process or any particular process.

Ref: EPA 24/96

ENVIRONMENTAL PROTECTION ACT 1990, PART I

SCHEDULE 1
TO VARIATION NOTICE REFERENCE 24/96

CLARKSTEEL GALVANISING LIMITED
STATION ROAD
YAXLEY
PETERBOROUGH
PE7 3EG

1 The description of the process has been amended to take account of the upgrading of the plant.

2 Conditions 1, 2 and 3 are deleted.

3 Existing condition 6 has been renumbered condition 3 and amended to read as follows:-

"3 Emissions to air from the main process chimney shall not exceed the following emission concentration limits at reference conditions, 273k101.3 kPa and without correction for water vapour and expressed as 15 minute mean concentrations.

Emission	*Concentration Limit*
Total particulate matter (from galvanising baths)	*15 mg/m³*
Chloride (as hydrogen chloride excluding particulate matter)".	*30 mg/m³*

4 Existing condition 7 has been renumbered condition 4 and amended to read as follows:-

"4 No emission from any source at the premises other than the main process chimney shall exceed the following concentration limit at reference conditions, 273k, 101.3 kPa and without correction for water vapour.

Emission	*Concentration Limit*
Particulate matter	*50 mg/m³".*

5 Existing condition 10 is renumbered condition 7 and amended to read as follows:-

"7 (a) The main process chimney shall be continuously indicatively monitored for particulate matter emissions. In the event of increased dust emissions visual and audible alarms shall be activated.

(b) With effect from 1 October 1996, a reference level shall be agreed with the local authority at which the alarms activate. Emission events which lead to the activation of the alarms shall be automatically recorded".

6 Existing condition 12 is renumbered condition 9 and amended to read as follows:-

"9 Emissions to air from the main process chimney shall be monitored once a year for the following pollutant concentrations using analytical methods to be approved in advance by the local authority.

Particulate matter.

Chlorides (as hydrogen chloride excluding particulate matter)."

7 The following condition shall be inserted following condition 9:-

"10 The local authority shall be advised at least 7 days in advance of any periodic monitoring exercise to determine compliance with emission limit values, of the provisional time and date of the monitoring, the pollutants to be tested and the methods to be used."

8 Existing condition 17 is renumbered 15 and amended to read as follows:-

"15 The rate of extraction at the galvanising bath local exhaust ventilation system shall be adequate to contain any fumes generated."

9 Existing conditions 20, 21, 22 and 38 are deleted.

10 Existing condition 37 is renumbered condition 32 and amended to read as follows:-

"32 Any records required to be kept by the above conditions shall be retained at the workplace for a minimum of 2 years and made available for examination by the local authority".

11 The following existing conditions are renumbered:-

Condition 4 is renumbered condition 1.
Condition 5 is renumbered condition 2.
Condition 8 is renumbered condition 5.
Condition 9 is renumbered condition 6.
Condition 11 is renumbered condition 8.
Condition 13 is renumbered condition 11.
Condition 14 is renumbered condition 12.
Condition 15 is renumbered condition 13.
Condition 16 is renumbered condition 14.
Condition 17 is renumbered condition 15.
Condition 18 is renumbered condition 16.
Condition 19 is renumbered condition 17.
Condition 23 is renumbered condition 18.
Condition 24 is renumbered condition 19.
Condition 25 is renumbered condition 20.
Condition 26 is renumbered condition 21.
Condition 27 is renumbered condition 22.
Condition 28 is renumbered condition 23.
Condition 29 is renumbered condition 24.
Condition 30 is renumbered condition 25.
Condition 31 is renumbered condition 26.
Condition 32 is renumbered condition 27.
Condition 33 is renumbered condition 28.
Condition 34 is renumbered condition 29.
Condition 35 is renumbered condition 30.
Condition 36 is renumbered condition 31.
Condition 37 is renumbered condition 32.

ENVIRONMENTAL PROTECTION ACT 1990, PART I

SCHEDULE 2
TO VARIATION NOTICE REFERENCE 24/96

CLARKSTEEL GALVANISING LIMITED
STATION ROAD
YAXLEY
PETERBOROUGH
PE7 3EG

HUNTINGDONSHIRE DISTRICT COUNCIL

ENVIRONMENTAL PROTECTION ACT 1990, PART I

THE ENVIRONMENTAL PROTECTION (PRESCRIBED PROCESSES AND SUBSTANCES) REGULATIONS 1991 (AS AMENDED)

THE ENVIRONMENTAL PROTECTION (APPLICATIONS, APPEALS AND REGISTERS) REGULATIONS 1991 (AS AMENDED)

Authorisation 12/92
(As amended by Variation Notice
/96 dated 1996.)

(I) NAME AND ADDRESS OF OPERATOR:

Clarksteel Galvanising Limited
Station Road
Yaxley
PETERBOROUGH
PE7 3EG

Reg No: 1317422

(II) ADDRESS OF AUTHORISED PROCESS:

Station Road
Yaxley
PETERBOROUGH
PE7 3EG

(marked in red on the attached drawing reference number 12/92/A)

Huntingdonshire District Council hereby authorises Clarksteel Galvanising Limited to operate a prescribed hot dip galvanising process as described below and in accordance with the following conditions which are based upon guidance from the Secretary of State in Process Guidance Note PG 2/2 (96):

Description of Process

The process is prescribed for Local Authority air pollution control under Section 2.2 of Schedule 1 to the Environmental Protection (Prescribed Processes and Substances) Regulations 1991, S.I. 472 (as amended).

The lay-out of the site is set out in diagrammatic form on the attached drawing 12/92/B and the lay-out of the galvanising plant is shown on the attached drawing 12/92/C/ For ease of reference, the various tanks involved in the process are colour coded on the latter drawing.

The mild steel components to be galvanised are either manufactured on site at the Clarksteel fabrication workshop or are brought in from outside fabricators. The process is in operation between 7 am - 5 pm and 8.30 pm - 5 am Monday to Friday.

The first step of the process is the preparation of components by wiring up in a manner suitable for mechanical handling and for optimum presentation to the process tanks.

All components are dipped into cold hydrochloric acid of approximately 14% strength. The hydrochloric acid has an additive to prevent the need for pre-cleaning of the components. There are 7 acid pickling tanks with a combined capacity of 11,000 gallons. The tanks are of various dimensions and the components are dipped into the most appropriate sized and available tank for between 1 and 3 hours.

After pickling, the components are moved to the galvanising bath where they are immersed in molten zinc at 450°C for 2 to 4 minutes. The bath has a capacity of 90 tonnes.

The galvanising bath is totally enclosed and connected to a local exhaust system. The enclosure over the bath has doors at one end that open to allow the components to be placed over the bath, once the component is in place the doors are closed and the component lowered into the molten zinc.

The exhaust ventilation system is connected to an Airmaster RJX 225/A/15-12 bag house filtration system. This exhausts via the process chimney which discharges 3m above the roof ridge of the building.

On completion of galvanising the components are withdrawn from the bath and moved to a quench tank where they are cooled to facilitate ease of handling and inspection. The finished components are weighed and transferred for despatch.

There are no noticeable emissions to air from the degreasing, acid pickling or quench tanks. The galvanising bath is the main source of emissions to air and these arise because of the application of liquid zinc ammonium chloride to the bath surface.

The liquid is sprayed over the bath surface approximately 4 times per hour to prevent oxidation and to assist with the quality of the final galvanised product.

The application of liquid to the hot bath surface produces an instantaneous emission of dense white fume which consists mainly of ammonium and chloride compounds.

Incidental losses of zinc occur during the process by splashing, as hard zinc dross acid as zinc ash. Zinc ash is lighter than molten zinc and collects on the bath surface. The ash is skimmed off at regular intervals and is stored in 45 gallon containers prior to sale for recycling. Neither of these operations gives rise to excessive dust emissions.

EMISSION LIMITS

✓ 1 All emissions to air from the galvanising plant building, other than steam or water vapour, shall be colourless and free from persistent mist.

✓ 2 All emissions to air from the main process chimney shall be free from persistent fume and droplets.

✓ 3 Emissions to air from the main process chimney shall not exceed the following emission concentration limits at reference conditions, 273k, 101.3 kPa, without correction for water vapour content and expressed as 15 minute mean concentrations.

Emission	*Concentrations*
Total particulate matter (from galvanising baths)	*15mg/m³*
Chlorides (as hydrogen chloride excluding particulate matter).	*30 mg/m³*

✓ 4 No emission from any source at the premises other than the main process chimney shall exceed the following concentration limits at reference conditions, 273k, 101.3 kPa, and without correction for water vapour.

Emission	*Concentration Limit*
Particulate matter.	*50mg/m³*

EMISSION MONITORING

5 Visual and olfactory assessments for fumes, gases, dust and odour emissions from the premises shall be made daily from the position marked by an 'X' in red ink on the attached drawing reference number 12/92/A.

6 The results of the visual and olfactory assessments required at paragraph 5, together with the prevailing wind direction at the time of the assessment shall be recorded in a log book (hereinafter referred to as *'the log'*) which is to be kept at the workplace.

7 (a) The main process chimney shall be continuously indicatively monitored for particulate matter emissions. In the event of increased dust emissions visual and audible alarms shall be activated.

(b) With effect from 1 October 1996, a reference level shall be agreed with the Local Authority at which the alarms activate. Emission events which lead to the activation of the alarms shall be automatically recorded.

8 The continuous monitoring device required at paragraph 7(a) shall be checked daily and calibrated in accordance with the manufacturers recommendations and, in any event, at least annually.

9 Emissions to air from the main process chimney shall be monitored once a year for the following pollutant concentrations using analytical methods to be approved in advance by the Local Authority.

Particulate Matter

Chlorides (as hydrogen chloride excluding particulate matter)

10 The Local Authority shall be advised at least 7 days in advance of any periodic monitoring exercise to determine compliance with emission limit values of the provisional time and date of monitoring, the pollutants to be tested and the methods to be used.

11 The results of all emission monitoring, daily checks of instruments and calibration details shall be entered in the log.

12 Adverse monitoring results shall be investigated immediately and all cases shall be recorded in the log, together with details of the cause and remedial action.

13 The results of all non-continuous emission monitoring shall be forwarded to the Local Authority within 8 weeks of the completion of sampling.

14 In any case, where an emission concentration exceeds the limits specified at paragraph 3the result shall be forwarded to the Local Authority and where any emission concentration is more than twice the specified limit, the Local Authority shall be advised immediately.

LOCAL EXHAUST VENTILATION SYSTEM

15 The rate of extraction at the galvanising bath local exhaust ventilation system shall beadequate to contain any fumes generated.

16 Exhaust flow rates from the bath shall be minimised but shall be consistent with goodoperating practice and health and safety requirements.

17 The introduction of dilution air to achieve emission concentration limits shall not bepermitted.

ARRESSMENT PLANT

18 The local exhaust ventilation system at the galvanising bath shall be vented to an Airmaster AJX 225/A/15-12 bag house filter system.

19 The bag house filter system shall be equipped with continuous monitors connected to visual and audible alarms to warn of malfunction or bag failure.

20 The height of the chimney shall terminate 3 metres above the roof ridge at the galvanising plant building.

21 The chimney shall operate with an efflux velocity of 15 m/sec at full load and no cap or cowl shall be fitted to the final opening.

22 The chimney and associated ductwork shall be leak proof and shall be maintained in a clean condition.

23 Adequate safe facilities for sampling shall be provided in the chimney.

MATERIALS HANDLING

24 Stocks of dusty materials such as flux and ash shall be stored in such a manner as to prevent wind whipping. All such materials shall be stored in covered containers.

25 The bund walls in the galvanising plant building and around external acid storage tanks shall be maintained in a condition which ensures the containment of liquid spillages.

26 All spillages shall be cleared promptly and appropriate equipment and materials shall be stocked.

GENERAL

27 Proper use of equipment, proper supervision of process operations and adequatepreventative maintenance shall be employed on all plant and the equipment concerned with the control of emissions to air. Essential spares and consumables shall be held.

28 Any malfunction or breakdown leading to abnormal emissions above those permitted by this authorisation shall be remedied promptly and process operations suspended until such time.

29 All malfunctions or breakdowns which cause abnormal emissions shall be recorded in the log and the Local Authority is to be an effect on the local community.

30 Staff at all levels shall receive the necessary formal training and instructions in their duties relating to control of the process and emissions to air, particularly with regard to start-up, shut down and abnormal conditions. Key personnel shall be identified in the log.

31 Good housekeeping shall be practised at all times.

32 Any records required to be kept by the above conditions shall be retained at the workplacefor a minimum of 2 years and made available for examination by the Local Authority.

10th January 1997

Signed: Elizabeth A Wilson

Director of Operational Services

Investigations/clarkate doc

GENERAL NOTES

1. Implied Conditions

It should be noted that Section 7(4) of the Act provides that, in relation to any aspect of the process not regulated by the conditions in this authorisation the best available techniques not entailing excessive cost shall be used:

(i) for preventing the release of substances prescribed for air into the air, or where that is not practicable by such means, for reducing the release into the air of such substances to a minimum and for rendering harmless any such substances which are so released, and

(ii) for rendering harmless any other substances which might cause harm if released into the air.

2. Review

The Local Authority will undertake a review of the conditions in this authorisation at least every 4 years or where complaint is attributable to the process an immediate review shall be undertaken.

3. Variation

The Local Authority will ensure that the authorisation remains up to date in line with the objectives set out in section 7(2) of the act and may issue a variation notice following amendment to the Secretary of State's Guidance Note or following receipt of any direction from the Secretary of State.

4. Appeal

The operator can appeal in writing to the Secretary of State for the Environment against the conditions included in an authorisation or any refusal to vary the authorisation within six months of the date of the decision against which the appeal is made. Appeals will not put notices into abeyance, except in the case of revocation notices.

5. Transfer of Authorisation

The holder of the authorisation may transfer it to a person who proposes to carry out the process in the holder's place. The person to whom the authorisation is transferred must notify the Local Authority within 21 days of the date of transfer and anyone who fails to do so is guilty of an offence.

6. Other Legal Requirements

This Authorisation is issued solely for the purpose of Part I of the Environmental Protection Act 1990 and the Operator must ensure that he complies with all other statutory requirements.

7. Annual Subsistence Charge

The Secretary of State has drawn up a charging scheme under Section 8 of the Environmental Protection Act 1990, Part I. Under this scheme Local Authorities are required to levy an annual subsistence charge related to the authorisation. The Local Authority will invoice for the amount due which is subject to annual review by the Department of the Environment.

CLARK-DRAIN

THE DRAINAGE COMPANY

GP20

Huntingdonshire
District Council

LA-IPPC 12/92 B8 GP20

Additional Information

Clark-Drain Limited formerly known as Clarksteel Limited (copy of certificate of incorporation on change of name attached), and Clarksteel Galvanising Limited have traded from the current site and business address in excess of 40 years still being privately owned and employing approximately 150 staff from the local community.

The main business quality accredited to ISO9001;2000,BS EN124 1994 combined with third party accreditation by BSI Kite mark for castings continues to be that of manufacturing manhole covers and drainage products supplying the building industry, water authorities and other government departments.

The Galvanising division quality accredited to BSEN 1461 continues to play a major important integral role in the current and future expected growth of the business.

Currently approximately fifty percent of output is internal for manufactured manhole covers and drainage products together with fifty percent of output supplying galvanising services to the local engineering industries offering with our own in house distribution fleet a collection and delivery service.

In the last nine months following a board project approval programme approximately £500,000 has been invested within the Galvanising division to update this facility in terms of health and safety, environmental legislation, plant and equipment.

It is therefore essential to the company that our application to Huntingdon District Council for a continuation from our existing process approval to an A2 permit is successful.

Please find attached company history and product literature.

CERTIFICATE OF INCORPORATION

ON CHANGE OF NAME

Company No. 1397422

The Registrar of Companies for England and Wales hereby certifies that

CLARKSTEEL LIMITED

having by special resolution changed its name, is now incorporated

under the name of

CLARK-DRAIN LIMITED

Given at Companies House, Cardiff, the 15th January 2004

THE OFFICIAL SEAL OF THE REGISTRAR OF COMPANIES

Companies House

— for the record —

POLLUTION PREVENTION AND CONTROL ACT 1999
Pollution Prevention and Control (England and Wales) Regulations 2000, Regulation 28(2)

PPC Permit ref: PCC 01/04 Information Request ref: SR 43232

Request for Information Notice

From: Huntingdonshire District Council Council ("the Council")

To:[1]
Clark-Drain Limited, Station Road, Yaxley, Peterborough, PE7 3EG

The Council, in the exercise of the powers conferred upon it by Regulation 28(2) of the Pollution Prevention and Control (England and Wales) Regulations 2000[2] ("the 2000 Regulations"), hereby requires you :-

(a) to furnish the Council at the address set out below the information specified in the Schedule attached to this Notice ("the Schedule"), being information which the Council reasonably considers that it needs for the purpose of the discharge of its functions under the 2000 Regulations; and

(b) to furnish that information [~~in writing / in electronic format compatible with system~~] within the period specified in the Schedule.

[3]

Signed on behalf of the Council .....

Designation Director of Operational Services

An authorised officer of the Council

Dated 6 October 2004

(1) The operator at the address shown on their permit / application.
(2) S.I. 2000 No. 1973 to which there are amendments not relevant to this information notice.
(3) Enter council address

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PPC Permit ref: PPC 01/04

Information Request ref: 43232

Schedule

Information to be supplied to the Council	Format of Submission	Deadline for Submission	Received
1. State the throughput of 'wire galvanising'.	Written/electronic	3 January 2005	✓
2. Present a 'Waste Minimisation Audit' – the use and fate of all materials should be mapped onto a process flow diagram using data from the raw materials inventory. Data should be incorporated for each principal stage of the operation in order to construct a mass balance for the installation.	" "	"	✓ Check with SG note Ok
3. Identify the surfacing condition around the bulk storage areas – indicate areas of impervious surface together with other relevant information such as: thickness, falls, material, permeability, strength/re-inforcement and resistance to chemical attack.	" "	"	✓ new info received
4. State details of storage tanks – such as high level alarms/volume indicators to warn of overfill.	" "	"	✓
5. Energy – provide the energy used per tonne of throughput. This should be reported as average energy consumed for a specific period of time.	" "	"	✓
Provide information on other energy sources that may be available to the process, such as combined heat and power, generation of energy from waste and use of less polluting fuels.	" "	"	X not applicable
Briefly explain the benefits of using your chosen energy source as opposed to the alternatives.	" "	"	✓
6. Noise survey – measure the background noise and the rating level during the quietest time of the night at the nearest residential neighbours, in accordance with BS 4142. Suggested assessment locations are shown on the attached plan.	" "	"	✓ not sure about noise data Re 16 + 2
7. Site Condition Report – Describe the condition of the site, in particular, identifying any substances in, on or under the land that may be a pollution risk. Identify potential receptors, for example, people, animals, ground and surface waters, vegetation, building materials, services, etc. Identify pathways; the means by which a substance may come into contact with or otherwise affect a receptor on, under or through the site. Further information on site condition reports can be found at the following web sites:- http://www.environment-agency.go.uk/business/444217/444663/298441/horizontal/534710/ http://www.defra.gov.uk/environment/ppc/ippcguide/ippced3.htm	" "	"	

Dated: 6 October 2004

Signed: Elizabeth A Watson

Designation: Director of Operational Services
An authorised officer of the Council

Guidance for Operators receiving a Request for Information Notice

(This guidance does not form part of the Request for Information Notice, but it is for the guidance of those served with the notice.)

1. Dealing with a Request for Information Notice

This notice requests information, which the Council considers it requires for the purposes of the discharge of its functions under the Pollution Prevention and Control (England and Wales) Regulations 2000.

The [legal person/individual] named in this notice is required to supply the information detailed in the Notice or attached Schedule within the timescale specified.

If you have recently applied for a permit under the LA-IPPC or LAPPC regimes, the information to be provided will assist the Council in the swift determination of the application.

If you fail to provide the information specified in the notice by the given date, it is open to this authority to deem your application for a permit to have been withdrawn (Schedule 4, paragraph 4 of the PPC regulations).

2. Exclusion from registers of certain confidential information

(a) Commercial Confidentiality

An operator may request certain information within an application or associated request for information to remain confidential i.e. not be placed on the public register. The operator must request the exclusion from the public register of commercially confidential information at the time of supply of the information requested by this notice. The operator should provide clear justification for each item wishing to be kept from the register. The amount of information excluded from the register should be kept to the minimum necessary to safeguard the operator's commercial advantage. It may assist the local authority if the information the operator considers to be commercially confidential is submitted in a way which will allow it to be easily removed should the request be granted, for example on separate pages, marked 'claimed confidential'. The onus is on the operator to provide a clear justification for each item to be kept from the register. It will not simply be sufficient to say that the process is a trade secret.

The general principle is that information should be freely available to the public. Information that maybe considered commercially confidential is that which if it "were being contained within the register would prejudice to an unreasonable degree the commercial interests of an individual or other person" (regulation 31(12) of the 2000 Regulations).

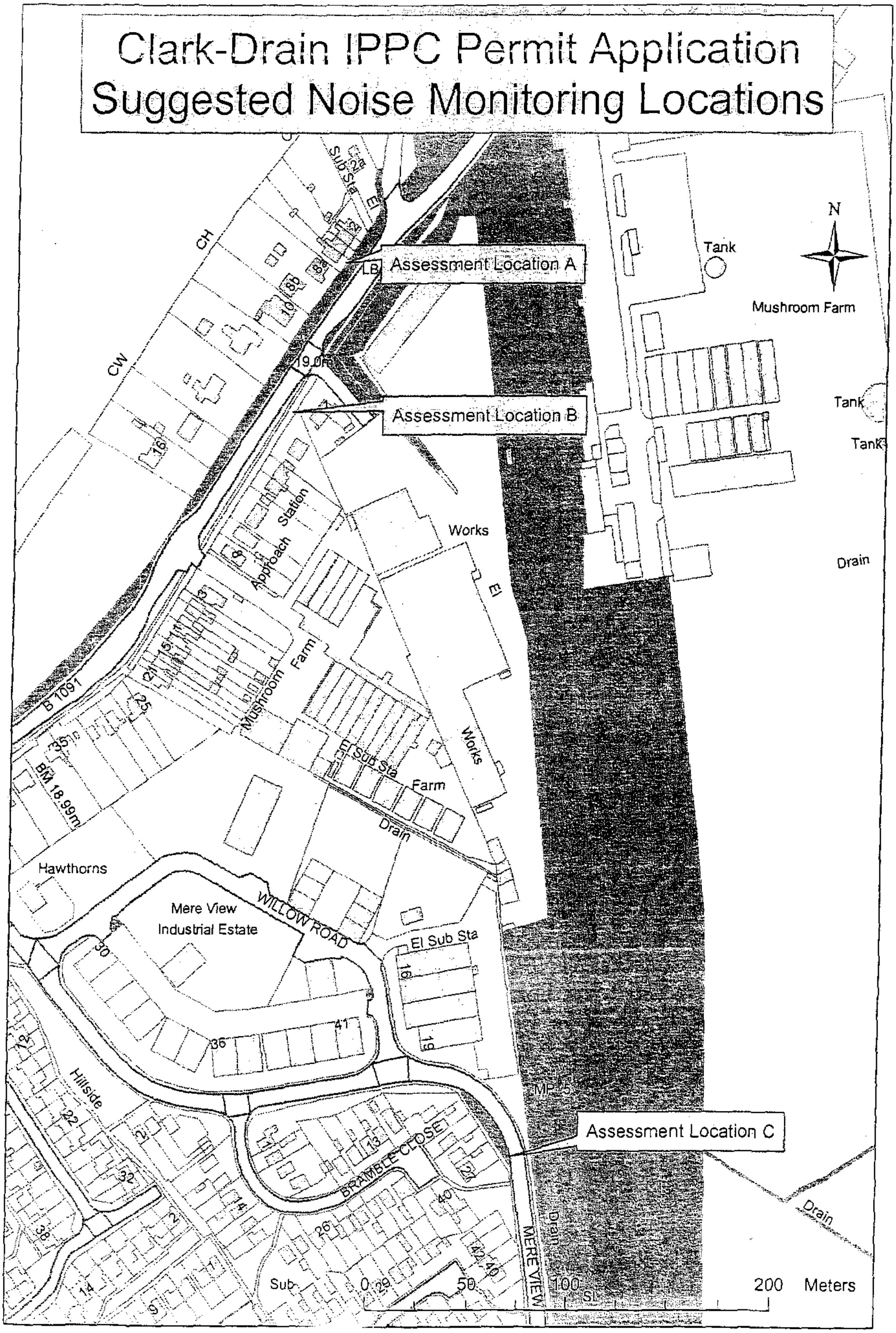
Local authorities will also take into account whether the information at issue could be obtained or inferred from other publicly accessible sources.

The local authority will determine this request within 28 days of the date of such an application and will issue a Determination Notice detailing their decision. The notice may specify a time period over which the information is to remain comercially confidential (if not specified, it will be four years beginning with the date of the determination). The operator may appeal to the Secretary of State within 21 days of the notification of the decision.

If the application is granted the local authority will place a statement on the public register indicating the existence of information which has been withheld and stating the reasons why, [plus whether this information is relevant to a permit condition, and whether the permit condition has been complied with].

The local authority may consider that certain areas of the information are commercially confidential, and others are not. If this is the case it will be stated in the determination notice. The operator may appeal against this in the normal manner.

Further guidance on commercial confidentiality can be found in Chapter 8 of the LA-IPPC and LAPPC Guidance.



Clark-Drain IPPC Permit Application
Suggested Noise Monitoring Locations
Assessment Location A
Assessment Location B
Assessment Location C
N
Tank
Mushroom Farm
Tank
Tank
Drain
Works
Works
Mushroom Farm
Station Approach
El Sub Sta
Farm
Drain
B 1091
BM 18.99m
Hawthorns
Mere View
Industrial Estate
WILLOW ROAD
El Sub Sta
Hillside
BRAMBLE CLOSE
MERE VIEW
Drain
Drain
MP 75
19.0m
LB
CH
CW
0
50
100
200
Meters

CLARK-DRAIN

THE DRAINAGE COMPANY

17Th December 2004

F.T.A.O.
Mr Aaron J Morley
Environmental Protection Officer
Environmental Health Services Division
Huntingdon District Council
Pathfinder House
St Mary's Street
Huntingdon
PE29 3TN

Dear Mr Morley,

Pollution Prevention and Control Act 1999
Pollution Prevention and Control (England and Wales) Regulations 2000
Application for a Part 2A LA- IPPC Permit

Further to your letter dated 6Th October 2004 please find enclosed our cheque for £1,836 made out to the council together with further information requested.

1. There is no throughput of 'wire galvanising' carried out at our facility; a lead-annealing bath in the context of the licence would be used for this purpose.

2. We have already submitted what happens to raw materials contained within the various process production stages and best practise guidelines as per defra sector guidance notes IPPC SG5, these guidelines ensure waste is kept to a minimum, could you therefore please advise if and where this needs to be more sophisticated and expanded upon as we thought this aspect had been covered by documents (LA-IPPC12/92 B2.1 GP3,LA-IPPC12/92 B2.2 GP4,LA-IPPC12/92 B2.3 GP5,LA-IPPC12/92 B2.4 GP6,LA-IPPC12/92 B2.5 GP7,LA-IPPC12/92 B2.10 GP12,LA-IPPC12/92 B2.12 GP14) within our application form for a part 2A LA-IPPC Permit.

3. Please refer to the enclosed information PPC 01/04 43232/3 together with Galvanising site plan and technical data sheets.

4. Please refer to the enclosed information PPC 01/04 43232/4.

5. Please refer to the enclosed information PPC 01/04 43232/5.

Other energy sources such as electricity could be made available to the hot dip galvanising process; currently the galvanising bath is gas fired which is the industry standard.

Galvanising exhaust heat generated is used for heating/drying other waste is Not combustible.

Business Benefits Of Gas

A) Natural gas can save money. Historical analysis shows that in most periods natural gas offers a cost advantage over other energy sources including electricity, oil and propane.

B) New high efficiency natural gas equipment is specially designed to cut your energy costs by extracting every possible ounce of energy from the fuel.

C) Natural gas is piped directly into your business premise. It's always there when You need it and you never have to worry about refilling a tank or running low On fuel.

D) Natural gas can do more than provide heat for a galvanising bath. It can provide Space heat to your business, water heating, space conditioning, cooking and Laundry drying. It can be used outdoors for gas lighting and to heat patios, Swimming pools or hot tubs.

E) By all measures air emissions, solid wastes, water pollution and water Consumption natural gas is the best energy alternative for today.

F) Cleaner natural gas equipment means less maintenance and repairs over the Years.

G) Natural gas is clean and odour free and delivers consistent heat. Natural gas Equipment is compact and quiet in operation.

I) Natural gas is one of the world's safest sources of energy for which Gas Distributors have developed extensive and time proven safety measures.

6. Please find attached noise survey report PPC 01/04 43232/06 completed as requested with Mr Aaron Morley's requirements and in accordance with BS 4142.

7. I understand the site condition report provided by Abatech International Ltd has has been received.

CLARK-DRAIN

THE DRAINAGE COMPANY

I trust you will find the enclosed information to be in order but should you have any queries please do not hesitate to contact me.

Yours Sincerely
Clark-Drain Limited

M C Gilbey
Company Accountant
Direct Dial Tel No. 01733-765325
Direct Dial Fax No. 01733-246912
Email : mgilbey@clark-drain.com

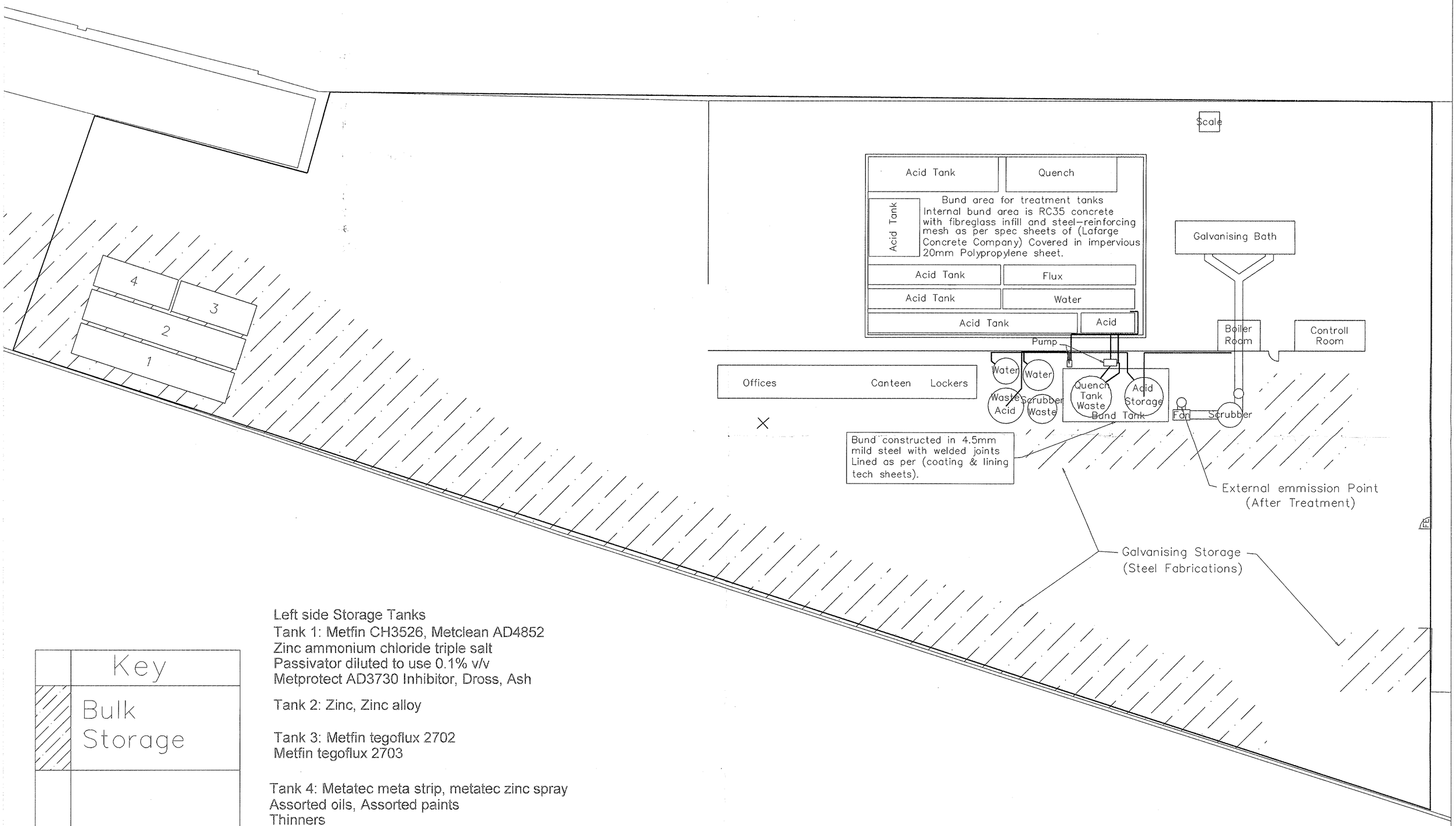
PPC 01/04
43232/3

Bulk storage areas

Internal bund area is RC35 concrete with fiberglass infill and steel-reinforcing mesh as per spec sheets of (Lafarge Concrete Company) covered in impervious 20mm Polypropylene sheet.

External bulk hydrochloric storage tank.

Bund constructed in 4.5mm mild steel with welded joints lined as per (Coating & lining tech sheets).



Left side Storage Tanks
Tank 1: Metfin CH3526, Metclean AD4852
Zinc ammonium chloride triple salt
Passivator diluted to use 0.1% v/v
Metprotect AD3730 Inhibitor, Dross, Ash

Tank 2: Zinc, Zinc alloy

Tank 3: Metfin tegoflux 2702
Metfin tegoflux 2703

Tank 4: Metatec meta strip, metatec zinc spray
Assorted oils, Assorted paints
Thinners

CLARK-DRAIN LTD.
STATION ROAD, YAXLEY, PETERBOROUGH
PE7 3EQ
PHONE 01733 765399 FAX 01733 246923

DIMENSIONS IN MILLIMETRES | PROJECTION
Tolerance unless otherwise specified
Dimensional = + -

Drawn by G Petty | Checked by :
Date 16/12/04 | Date :
Scale N.T.S. | Edition 4

MATERIAL :
FINISH :

Title/Name
Galv Site Plan

Sheet 1 of 1
LA - IPPC 12/92
GP2 A

CONCRETE FOR INTERNAL BUND), TECHNICAL DATA SHEETS. 3.1

LAFARGE
READYMIX
TECHNICAL SUPPORT

Lafarge Aggregates Limited, PO Box 7392, Syston, Leicester, LE7 1XQ
Fax: 0870 336 8629

Fax Cover Sheet

DATE: 15/12/04

TO: Clark Drain

ATT'N: Mr Fletcher FAX: 01733 246938

FROM: Lee Baldwin PHONE: 0116 264 8944

EMAIL: lee.baldwin@lafarge.com

CC:

Number of Pages including cover sheet: 4

Message:
Mix design as requested and Health + Safety info.

LAFARGE READYMIX

Concrete Mix Design

Customer Name:	Clark Drain
Site Address:	Yaxley
Quotation Number:	
Supplying Plant/s:	533 PETERBOROUGH

Please find below the proposed concrete mix designs for the above contract.
We trust these to be satisfactory, however, should you have any queries, please contact us.

Quote Mix Number:	
Mix Description:	RC35
Nom. Aggregate Size (mm):	20
Cement Type:	CIIIA
Slump (mm):	S2
Minimum Cement Content:	300
Max. Water/Cement Ratio:	0.6
Exposure Class(s):	XF1
Design Chemical Class:	DC1

Design Saturated Surface Dry Masses for One Cubic Metre (Units kg)

Cement (kg):	167
Addition (kg):	167
Blend Proportion (%):	50
Aggregate 1 (kg):	1113
Aggregate 2 (kg):	0
Aggregate 3 (kg):	785
Aggregate 4 (kg):	0
Fine Aggregate Content (%):	41
Admixture 1:	1.5
Admixture 2:	0.0
Admixture 3:	1.0
Water/Cement Ratio:	0.57

Key to the constituents used in the above concrete mix designs.

Cement:	CEM I 42.5 N	Castle Cement	Ketton
Addition	GGBS	Appleby Group	Scunthorpe
Aggregate 1:	20-5mm Granite	Lafarge Aggs. Ltd.	Mountsorrel
Aggregate 2:	10mm Granite	Lafarge Aggs. Ltd.	Mountsorrel
Aggregate 3:	Sand BS 882, Tab 4	Lafarge Aggs. Ltd.	Somersham
Aggregate 4:	n/a	n/a	n/a
Admixture 1:	Chrysoplast RMB	Chryso	Loiret, France
Admixture 2:	Conplast AE 383	Fosroc	Tamworth
Admixture 3:	Fibrin XT	Adfil	Beverley

Comments

All information contained above is correct at the time of issue.

Authorised By: _____ **Date of Issue:** 15/12/04

LAFARGE AGGREGATES

HEALTH AND SAFETY PRODUCT DATA SHEET

Ready-mixed Concrete

- **IDENTIFICATION OF SUBSTANCE/PREPARATION AND COMPANY**

Product Name:
Readymixed Concrete.
Application:
Readymixed concrete is designed to enable the user to cast the plastic material into the required shape prior to hardening.

- **COMPOSITION/INFORMATION ON INGREDIENTS**

General:
A mixture of natural aggregate, Portland cement and water. Admixtures may be added to improve product handling characteristics or the properties of the hardened concrete.
Hazardous Ingredients:
Cement (mainly calcium oxide) up to 20%.
Hazardous for Supply Classification:
Irritant.

- **HAZARDS IDENTIFICATION**

Eyes:
May cause irritation and inflammation.
Skin:

1. Ulceration may occur. This is commonly known as 'cement burns'.
2. Irritant contact dermatitis may be caused by the combination of wetness, alkalinity and abrasiveness of the mixture.
3. Allergic contact dermatitis may be caused by individual sensitivity to chromium compounds present in trace amounts in cement.

Inhalation:
No hazard as supplied.
Ingestion:
Would cause severe irritation due to alkaline burn to the lining of the throat and gut. In most cases of ingestion the more immediate problem will be potential blockage of the airways and gullet.

- **FIRST AID MEASURES**

Eyes:
The eyes should be immediately and thoroughly irrigated with water for at least 10 minutes and then medical advice should be sought.
Skin:
Contaminated skin should be washed with cold running water as soon as possible. Particular attention should be paid to any wounds which should be covered with a suitable dressing.
Inhalation:
Not relevant.
Ingestion:
Immediate and specialised medical aid is required. Do not induce vomiting.

- **FIRE FIGHTING MEASURES**

The product is not flammable.

- **ACCIDENTAL RELEASE MEASURES**

The product should be prevented from entering watercourses, drains, etc. Spillages will solidify in approximately 4 hours. Persons involved in clearing up spillages must be protected against skin contact.

- **HANDLING AND STORAGE**

Wet Handling:
Personal Protective Equipment to prevent skin contact is required when handling wet material. Clothing should be worn so as to avoid fresh concrete falling in and being trapped, i.e. with sleeves over gloves and trouser legs over boots, not tucked inside. If splashes in the eye are likely, eye protection should be worn.
Storage:
Not applicable.

- **EXPOSURE CONTROLS/PERSONAL PROTECTION**

Eyes:
Wet material: eye protection should be suitable for protection against either impact or chemical splash and should conform to BSEN.166.
Skin:
Skin contact should be avoided by the use of impervious protective clothing.
Inhalation:
Protective equipment not required when material is wet.
Industrial Hygiene:
Personal hygiene is important. Suitable washing facilities should be provided. Facilities for cleaning and storing personal protective equipment and, where necessary, changing facilities should also be provided.

- **PHYSICAL AND CHEMICAL PROPERTIES**

Appearance:
Grey semi-solid.
pH:
12.5 minimum.
Density:
Up to 2500 kg/m^3.

- **STABILITY AND REACTIVITY**

Chemically stable and un-reactive.

- **TOXICOLOGICAL INFORMATION**
  Skin Ulceration:
  Cement burns can be very serious and can occur if freshly mixed concrete or cement gets trapped against the skin by falling inside boots or gloves. They can take several months to heal and may need skin grafting.
  Dermatitis:
  Skin affected with dermatitis feels itchy and sore and looks red, scaly and cracked. In the worst cases, serious inflammation and secondary infections can occur.
  Persons can become allergically sensitised to wet concrete. This is a permanent condition and means that contact with even minute amounts will produce dermatitis which can affect the whole of the body not just where there has been contact. A person so sensitised normally has to give up work with wet cement and concrete.

- **ECOLOGICAL INFORMATION**
  No adverse ecological behaviour or effects.

- **DISPOSAL CONSIDERATIONS**
  Waste Material: Place in sacks, allow to harden and dispose as inert material.

- **TRANSPORT INFORMATION**
  This product NOT classified as hazardous for transport.

- **REGULATORY INFORMATION**
  Risk Phrases:
  R34: Causes burns.
  R43: May cause sensitisation by skin contact.
  Safety Phrases:
  S24/25: Avoid contact with skin and eyes.
  S36/37/39: Wear suitable protective clothing, gloves and eye/face protection.

- **OTHER INFORMATION**
  Readymixed concrete in its wet state is a substance hazardous to health and as such the employer of persons who may be exposed to it at work must carry out an assessment under the Control of Substances Hazardous to Health Regulations 1994.

  NB. Possession of this health and safety data sheet does not constitute an assessment.

  The use of Personal Protective Equipment is subject to the "Personal Protective Equipment at Work Regulations 1992". All new Personal Protective Equipment must carry the CE Mark of Conformity with European Standards.

  Where exposure to wet cement is such that there is a reasonable likelihood of dermatitis, then health surveillance for this condition will be required under the COSHH Regulations.

- **USEFUL REFERENCES**
  The following publications are all available from HSE Books, PO Box 1999, Sudbury, Suffolk, CO10 6PS.
  Tel: 0178 781165
  Fax: 0178 7313885

  General COSHH Approved Code of Practice L5.

  Booklet L.25 "Personal Protective Equipment at Work: Guidance on Regulations".

  Leaflet MS8.6 "Save your Skin Dermatitis".

  Construction Industry Advisory Sheet No. 26 "Cement".

  Guidance Note MS24 "Health Surveillance of Occupational Skin Disease".

(As revised in January 1999)

For further information write to:

The Divisional Safety and Environmental Manager
Lafarge Aggregates Limited, Granite House,
PO Box 7388, Syston, Leicester, LE7 1WA

TECHNICAL DATA SHEETS FOR EXTERNAL BUND

Technical Bulletin
High - Temperature - Resistant, Protective Coating

COROFLAKE® - S Primer
and
COROFLAKE® 23 - Roll or spray applied Coating

Product Description:
COROFLAKE® 23 is a two component, mineral flake filled, novolac vinyl ester coating system. This coating system consists of one primer and three coats @ 500 - 700 µm WFT per coat to produce a total DFT of 1500 µm nominal. The vinyl ester resin provides outstanding chemical and high temperature resistance. The multiple layers of overlapping micron-thick mineral flakes which are essential to establish needed physical properties, create an effective barrier to permeation and extend service life.

Recommended Uses:
COROFLAKE® 23 exhibits long-term protection against sulphuric acid, high temperature and condensing vapours. It is especially formulated for the demanding conditions in lignite-fired power station chimneys and ducts where Flue Gas Desulfurization Systems (FGD) has been installed.

Temperature Resistance:
+70 °C wet (not insulated); +180°C dry and +220°C for 15 min.

Generic Type:
Novolac Vinyl Ester

Filler:
Mineral Flakes

Solvent:
Styrene (reactive)

Design:
DIN 28051 and DIN 28053

Preparation:
Contaminants such as oil or grease must be removed prior to the grit blasting. The substrate shall be prepared by abrasive blasting to obtain a Sa 2½ surface, as defined in DIN EN ISO 12944-4 and a minimum sur-face profile @ 60 µm "Medium (G)" as defined in DIN EN ISO 8503-2.

Build-up of the system:

		Coverage
COROFLAKE®- S Primer	1 x 40-60 µm	150 g/m²
COROFLAKE® 23 Liquid	3 x 500-700 µm	3300 g/m²

Mixing Ratio:
100:2; COROFLAKE® Primer or Liquid to Hardener No.1 by weight. Mix hardener into resin based component, using a low speed mechanical agitator.

Pot Life:
1½ hrs. (+10°°C) 1 hr. (+20°C) ½ hr. (+3O°C)

Application Equipment:
Conventional Air or Airless Spray, Brush and Roller

Application:
Note: During application the coated surface must be shaded from direct or indirect sunlight. It may result in intercoat disbondment.
Primer is normally applied by brush or roller. Spray application can be used, but requires extra clean surface. COROFLAKE® 23 shall be applied in three coats utilizing an airless or conventional air spray system. Small areas may be coated by brush or roller. The substrate and air temperature shall be @ +10°C to +36°C (3°K above dew point). Primer may be recoated after initial set, which will occur normally after 4 hours, first coat must be applied within seven days. The following coats should be recoated not later then three days.

Cleanig:
Solvent T/1900

Shelf Life:
The shelf life is 3 months when stored @ + 20°C.
COROFLAKE® 23 Resin, COROFLAKE® S Primer and Hardener No.1 should be stored at a cool and dry place.

Density:

S - Primer	COROFLAKE® 23
0.96 kg/l (mixed)	1.2 kg/l (mixed)

Viscosity:

225 mPas	3000 mPas

Solid Content:

65 ± 2.5% (mixed)	69 ± 2% (mixed)

Flash Point:

Primer and COROFLAKE® 23 +32°C	Hardener No.1 +70°C

Modulus of Elasticity:
3000-4000 MPa (DIN EN ISO 178) flexural

Elongation at Tear:
0.5 % (DIN EN ISO 527)

Coefficient of Expansion:
25-30x10-6 1/°C (VDE 0304) linear

Abrasion:
90 mg (ASTM - D 4060)

Permeation:
0.0016 perm inch (ASTM-E96-90) Procedure E

Adhesion:
7.0 N/m² (DIN ISO 24624) to grit blasted C-Steel

Hardness:
35 Barcol (DIN EN 59)

1. Identification of the substance/preparation

Name of product	**TIP TOP COROFLAKE 23** Artikelnummer 590 0057
Manufacturer/distributor	STAHLGRUBER Otto Gruber GmbH & Co. KG Gruber Straße 63, D-85586 Poing Phone ++49 / 81 21 / 707 - 0
Emergency advice	Phone ++49 / 81 21 / 707 - 0

2. Composition/information on ingredients

Chemical characterization
Epoxide-vinyl ester-resin in styrene

Hazardous ingredients

CAS-No.	Name	[%]	Classification	
000100-42-5	styrene	20 - 35	Xn	R10-20-36/38

3. Special hazards information for man and environment

R-phrases

10	Flammable.
20	Harmful by inhalation.
36/38	Irritating to eyes and skin.

4. First aid measures

General information
Remove contaminated soaked clothing immediately.
In the event of persistent symptoms receive medical treatment.
Take away from danger area and lay down affected person.

In case of inhalation
Move to fresh air in case of accidental inhalation of vapours.
Seek medical treatment immediately.

In case of skin contact
Wash off immediately with soap and plenty of water.
Treat subsequently with skin cream.
Consult a doctor if skin irritation persists.

In case of eye contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Consult (eye) doctor immediately.

In case of ingestion
The decision whether to induce vomiting or not is to be taken by a physician.
Do not give milk.
Attention! Beware, danger of aspiration!
Do not induce vomiting.
Summon a doctor immediately.
Immediately give plenty of water, if possible charcoal slurry.

5. Fire-fighting measures

Suitable extinguishing material
Alcohol-resistant foam, dry chemical, carbon dioxide (CO2), water-spray

Extinguishing material that may not be used for safety reasons
Full water jet

Special exposure hazards arising from the substance, combustible products or resulting gases
Fire may produce:
carbon monoxide and dioxide
Irritant/corrosive, flammable as well as toxic distillation gases (carbonization gases)

Special protective equipment for firefighters
Wear self-contained breathing apparatus and protective suit.

Additional information
Vapours are heavier than air and spread along ground.
The vapour/air mixture is explosive, even in empty, uncleaned receptacles.
Cool containers at risk with water spray jet.
Collect contaminated firefighting water separately, must not be discharged into the drains.

6. Accidental release measures

Personal precautions
In case of vapour formation use respirator.
Ensure adequate ventilation.
Remove persons to safety.
Use personal protective clothing.
Keep away sources of ignition.

Environmental precautions
Do not discharge into the drains or bodies of water.

Methods for cleaning up/taking up
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder).
Shovel into suitable container for disposal.

7. Handling and storage

Advice on safe handling
Keep container tightly closed.
Vapours are heavier than air and spread along ground.
Use only in thoroughly ventilated areas.
Provide suitable extraction at the processing machines.

Advice on protection against fire and explosion
Keep away from heat and sources of ignition.
Do not smoke.
Take precautionary measures against static discharges.
Use only explosion-proof equipment.

Requirements for storage rooms and vessels
Keep container tightly closed in a dry, cool and well-ventilated place.
Pay attention to anti-explosion rules.
Avoid temperatures above 50°C.

Advice on storage compatibility
Incompatible with:
oxidizing agents
metal halogenides
peroxides

Further information on storage conditions
Keep away from food, drink and animal feeding stuffs.

8. Exposure controls / personal protection

Additional advice on system design
Ensure adequate ventilation, especially in confined areas.
Pay attention to anti-explosion rules.

Ingredients with occupational exposure limits to be monitored

CAS-No.	Name	Code	[mg/m³]	[ml/m³]	Remark
000100-42-5	styrene	TLV	430	100	EH 40 table 1

Respiratory protection
In case of insufficient ventilation wear suitable respiratory equipment (gas filter type A).

Hand protection
Plastic gloves

Eye protection
Eye wash bottle with pure water
tightly fitting goggles

Skin protection
Long sleeved clothing.
solvent-resistant apron

General protective measures
Do not inhale vapours.
Wash hands before breaks and immediately after handling the product.
When using, do not eat, drink or smoke.
Treat subsequently with skin cream.
Remove and wash contaminated clothes before re-use.

9. Physical and chemical properties

Form
liquid

Colour
yellowish

Odour
pungent

Data relevant for safety

	Value	Temperature	At	Method	Remark
Flash point	35 °C				
Combustion temperature	490 °C				
Lower explosion limit	1,1 Vol-%				
Vapour pressure	6 hPa	20 °C			

	Value	Temperature	At	Method	Remark
Density	1,2 g/ml				
Solubility in water		20 °C			immiscible
Viscosity	2750 - 3250 mPa*s				
Viscosity Outflow time	> 40 s			Ford beaker, no. 6	

10. Stability and reactivity

Conditions to avoid
To avoid thermal decomposition, do not overheat.
Vapour/air mixtures are explosive at intensive warming.
Heating can release vapours which can be ignited.
Avoid temperatures above 50°C.
If heating up polymerisation.

Materials to avoid
Oxidizing agents.
peroxides
metal halogenides

Hazardous decomposition products
Irritant/corrosive, flammable as well as toxic distillation gases (carbonization gases).
carbon monoxide and carbon dioxide

Additional information
No decomposition if stored and applied as directed.

11. Toxicological information

Experiences made from practice
Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.
Harmful by inhalation
Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.
Irritates eyes and skin.

12. Ecological information

General regulation
Do not flush into surface water or sanitary sewer system.
Water contaminating.
Product is toxic to fish and their nutrient animals.

13. Disposal considerations

Waste code No.	Name of waste
08 04 02	waste adhesives and sealants free of halogenated solvents

Recommendations for the product
Where possible recycling is preferred to disposal.
Can be incinerated, when in compliance with local regulations.

Recommendations for packaging
Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken fot reuse.
Packaging that cannot be cleaned should be disposed of like the product.

14. Transport information

Land and inland navigation transport (ADR/RID/GGVS/GGVE/ADNR)

Identification	1866 RESIN SOLUTION
Class/No./letter	3 / 31 c
Hazard No.	30
Product No.	1866
Remarks	

Viscous substance - excepted quantitiy if in containers with a capacity up to 450 l (marginale 2301 ADR, section E, remark)

Marine transport IMDG/GGV See

Proper shipping name	RESIN SOLUTION
Class	3.3
UN-No.	1866
Marine pollutant	Yes
PG	III
MFAG	310
EmS-No.	3-05
Remarks	

Limited quantities (section 18): combination packaging: 5 l / 30 kg (total gross mass); trays: 5 l / 20 kg (total gross mass)

Air transport ICAO/IATA

Proper shipping name	RESIN SOLUTION
Class	3
UN/ID-No.	1866
PG	III

Remarks
PAC 309 (60 L), CAC 310 (220 L)

15. Regulatory information

Remarks for classification
According to EC-regulations the product is to be labelled as follows:

Classification
Xn Harmful

R-phrases

10	Flammable.
20	Harmful by inhalation.
36/38	Irritating to eyes and skin.

S-phrases

23.3	Do not breathe vapour.
35	This material and its container must be disposed of in a safe way.
51	Use only in well ventilated areas.

Hazardous ingredients for labeling
styrene

16. Other information

Further information
Data of items 4 to 8, as well as 10 to 12, do partly not refer to the use and the regular employing of the product (in this sense consult information on use and on product), but to liberation of major amounts in case of accidents and irregularities.
The information describes exclusively the safety requirements for the product (s) and is based on the present level of our knowledge.
The delivery specifications are contained in the corresponding product sheet.
This data does not constitute a guarantee for the characteristics of the product(s) as defined by the legal warranty regulations.
(n.a. = not applicable; n.d. = not determined)

1. Identification of the substance/preparation

Name of product	**TIP TOP HARDENER No. 01** No. 590 0019
Manufacturer/distributor	STAHLGRUBER Otto Gruber GmbH & Co. KG Gruber Straße 63, D-85586 Poing Phone 08121 / 707 - 0
Emergency advice	GBK Gefahrgut Büro GmbH, Ingelheim Phone 06132-84463

2. Composition/information on ingredients

Chemical characterization
Cumene hydroperoxide (80%) in cumene

Hazardous ingredients

CAS-No.	Name	[%]	Classification
000080-15-9	cumene hydroperoxide	60-80	O,T,N R7-21/22-23-34-48/20/22-51/53
000098-82-8	isopropylbenzene	10-20	Xn, N R10-37-51/53-65

3. Special hazards information for man and environment

R-phrases

21/22	Harmful in contact with skin and if swallowed.
23	Toxic by inhalation.
34	Causes burns.
48/20/22	Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
65	Harmful: may cause lung damage if swallowed.
7	May cause fire.

4. First aid measures

General information
Remove contaminated soaked clothing immediately.
Adhere to personal protective measures when giving first aid.

In case of inhalation
Remove the casualty into fresh air and keep him immobile.
In the event of symptoms refer for medical treatment.
Bei Bewußtlosigkeit den Betroffenen in stabile Seitenlage bringen.

In case of skin contact
Wash off immediately with soap and plenty of water.
Treat subsequently with skin cream.
Consult a doctor if skin irritation persists.

In case of eye contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Medical treatment by eye specialist.

In case of ingestion
The decision whether to induce vomiting or not is to be taken by a physician.
Do not induce vomiting.
Summon a doctor immediately.
Immediately give plenty of water, if possible charcoal slurry.

5. Fire-fighting measures

Suitable extinguishing material
Alcohol-resistant foam, dry chemical, carbon dioxide (CO_2), water-spray

Extinguishing material that may not be used for safety reasons
Full water jet

Special exposure hazards arising from the substance, combustible products or resulting gases
Fire may produce:
carbon monoxide and dioxide
Hydrocarbons.

Special protective equipment for firefighters
Use breathing apparatus with independent air supply.

Additional information
Cool containers at risk with water spray jet.

6. Accidental release measures

Personal precautions
In case of vapour formation use respirator.
Ensure adequate ventilation.
Use personal protective clothing.
Keep away sources of ignition.

Environmental precautions
Do not discharge into the drains or bodies of water.

Methods for cleaning up/taking up
Shovel into suitable container for disposal.
Soak up with inert absorbent material (e.g. vermiculite, clean sand).
Dilute larger quantities of desensitization agent (e.g. fuel oil) to < 10% before disposal.

7. Handling and storage

Advice on safe handling
Wash hands before breaks and at the end of workday.
Product may only come into contact with suitable materials, such as e.g. polyethylene or high-grade steel.
Keep away from soil, rust, chemicals, strong acides and bases and accelerators.

Advice on protection against fire and explosion
Keep away from sources of ignition - No smoking
Keep away from open flames, hot surfaces and sources of ignition.
Use explosion-proof equipment / fittings and non-sparking tools.

Requirements for storage rooms and vessels
Keep container tightly closed in a dry, cool and well-ventilated place.
Avoid temperatures above 30°C.
Keep only in original container.

Advice on storage compatibility
Storage together with other hazardous substances is not allowed.

Further information on storage conditions
Keep away from food, drink and animal feeding stuffs.

8. Exposure controls / personal protection

Additional advice on system design
Ensure adequate ventilation, especially in confined areas.

Ingredients with occupational exposure limits to be monitored

CAS-No.	Name	Code	[mg/m³]	[ml/m³]	Remark
000098-82-8	cumene	TLV	125	25	

Respiratory protection
In case of insufficient ventilation wear suitable respiratory equipment (gas filter type A).

Hand protection
PVC or PE gloves

Eye protection
Eye wash bottle with pure water
tightly fitting goggles

Skin protection
Long sleeved clothing.
apron

General protective measures
Avoid contact with eyes and skin
Wash hands before breaks and immediately after handling the product.
When using, do not eat, drink or smoke.
Treat subsequently with skin cream.
Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

Form
liquid

Colour
yellow

Odour
characteristic

Data relevant for safety

	Value	Temperature	At	Method	Remark
pH value in delivery state	> 5	20 °C	13 g/l		
Flash point	70 °C				
Combustion temperature					n. a.
Lower explosion limit					n.d.
Vapour pressure	4 hPa	20 °C			

	Value	Temperature	At	Method	Remark
Density	1,034 g/ml	20 °C			
Solubility in water	13 g/l	20 °C			
Viscosity dynamic	15 mPa*s	20 °C			
Solvent concentration	< 70 %				

Additional information
Decomposition starting from 80°C.

10. Stability and reactivity

Conditions to avoid
To avoid thermal decomposition, do not overheat.
Self-Accelerating decomposition temperature (SADT) 80°C.

Materials to avoid
soil, rust, chemicals, strong acides and bases and accelerators (heavy metal salts, amines)

Hazardous decomposition products
carbon monoxide and carbon dioxide
Hydrocarbons

Additional information
No decomposition if stored normally.

11. Toxicological information

Experiences made from practice
Toxic by inhalation
Harmful in contact with skin and if swallowed
Harmful: may cause lung damage if swallowed.
Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
Causes burns.

12. Ecological information

General regulation
Do not flush into surface water or sanitary sewer system.
Water contaminating.
Toxic to aquatic organisms.
May cause long-term adverse effects in the aquatic environment.

13. Disposal considerations

Waste code No.	**Name of waste**
16 05 03	other waste containing organic chemicals, e.g. lab chemicals not otherwise specified

Recommendations for the product
In compliance with regulations by local authorities this can be subjected to a special treatment (e.g. thermal utilization) after dilution with an inert inflammable solvent (e.g. fuel oil) to 10%.
Where possible recycling is preferred to disposal

Recommendations for packaging
Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken fot reuse.
Packaging that cannot be cleaned should be disposed of like the product.

14. Transport information

Land and inland navigation transport (ADR/RID/GGVS/GGVE/ADNR)

Identification	3109 ORGANIC PEROXIDE TYPE F, LIQUID cont. cumyl hydroperoxide
Class/No./letter	5.2 / 9 b
Hazard No.	539
Product No.	3109

Remarks
Marginal 2501a: combination packaging: 125 ml / 30 kg (total gross mass); trays: 125 ml / 20 kg (total gross mass)

Marine transport IMDG/GGV See

Proper shipping name	ORGANIC PEROXIDE TYPE F, LIQUID (cont. cumyl hydroperoxide)
Class	5.2
UN-No.	3109
Marine pollutant	Yes
PG	II
MFAG	735
EmS-No.	5.2-01

Remarks
Limited quantities (section 18): combination packaging: 250 ml / 30 kg (total gross mass); trays: 250 ml / 20 kg (total gross mass)
Subsidiary Risk Label(s): Corrosive

Air transport ICAO/IATA

Proper shipping name	ORGANIC PEROXIDE TYPE F, LIQUID (cont. cumyl hydroperoxide)
Class	5.2 / 8
UN/ID-No.	3109
PG	-

Remarks
PAC 500 (10 L), CAC 502 (25 L)

15. Regulatory information

Remarks for classification
According to EEC-regulations the product is to be labelled as follows:

Classification

T	Toxic
O	Supports fire
N	Dangerous for the environment

R-phrases

21/22	Harmful in contact with skin and if swallowed.
23	Toxic by inhalation.
34	Causes burns.
48/20/22	Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
65	Harmful: may cause lung damage if swallowed.
7	May cause fire.

S-phrases

14	Keep away from soil, rust, chemicals, strong acides and bases and accelerators (heavy metal salts and amines)
3/7	Keep container tightly closed in a cool place.
36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
45	In case of accident or if you feel unwell seek medical advice immediately (show the label if possible).
50	Do not mix with peroxid accelerators and reducing agents.
61	Avoid release to the environment. Refer to special instructions/Safety data sheets before use.
62	If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

Hazardous ingredients for labeling
isopropylbenzene, cumene hydroperoxide

16. Other information

Further information
Data of items 4 to 8, as well as 10 to 12, do partly not refer to the use and the regular employing of the product (in this sense consult information on use and on product), but to liberation of major amounts in case of accidents and irregularities.
The information describes exclusively the safety requirements for the product (s) and is based on the present level of our knowledge.
The delivery specifications are contained in the corresponding product sheet.
This data does not constitute a guarantee for the characteristics of the product(s) as defined by the legal warranty regulations.
(n.a. = not applicable; n.d. = not determined)

1. Identification of the substance/preparation

Name of product	**TIP TOP CLEANING AGENT T-100** No. 590 0600
Manufacturer/distributor	STAHLGRUBER Otto Gruber GmbH & Co. KG Gruber Straße 63, D-85586 Poing Phone ++49 / 81 21 / 707 - 0
Emergency advice	Phone ++49 / 81 21 / 707 - 0

2. Composition/information on ingredients

Chemical characterization
Mixture of organic solvents

Hazardous ingredients

CAS-No.	Name	[%]	Classification
000108-10-1	4-methylpentan-2-one	< 60	F, Xn R11-20-36/37-66
000108-88-3	toluene	< 60	F, Xn R11-20

3. Special hazards information for man and environment

R-phrases

11	Highly flammable.
20	Harmful by inhalation.
36/37	Irritating to eyes and respiratory system.

4. First aid measures

General information
Remove contaminated soaked clothing immediately.
Take away from danger area and lay down affected person.

In case of inhalation
Move to fresh air in case of accidental inhalation of vapours or decomposition products.
In the event of symptoms refer for medical treatment.

In case of skin contact
Wash off immediately with soap and plenty of water.
Treat subsequently with skin cream.
Consult a doctor if skin irritation persists.

In case of eye contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Medical treatment by eye specialist.

In case of ingestion
The decision whether to induce vomiting or not is to be taken by a physician.
Attention! Beware, danger of aspiration!
Do not induce vomiting.
Summon a doctor immediately.

5. Fire-fighting measures

Suitable extinguishing material
Foam, carbon dioxide (CO_2), dry chemical, water-spray

Extinguishing material that may not be used for safety reasons
Full water jet

Special exposure hazards arising from the substance, combustible products or resulting gases
Fire may produce:
carbon monoxide and dioxide

Special protective equipment for firefighters
Use breathing apparatus with independent air supply.

Additional information
Vapours are heavier than air and spread along ground.
The vapour/air mixture is explosive, even in empty, uncleaned receptacles.
Cool containers at risk with water spray jet.

6. Accidental release measures

Personal precautions
In case of vapour formation use respirator.
Use only explosion-proof equipment.
Ensure adequate ventilation.
Remove persons to safety.
Use personal protective clothing.

Environmental precautions
Do not discharge into the drains or bodies of water.

Methods for cleaning up/taking up
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder).
Shovel into suitable container for disposal.

Additional Information
Clean contaminated surface thoroughly.

7. Handling and storage

Advice on safe handling
Do not wear contact lenses when handling the product.
Keep container tightly closed.
Vapours are heavier than air and spread along ground.
Keep a good ventialtion and air-exhaust at the place of work.

Advice on protection against fire and explosion
Keep away from heat and sources of ignition.
Do not smoke.
Take precautionary measures against static discharges.
Use only explosion-proof equipment.

Requirements for storage rooms and vessels
Keep container tightly closed in a dry, cool and well-ventilated place.
Pay attention to anti-explosion rules.

Advice on storage compatibility
Incompatible with oxidizing agents.

Further information on storage conditions
Keep away from food, drink and animal feeding stuffs.

8. Exposure controls / personal protection

Additional advice on system design
Ensure adequate ventilation, especially in confined areas.

Ingredients with occupational exposure limits to be monitored

CAS-No.	Name	Code	[mg/m³]	[ml/m³]	Remark
000108-10-1	4-methylpentan-2-one	TLV	208	50	
000108-88-3	toluene	TLV	208	50	

Respiratory protection
In case of insufficient ventilation wear suitable respiratory equipment (gas filter type A).

Hand protection
Impervious butyl rubber gloves.

Eye protection
Eye wash bottle with pure water
tightly fitting goggles

Skin protection
Long sleeved clothing.

General protective measures
Do not inhale vapours.
Wash hands before breaks and immediately after handling the product.
When using, do not eat, drink or smoke.
Remove and wash contaminated clothes before re-use.
Avoid contact with eyes, skin or mucous membrane.

9. Physical and chemical properties

Form
liquid

Colour
colourless

Odour
like ketone

Data relevant for safety

	Value	Temperature	At	Method	Remark
Flash point	approx. 6 °C				
Combustion temperature	460 °C				
Lower explosion limit	1,2 Vol-%				
Vapour pressure	29 mbar				
Density	0,84 g/ml	20 °C			
Solubility in water		20 °C			immiscible
Solvent concentration	100 %				

10. Stability and reactivity

Conditions to avoid
To avoid thermal decomposition, do not overheat.
Vapour/air mixtures are explosive at intensive warming.
Heating can release vapours which can be ignited.

Materials to avoid
strong oxidizing agents

Hazardous decomposition products
carbon monoxide and carbon dioxide

Additional information
No decomposition if stored and applied as directed.

11. Toxicological information

Experiences made from practice
Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.
Irritating to eyes and respiratory system.
Harmful by inhalation
Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

12. Ecological information

General regulation
Do not flush into surface water or sanitary sewer system.
Water contaminating.

13. Disposal considerations

Waste code No.	**Name of waste**
07 07 04	other organic solvents, washing liquids and mother liquors

Recommendations for the product
Where possible recycling is preferred to disposal.
Can be incinerated, when in compliance with local regulations.

Recommendations for packaging
Contaminated packagings are to be treated like the product itself.
Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

Land and inland navigation transport (ADR/RID/GGVS/GGVE/ADNR)

Identification	1993 FLAMMABLE LIQUID, N.O.S. cont. toluene and methylisobutylketone
Class/No./letter	3 / 3 b
Hazard No.	33
Product No.	1993

Remarks
Marginal 2301a: combination packaging: 3 l / 12 l; trays: 1 l / 12 l (20 kg total gross mass)

Marine transport IMDG/GGV See

Proper shipping name	FLAMMABLE LIQUID, N.O.S. (cont. toluene and methylisobutylketone)
Class	3.2
UN-No.	1993
Marine pollutant	No
PG	II
MFAG	300/310
EmS-No.	3-07

Remarks
Limited quantities (section 18): combination packaging: 1 l / 30 kg (total gross mass); trays: 1 l / 20 kg (total gross mass)

Air transport ICAO/IATA

Proper shipping name	FLAMMABLE LIQUID, N.O.S. (cont. toluene and methylisobutylketone)
Class	3
UN/ID-No.	1993
PG	II

Remarks
PAC 305 (5 L), CAC 307 (60 L)

15. Regulatory information

Remarks for classification
According to EC-regulations the product is to be labelled as follows:

Classification

F	Highly flammable
Xn	Harmful

R-phrases

11	Highly flammable.
20	Harmful by inhalation.
36/37	Irritating to eyes and respiratory system.

S-phrases

16	Keep away from sources of ignition — No smoking.
33	Take precautionary measures against static discharges.
35	This material and its container must be disposed of in a safe way.
9	Keep container in a well-ventilated place.

Hazardous ingredients for labeling
4-methylpentan-2-one, toluene

16. Other information

Further information
Data of items 4 to 8, as well as 10 to 12, do partly not refer to the use and the regular employing of the product (in this sense consult information on use and on product), but to liberation of major amounts in case of accidents and irregularities.
The information describes exclusively the safety requirements for the product (s) and is based on the present level of our knowledge.
The delivery specifications are contained in the corresponding product sheet.
This data does not constitute a guarantee for the characteristics of the product(s) as defined by the legal warranty regulations.
(n.a. = not applicable; n.d. = not determined)

1. Identification of the substance/preparation

Name of product	**TIP TOP COROFLAKE N PRIMER** No. 590 0040
Manufacturer/distributor	STAHLGRUBER Otto Gruber GmbH & Co. KG Gruber Straße 63, D-85586 Poing Phone ++49 / 81 21 / 707 - 0
Emergency advice	Phone ++49 / 81 21 / 707 - 0

2. Composition/information on ingredients

Chemical characterization
Epoxide-vinyl ester-resin in styrene

Hazardous ingredients

CAS-No.	Name	[%]	Classification	
000100-42-5	styrene	35 - 50	Xn	R10-20-36/38
000121-69-7	N,N-dimethylaniline	< 0,2	T, N	R23/24/25-40-51/53

3. Special hazards information for man and environment

R-phrases

10	Flammable.
20	Harmful by inhalation.
36/38	Irritating to eyes and skin.

4. First aid measures

General information
Remove contaminated soaked clothing immediately.
In the event of persistent symptoms receive medical treatment.
Take away from danger area and lay down affected person.

In case of inhalation
Move to fresh air in case of accidental inhalation of vapours.
Seek medical treatment immediately.

In case of skin contact
Wash off immediately with soap and plenty of water.
Treat subsequently with skin cream.
Consult a doctor if skin irritation persists.

In case of eye contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Consult (eye) doctor immediately.

In case of ingestion
The decision whether to induce vomiting or not is to be taken by a physician.
Do not give milk.
Attention! Beware, danger of aspiration!
Do not induce vomiting.
Summon a doctor immediately.
Immediately give plenty of water, if possible charcoal slurry.

5. Fire-fighting measures

Suitable extinguishing material
Alcohol-resistant foam, dry chemical, carbon dioxide (CO2), water-spray

Extinguishing material that may not be used for safety reasons
Full water jet

Special exposure hazards arising from the substance, combustible products or resulting gases
Fire may produce:
carbon monoxide and dioxide
Irritant/corrosive, flammable as well as toxic distillation gases (carbonization gases)

Special protective equipment for firefighters
Wear self-contained breathing apparatus and protective suit.

Additional information
Vapours are heavier than air and spread along ground.
The vapour/air mixture is explosive, even in empty, uncleaned receptacles.
Cool containers at risk with water spray jet.
Collect contaminated firefighting water separately, must not be discharged into the drains.

6. Accidental release measures

Personal precautions
In case of vapour formation use respirator.
Ensure adequate ventilation.
Remove persons to safety.
Use personal protective clothing.
Keep away sources of ignition.

Environmental precautions
Do not discharge into the drains or bodies of water.

Methods for cleaning up/taking up
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder).
Shovel into suitable container for disposal.

7. Handling and storage

Advice on safe handling
Keep container tightly closed.
Vapours are heavier than air and spread along ground.
Use only in thoroughly ventilated areas.
Provide suitable extraction at the processing machines.

Advice on protection against fire and explosion
Keep away from heat and sources of ignition.
Do not smoke.
Take precautionary measures against static discharges.
Use only explosion-proof equipment.

Requirements for storage rooms and vessels
Keep container tightly closed in a dry, cool and well-ventilated place.
Pay attention to anti-explosion rules.
Avoid temperatures above 50°C.

Advice on storage compatibility
Incompatible with:
oxidizing agents
metal halogenides
peroxides

Further information on storage conditions
Keep away from food, drink and animal feeding stuffs.

8. Exposure controls / personal protection

Additional advice on system design
Ensure adequate ventilation, especially in confined areas.
Pay attention to anti-explosion rules.

Ingredients with occupational exposure limits to be monitored

CAS-No.	Name	Code	[mg/m³]	[ml/m³]	Remark
000100-42-5	styrene	TLV	430	100	EH 40 table 1
000121-69-7	N,N-dimethylaniline	TLV	25	5	

Respiratory protection
In case of insufficient ventilation wear suitable respiratory equipment (gas filter type A).

Hand protection
Plastic gloves

Eye protection
Eye wash bottle with pure water
tightly fitting goggles

Skin protection
Long sleeved clothing.
solvent-resistant apron

General protective measures
Do not inhale vapours.
Wash hands before breaks and immediately after handling the product.
When using, do not eat, drink or smoke.
Treat subsequently with skin cream.
Remove and wash contaminated clothes before re-use.

9. Physical and chemical properties

Form
liquid

Colour
yellowish

Odour
pungent

Data relevant for safety

	Value	Temperature	At	Method	Remark
Flash point	35 °C				
Combustion temperature	490 °C				
Lower explosion limit	1.1 Vol-%				

	Value	Temperature	At	Method	Remark
Vapour pressure	6 hPa	20 °C			
Density	1 g/ml				
Solubility in water		20 °C			immiscible
Viscosity	340 - 444 mPa*s				

10. Stability and reactivity

Conditions to avoid
To avoid thermal decomposition, do not overheat.
Vapour/air mixtures are explosive at intensive warming.
Heating can release vapours which can be ignited.
Avoid temperatures above 50°C.
If heating up polymerisation.

Materials to avoid
Oxidizing agents.
peroxides
metal halogenides

Hazardous decomposition products
Irritant/corrosive, flammable as well as toxic distillation gases (carbonization gases).
carbon monoxide and carbon dioxide

Additional information
No decomposition if stored and applied as directed.

11. Toxicological information

Experiences made from practice
Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.
Harmful by inhalation
Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.
Irritates eyes and skin.

12. Ecological information

General regulation
Do not flush into surface water or sanitary sewer system.
Water contaminating.
Product is toxic to fish and their nutrient animals.

13. Disposal considerations

Waste code No.	Name of waste
08 04 02	waste adhesives and sealants free of halogenated solvents

Recommendations for the product
Where possible recycling is preferred to disposal.
Can be incinerated, when in compliance with local regulations.

Recommendations for packaging
Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken fot reuse.
Packaging that cannot be cleaned should be disposed of like the product.

14. Transport information

Land and inland navigation transport (ADR/RID/GGVS/GGVE/ADNR)

Identification	1866 RESIN SOLUTION
Class/No./letter	3 / 31 c
Hazard No.	30
Product No.	1866
Remarks	

Marginal 2301a: combination packaging: 5 l / 45 l; trays: 5 l / 20 kg total gross mass.

Marine transport IMDG/GGV See

Proper shipping name	RESIN SOLUTION
Class	3.3
UN-No.	1866
Marine pollutant	Yes
PG	III
MFAG	310
EmS-No.	3-05
Remarks	

Limited quantities (section 18): combination packaging: 5 l / 30 kg (total gross mass); trays: 5 l / 20 kg (total gross mass)

Air transport ICAO/IATA

Proper shipping name	RESIN SOLUTION
Class	3
UN/ID-No.	1866
PG	III

Remarks
PAC 309 (60 L), CAC 310 (220 L)

15. Regulatory information

Remarks for classification
According to EC-regulations the product is to be labelled as follows:

Classification
Xn Harmful

R-phrases

10	Flammable.
20	Harmful by inhalation.
36/38	Irritating to eyes and skin.

S-phrases

23.3	Do not breathe vapour.
35	This material and its container must be disposed of in a safe way.
51	Use only in well ventilated areas.

Hazardous ingredients for labeling
styrene

16. Other information

Further information
Data of items 4 to 8, as well as 10 to 12, do partly not refer to the use and the regular employing of the product (in this sense consult information on use and on product), but to liberation of major amounts in case of accidents and irregularities.
The information describes exclusively the safety requirements for the product (s) and is based on the present level of our knowledge.
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PPC 01/04
43232/4

External bulk hydrochloric storage tank.
Storage tank indicator

Bulk storage tank has a level sight glass fitted and outlet valve locked with two operators in attendance when filling and emptying.

PPC 01/04
43232/3

Bulk storage areas

Internal bund area is RC35 concrete with fiberglass infill and steel-reinforcing mesh as per spec sheets of (Lafarge Concrete Company) covered in impervious 20mm Polypropylene sheet.

External bulk hydrochloric storage tank.

Bund constructed in 4.5mm mild steel with welded joints lined as per (Coating & lining tech sheets).

PPC 01/04 43232/5

5

QUALITY CASTINGS

Quality Castings were operating 17 electric resistance furnaces for casting aluminium at their factory in Bury St. Edmunds. Performance was not matching expectation. Melting rates were not being achieved, heating elements were wearing out too quickly and operation was proving inconsistent. A new gas-fired furnace designed by British Gas Technical Consultancy Service was installed at the factory as part of a research programme to provide better equipment for the aluminium melting industry.

The customer was impressed both with the furnace design and the excellent results achieved. Following the test period eleven gas-fired furnaces, tailored to suit the customer's needs, have been installed.

CLARKSTEEL

Clarksteel Ltd of Peterborough, who manufacture drainage products, replaced an electrically heated galvanising tank with a larger capacity gas-fired model as part of a planned production increase. In addition to the improved control and increased production capacity, running costs have been reduced due to the 50% energy saving and the maximum demand charges have been reduced.

"As a result of the installation of gas we have substantially reduced our energy costs by 50% or a fuel cost saving of £28,000 per annum. As our company continues to develop and expand we hope that there will be further energy cost savings, like we have seen with the recent capital investment programme. We also hope to develop further our good relationship with British Gas Eastern who are in fact a customer of our's," said Mr. M. Gilbey, Group Accountant.

BLM (WELWYN)

As part of a redevelopment plan to improve environmental performance, BLM (Welwyn) installed new gas-fired plant at their Welwyn Garden City factory. This consisted of lead melting kettles, an incinerator to clean fumes and a wet scrubber system. Heat exchangers enable pre-heating of process fumes which has helped further increase energy savings as well as increase production.

Mr T.Boon, Director of Technical Services said, *"This technology has provided further gains in environmental performance together with an increase in throughput for less energy requirement."*

CARDALE ENGINEERING

Cardale Engineering Ltd. of Luton, installed new gas-fired equipment including drying and curing ovens for their automotive engineering business. To help reduce energy costs further, gas-fired space heating equipment was installed, including radiant tube heaters in the factory areas and boilers for the offices. Benefits have included reduced running costs, improved flexibility of operation and consolidation of site tariffs.

The company Directors said, *"British Gas staff gave excellent technical support, analysis on plant specification, installation pre-layout and suggestions enabling smooth commissioning of the plant. This helped ensure maximisation of efficiency and costs. The assistance of British Gas personnel could not be faulted."*

British Gas
Eastern

Resource Department, British Gas plc (Eastern), Star House,
Mutton Lane, Potters Bar, Herts EN6 2PD. Telephone (0707) 651151

RESOURCE

For Process Heating

Why Choose Gas?

- Modern gas-fired process equipment is efficient and economical, keeping energy costs to a minimum.
- Gas is highly controllable, offering rapid response times and excellent results economically.
- Gas is the cleanest fossil fuel helping to reduce emissions and provide a good working environment.

Why Choose British Gas Eastern?

- We provide a complete service from initial site survey to installation and after sales service.
- Our Engineers are fully trained and experienced in the design and installation of specialist gas-fired process equipment.
- We do not manufacture appliances, so we can specify the most appropriate systems to match your individual needs.
- We offer environmental services to help you to meet legislation.
- We offer advice and assistance in all areas of gas utilisation including catering, heating, hot water, CHP and cooling.
- Our research stations can provide specialised technical support.
- You can be sure that all relevant standards and codes of practice will be followed.
- Regardless of who supplies your gas, our Resource is available to all industrial organisations

British Gas
Eastern

METALS

Ref. PPC01/04 43232/5

Energy Costs

Date	Gas COST	KWH used	Electricity COST	kwh used	Total
January	2373.73	207857	977.74	20756	3351.47
february	2469.93	216281	1312.71	30903	3782.64
March	2372.47	207747	1431.64	13288	3804.11
April	2324.30	176484	1582.40	19155	3906.70
May	2009.56	152586	926.33	16291	2935.89
June	2454.70	186386	1148.83	26599	3603.53
July	2854.00	216704	1173.05	19708	4027.05
August	2379.89	180705	1477.31	24542	3857.20
September	2592.15	196823	1295.75	25321	3887.90
Total To Date	**21830.73**	**1741573**	**11325.76**	**196563**	**33156.49**

TOTAL PRODUCTION

Date	tonneage	energy	energy cost per tonne
January	261.845	3351.47	12.80
february	469.639	3782.64	8.05
March	457.964	3804.11	8.31
April	253.592	3906.70	15.41
May	475.739	2935.89	6.17
June	526.365	3603.53	6.85
July	680.08	4027.05	5.92
August	561.358	3857.20	6.87
September	622.348	3887.90	6.25
Total To Date	**4308.93**	**33156.49**	**7.69**

PPC 01/04
43232/6

6

ENVIRONMENTAL NOISE SURVEY – CLARKDRAIN GALVANISING
Over the night of 16/17 dec 04

General

The survey was carried out according to BS 4142 1997.
This requires any night time survey to be carried out at a time when the nearest residents are about to go to sleep or are sleeping, section **(6.2).** This was agreed with Aaron Morley over the telephone as 2300 to 0200hrs. Times of the test periods are logged automatically on the printouts attached to this report.
Three (3) locations were suggested by HDC and these were marked on the map supplied by them as A, B and C. Any references to the sections in BS standard are in the form **(12.3)** etc

Equipment

The Clark-Drain sound meter, being intended for inside industrial use does not measure low enough to distinguish residual sound levels outside at night and does not have an LA90 facility. Consequently a type 1 environmental sound meter was hired in the form of a kit of (meter, plus calibrator plus printer, plus calibration certificate copies). The calibration of the meter was checked out before use by the Clark-Drain QA manager (Don Reid). Details of the meter etc, certificates, serial numbers and data sheet are attached separately.
A familiarisation period was used for trial runs in daytime before using the meter and associated equipment.

Weather conditions

Cool but mild for time of year, with a mean temperature of 4C
15-20 mph wind from west (slightly more gusting during the latter stages of the night), even cloud cover.

Positioning of meter

1.3m above ground on a tripod **(5.3 note 1)**
At least 3.5 m away from reflecting surfaces **(5.3)**
Microphone level and pointing towards the galv plant
At the map locations A, B, C
The foam "muff" was used over the microphone to reduce any wind noise.

The subjective "nature" of the specific noise.

This was assessed at each of the locations according to the perceived noise from the galvanising plant **(8)** and the appropriate factor and notes incorporated into the calculations.

LOCATION A

description	symbol	result	clause	commentary
Measured noise level	LAeq(10min)	44	6.3	Galv plant operating
Residual noise level	LAeq(10min	51	6.3	Galv plant shut down
Background noise level	LA90	41	7.3	Of residual noise
Correction factor		0	Table 1	.Table does not give a correction factor for the circumstance of residual being greater than measured.
Specific noise level		44	6.3	
Acoustic feature correction		0	8	No discernable noise pattern
Rating level		44	8.3	
Excess of rating over background		3	9	
Likelihood of complaints		unlikely		

LOCATION B

description	symbol	result	clause	commentary
Measured noise level	LAeq(10min)	44	6.3	Galv plant operating
Residual noise level	LAeq(10min	57	6.3	Galv plant shut down
Background noise level	LA90	38	7.3	
Correction factor		0	Table 1	
Specific noise level		44	6.3	
Acoustic feature correction		0	8	No discernable noise pattern
Rating level		44	8.3	
Excess of rating over background		6	9	
Likelihood of complaints		Not likely		

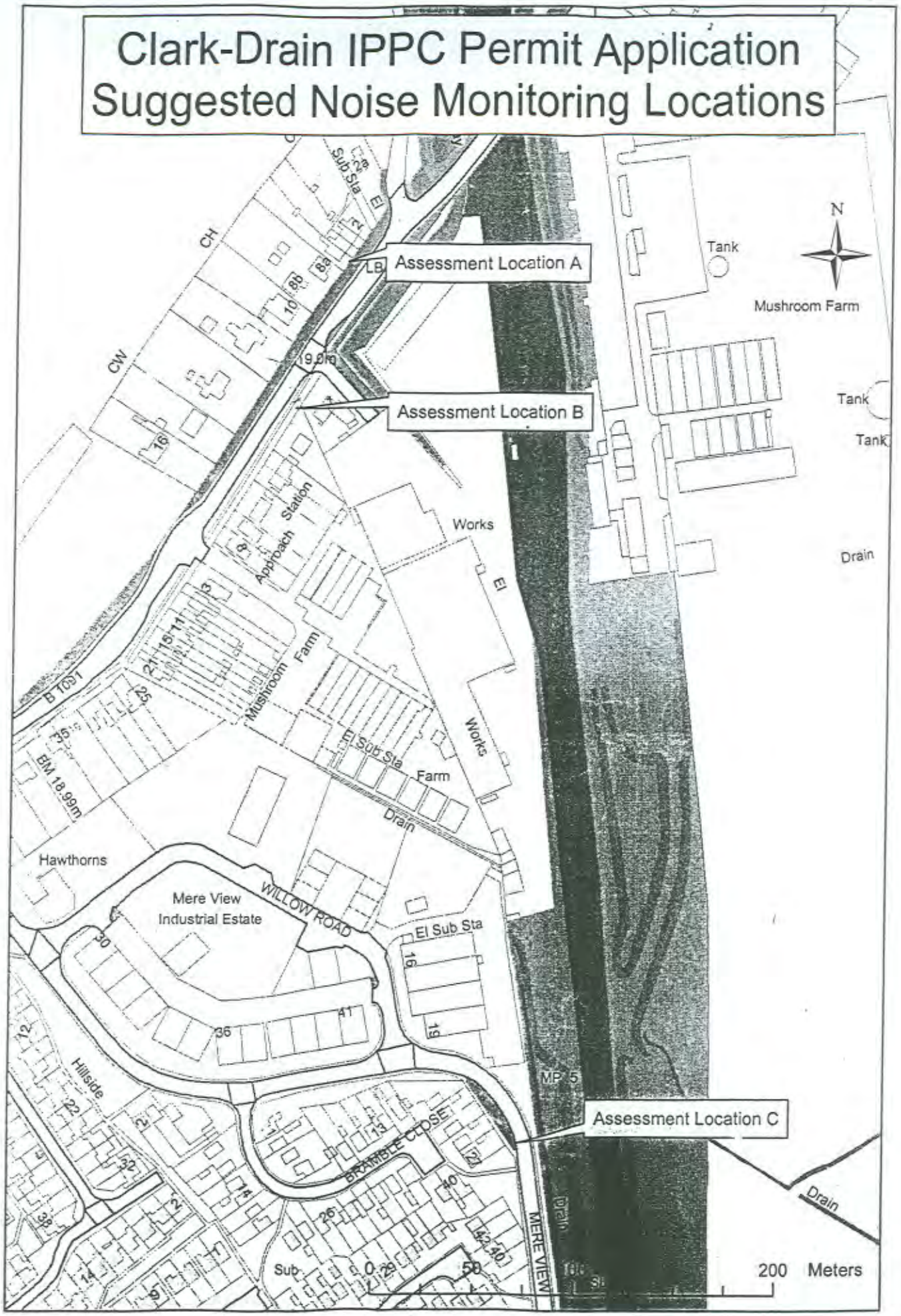
LOCATION C

description	symbol	result	clause	commentary
Measured noise level	LAeq(10min)	37	6.3	Galv plant operating
Residual noise level	LAeq(10min	41	6.3	Galv plant shut down
Background noise level	LA90	35	7.3	
Correction factor		0	Table 1	
Specific noise level		37	6.3	
Acoustic feature correction		0	8	
Rating level		37	8.3	
Excess of rating over background		2	9	
Likelihood of complaints		Unlikely		

General comments.

During the "galv plant on" periods the extractor system was worked full time, and the normal shift activities worked..
During all tests the pause button was used to eliminate passing cars and trains etc. Traffic was light throughout the test period and little use was made of the button.
In order to isolate the "specific noise" under investigation, the plastics factory and steel shop were temporarily shut down from their reduced night time activities.

Clark-Drain IPPC Permit Application
Suggested Noise Monitoring Locations



Castle
advanced sound solutions

Certificate of Calibration

for

GA 607

Description: Calibrator - Dual Level

Identification: Serial Number **039352**

Basis of Test

Compliance to IEC 942 1988 : Class 1

Calibrated by: **O L Wrightson**

Checked by: **M Mann**

Certificate number: **039352/42997**

Date: **08/09/04**

Recalibration due: **01/11/05**

CASTLE GROUP LIMITED, SALTER ROAD,
SCARBOROUGH, NORTH YORKSHIRE, YO11 3UZ ENGLAND
Telephone: +44 (0)1723 584250 Facsimile: +44 (0)1723 583728

NPL calibration certificate reference 55031

Reference: GA607.cal/060993

Castle
advanced sound solutions

Certificate of Calibration

for

Vocis M (GA131)

Description: Integrating 1/1 & 1/3 Octave Band Sound Level Meter

Identification: Serial Number ***0061959***

Microphone: Serial Number ***5048***

Basis of Test

Compliance to IEC 61672-1 : 2002 Class 1, IEC 60651 : 2001 Type 1, IEC 60804 : 2000 Type 1, IEC 1260 : 1995 Class 1

Calibrated by: ***O L Wrightson***

Checked by: ***M Mann***

Certificate number: ***0061959/42997***

Date: ***08/09/04***

Recalibration due: ***01/11/05***

CASTLE GROUP LIMITED, SALTER ROAD,
SCARBOROUGH, NORTH YORKSHIRE, YO11 3UZ ENGLAND
Telephone: +44 (0)1723 584250 Facsimile: +44 (0)1723 583728

NPL calibration certificate reference *S5149*
Reference: GA131m.cal/131102

Location A Specific source on

Castle PRO-DX Vocis M (GA131)

Serial Number: 0061959
Program Version: 1.11

Log Name: AJTA2

Logging Mode: FULL OCTAVE Fast A

Log Start: 01:55:29 on 17/12/04
Log End: 02:05:29 on 17/12/04

Interval: 05 Minute(s)

Interval Measurements

Interval Time: 02:01:41

Channel A

Hz	Leq	Lmin	Lmax
AP	43.9	40.4	54.6
16	5.6	-12.6	31.8
31.5	16.2	6.2	40.1
63	31.0	25.1	44.0
125	34.7	29.8	45.0
250	33.8	29.5	43.3
500	36.8	32.8	45.7
1k	37.3	32.8	46.0
2k	33.0	26.9	49.0
4k	33.8	21.6	51.4
8k	23.6	14.6	41.0
16k	12.3	8.5	29.6

Pmax:

AP = 74.7 dB

Interval Lns:

Hz	L05	L10	L50	L90
AP	46.4	45.2	42.8	41.6
16	19.8	19.8	19.8	19.8
31.5	19.8	19.8	19.8	19.8
63	33.2	32.6	30.2	28.2
125	36.4	36.0	34.2	32.6
250	36.0	35.4	33.0	31.4
500	38.8	38.2	36.2	34.6
1k	40.4	39.2	38.2	34.6
2k	36.4	34.4	31.2	29.2
4k	40.8	36.6	26.2	23.2
8k	28.6	25.6	19.8	19.8
16k	19.8	19.8	19.8	19.8

63	33.2	32.6	30.2	28.2
125	36.4	36.0	34.2	32.6
250	36.0	35.4	33.0	31.4
500	38.8	38.2	36.2	34.6
1k	40.4	39.2	35.2	34.6
2k	36.4	34.4	31.2	29.2
4k	40.8	36.6	26.2	23.2
8k	28.6	25.6	19.8	19.8
16k	19.8	19.8	19.8	19.8

As previous

Hz	L95	L99	L01
AP	41.2	40.8	48.8
16	19.8	19.8	19.8
31.5	19.8	19.8	24.4
63	27.6	26.6	34.6
125	32.2	31.4	37.6
250	31.0	30.4	37.0
500	34.2	33.6	39.8
1k	34.0	33.4	42.6
2k	28.6	27.6	40.8
4k	22.8	22.0	45.6
8k	19.8	19.8	34.0
16k	19.8	19.8	21.4

Cumulative Measurements

Channel A

Hz	Leq	Lmin	Lmax
AP	43.7	39.6	54.6
16	6.7	-12.6 ?	31.8 ?
31.5	16.5	6.2	40.1
63	30.9	25.1	44.0
125	34.6	28.8	45.0
250	33.6	28.8	43.3
500	36.5	31.4	45.7
1k	37.1	32.2	46.0
2k	32.9	26.9	49.2
4k	33.8	21.6	51.4
8k	23.2	14.3	41.0
16k	12.2	8.5	29.6

Pmax:

AP = 74.7 dB

Cumulative Lns:

Hz	L05	L10	L50	L90
AP	44.2	45.2	42.8	41.4
16	19.8	19.8	19.8	19.8
31.5	19.8	19.8	19.8	19.8
63	33.2	32.4	30.2	28.2
125	36.4	35.8	34.0	32.4
250	35.8	35.2	33.0	31.2
500	38.6	38.0	36.0	34.2
1k	40.0	39.0	36.2	34.4
2k	36.2	34.4	31.2	29.0
4k	40.8	37.0	26.2	23.4
8k	28.4	25.8	19.8	19.8
16k	19.8	19.8	19.8	19.8

16k ....

Pmax:

AP = 74.7 dB

Cumulative Lns:

Hz	L05	L10	L50	L90
AP	[illegible]	45.2	42.8	41.4
16	19.8	19.8	19.8	19.8
31.5	19.8	19.8	19.8	19.8
63	33.2	32.4	30.2	28.2
125	36.4	35.8	34.0	32.4
250	35.8	35.2	33.0	31.2
500	38.6	38.0	36.0	34.2
1k	40.0	39.0	36.2	34.4
2k	36.2	34.4	31.2	29.0
4k	40.8	37.0	26.2	23.4
8k	28.4	25.8	19.8	19.8
16k	19.8	19.8	19.8	19.8

Hz	L95	L99	L01
AP	41.0	40.4	48.6
16	19.8	19.8	19.8
31.5	19.8	19.8	25.2
63	27.6	26.6	34.6
125	31.8	30.6	37.4
250	30.8	30.0	37.0
500	33.8	32.6	39.8
1k	33.8	33.0	42.2
2k	28.4	27.6	40.6
4k	22.8	22.2	45.4
8k	19.8	19.8	33.4
16k	19.8	19.8	20.8

Log Overloaded: No

A

Location: BRIDGE ..... GALV ON .....

Operator: MS RAYNER .....

Signature: MS .....

User calibration: 16:10:30 on 16/12/04

Factory recal due: 01/11/05

Location A Specific source off

Castle PRO-DX Vocis M (GA131)

Serial Number: 0061959
Program Version: 1.11

Log Name: 11

Logging Mode: FULL OCTAVE Fast A

Log Start: 23:50:30 on 16/12/04
Log End: 00:03:34 on 17/12/04

Interval: 05 Minute(s)

Interval Measurements

Interval Time: 23:57:47

Channel A

Hz	Leq	Lmin	Lmax
AP	52.0	40.1	67.0
16	1.2	-13.1	21.7
31.5	14.4	4.6	25.5
63	28.6	21.9	35.3
125	33.6	29.2	40.4
250	36.5	30.1	49.4
500	43.0	32.7	57.1
1k	49.3	33.7	64.0
2k	44.6	26.1	62.6
4k	33.5	19.4	55.7
8k	23.1	13.0	40.3
16k	19.6	16.3	29.0

Pmax:

AP = 79.5 dB

Interval Lns:

Hz	L05	L10	L50	L90
AP	58.2	56.0	45.2	41.4
16	19.8	19.8	19.8	19.8
31.5	19.8	19.8	19.8	19.8
63	31.0	30.2	27.8	25.8
125	35.4	34.8	33.0	31.6
250	40.2	38.8	34.4	32.6
500	49.2	47.6	37.0	34.6
1k	55.8	53.4	40.8	35.2
2k	51.2	48.6	36.0	28.2

250	40.2	38.8	34.4	32.6
500	49.2	47.6	37.0	34.6
1k	55.8	53.4	40.8	35.2
2k	51.2	48.6	36.0	28.2
4k	39.6	35.6	25.8	21.0
8k	29.0	26.6	19.8	19.8
16k	21.0	20.4	19.8	19.8

Hz	L95	L99	L01
AP	41.2	40.8	62.4
16	19.8	19.8	19.8
31.5	19.8	19.8	20.0
63	25.2	24.4	32.6
125	31.0	30.2	37.0
250	32.2	31.4	43.8
500	34.4	33.8	52.0
1k	34.8	34.2	59.8
2k	27.4	26.4	55.6
4k	20.4	20.0	45.4
8k	19.8	19.8	33.4
16k	19.8	19.8	23.0

Cumulative Measurements

Channel A

Hz	Leq	Lmin	Lmax
AP	51.2	40.1	68.5
16	4.1	-13.1	28.0
31.5	14.6	4.6	29.8
63	29.3	21.9	46.0
125	34.0	27.7	48.4
250	36.3	30.1	49.4
500	42.2	32.0	57.1
1k	48.6	33.1	67.2
2k	43.0	24.7	62.6
4k	31.7	18.6	55.6
8k	22.1	12.6	40.3
16k	19.4	16.3	29.0

Pmax:

AP = 79.8 dB

Cumulative Lns:

Hz	L05	L10	L50	L90
AP	57.6	54.6	43.2	41.2
16	19.8	19.8	19.8	19.8
31.5	19.8	19.8	19.8	19.8
63	30.8	30.0	27.8	25.8
125	35.8	35.0	33.2	31.6
250	40.4	38.6	34.2	32.4
500	48.8	46.0	36.0	34.4
1k	55.2	52.2	38.2	34.8
2k	50.0	45.8	32.8	27.4
4k	37.2	33.8	24.6	20.8
8k	27.6	25.0	19.8	19.8
16k	20.8	20.4	19.8	19.8

Hz	L95	L99	L01

500	[illegible]		
1k	48.6	33.1	67.2
2k	43.0	24.7	62.6
4k	31.7	18.6	55.6
8k	22.1	12.6	40.3
16k	19.4	16.3	29.0

Pmax:

AP = 79.8 dB

Cumulative Lns:

Hz	L05	L10	L50	L90
AP	57.6	54.6	43.2	41.2
16	19.8	19.8	19.8	19.8
31.5	19.8	19.8	19.8	19.8
63	30.8	30.0	27.8	25.8
125	35.8	35.0	33.2	31.6
250	40.4	38.6	34.2	32.4
500	48.8	46.0	36.0	34.4
1k	55.2	52.2	38.2	34.8
2k	50.0	45.8	32.8	27.4
4k	37.2	33.8	24.6	20.8
8k	27.6	25.0	19.8	19.8
16k	20.8	20.4	19.8	19.8

Hz	L95	L99	L01
AP	41.0	40.6	62.2
16	19.8	19.8	19.8
31.5	19.8	19.8	20.6
63	25.2	24.4	35.2
125	31.2	30.4	39.0
250	32.0	31.2	43.6
500	34.0	33.4	52.2
1k	34.4	33.8	60.2
2k	26.8	25.8	54.4
4k	20.2	19.8	43.0
8k	19.8	19.8	32.2
16k	19.8	19.8	22.4

(A)

Log Overloaded: No

Location: BRIDGE GALV OFF

Operator: M S RAYNOR

Signature: [signature]

User calibration: 16:10:30 on 16/12/04

Factory recal due: 01/11/05

Castle PRO-DX Vocis M (GA131)

Serial Number: 0061959
Program Version: 1.11

Log Name: 147

Logging Mode: FULL OCTAVE Fast A

Log Start: 01:44:44 on 17/12/04
Log End: 01:54:44 on 17/12/04

Interval: 05 Minute(s)

Interval Measurements

Interval Time: 01:50:06

Channel A

Hz	Leq	Lmin	Lmax
AP	43.3	36.4	57.6
16	15.0	-8.4	34.4
31.5	21.8	3.9	42.9
63	27.5	19.9	48.9
125	31.2	22.7	49.7
250	34.1	25.1	51.4
500	32.9	29.1	44.1
1k	33.4	29.7	46.1
2k	34.4	24.8	55.6
4k	38.2	22.9	56.9
8k	25.2	17.8	48.9
16k	13.4	10.3	35.0

Pmax:

AP = 83.4 dB

Interval Lns:

Hz	L05	L10	L50	L90
AP	49.4	46.4	39.0	37.2
16	20.4	19.8	19.8	19.8
31.5	26.4	22.8	19.8	19.8
63	29.8	28.2	25.2	23.0
125	34.8	33.0	28.4	25.8
250	37.0	32.4	28.8	27.0
500	35.6	34.4	31.8	30.6
1k	36.8	35.2	31.8	30.6
2k	39.6	36.4	28.6	26.4
4k	45.0	39.6	25.8	24.0
8k	29.6	26.2	20.6	19.8
16k	19.8	19.8	19.8	19.8

63	29.8	28.2	25.2	23.0
125	34.8	33.0	28.4	25.8
250	37.0	32.4	28.8	27.0
500	35.6	34.4	31.8	30.6
1k	36.8	35.2	31.8	30.6
2k	39.6	36.4	28.6	26.4
4k	45.0	39.6	25.8	24.0
8k	29.6	26.2	20.6	19.8
16k	19.8	19.8	19.8	19.8

Hz	L95	L99	L01
AP	37.0	36.6	52.6
16	19.8	19.8	27.4
31.5	19.8	19.8	33.4
63	22.4	21.2	36.0
125	25.2	24.4	40.4
250	26.6	26.0	47.0
500	30.4	29.8	37.8
1k	30.4	30.0	40.0
2k	26.0	25.6	45.4
4k	23.8	23.2	50.8
8k	19.8	19.8	36.0
16k	19.8	19.8	20.4

Cumulative Measurements

Channel A

Hz	Leq	Lmin	Lmax
AP	43.9	36.4	59.4
16	14.7	-10.4	34.4
31.5	21.2	3.9	42.9
63	27.6	18.7	48.9
125	31.6	22.7	49.7
250	33.5	25.1	51.4
500	33.6	29.1	45.8
1k	35.5	29.7	52.7
2k	35.6	24.8	58.4
4k	38.6	22.8	57.0
8k	26.6	17.8	48.9
16k	14.5	10.3	35.0

Pmax:

AP = 83.4 dB

Cumulative Lns:

Hz	L05	L10	L50	L90
AP	49.6	47.0	40.0	37.4
16	20.4	19.8	19.8	19.8
31.5	25.8	22.6	19.8	19.8
63	31.0	29.4	25.4	23.0
125	35.4	34.2	29.4	26.2
250	35.8	34.2	29.2	27.2
500	36.8	35.8	32.2	30.8
1k	38.8	37.2	32.2	30.8
2k	40.8	37.6	29.6	26.6
4k	45.8	40.8	26.8	24.2
8k	32.2	29.0	21.4	19.8
16k	19.8	19.8	19.8	19.8

	20.6	17.8	48.9
16k	14.5	10.3	35.0

Pmax:

AP = 83.4 dB

Cumulative Lns:

Hz	L05	L10	L50	L90
AP	49.6	47.0	40.0	37.4
16	20.4	19.8	19.8	19.8
31.5	25.8	22.6	19.8	19.8
63	31.0	29.4	25.4	23.0
125	35.4	34.2	29.4	26.2
250	35.8	34.2	29.2	27.2
500	36.8	35.8	32.2	30.8
1k	38.8	37.2	32.2	30.8
2k	40.8	37.6	29.6	26.6
4k	45.8	40.8	26.8	24.2
8k	32.2	29.0	21.4	19.8
16k	19.8	19.8	19.8	19.8

Hz	L95	L99	L01
AP	37.2	36.8	52.8
16	19.8	19.8	26.6
31.5	19.8	19.8	32.2
63	22.4	21.4	34.6
125	25.6	24.6	38.8
250	26.8	26.0	46.0
500	30.4	30.0	40.0
1k	30.6	30.2	44.2
2k	26.2	25.6	46.0
4k	23.8	23.4	50.8
8k	19.8	19.8	36.8
16k	19.8	19.8	22.8

(B)

Log Overloaded: No

Location: STATION APP. GALW ON

Operator: M S RAYNER

Signature: .....

User calibration: 16:10:30 on 16/12/04

Factory recal due: 01/11/05

Castle PRO-DX Vocis M (GA131)

Serial Number: 0061959
Program Version: 1.11

Log Name: KJ

Logging Mode: FULL OCTAVE Fast A

Log Start: 00:18:37 on 17/12/04
Log End: 00:28:37 on 17/12/04

Interval: 05 Minute(s)

Interval Measurements

Interval Time: 00:25:15

Channel A

Hz	Leq	Lmin	Lmax
AP	57.7	37.1	80.5
16	13.1	-11.1	33.4
31.5	20.3	2.4	44.3
63	26.8	17.4	45.0
125	33.5	24.1	54.2
250	39.0	25.8	62.0
500	45.6	30.2	69.6
1k	55.3	31.1	78.7
2k	51.2	23.6	75.4
4k	37.8	19.5	61.0
8k	25.7	14.1	48.4
16k	15.0	8.3	29.6

Pmax:

AP = 96.8 dB

Interval Lns:

Hz	L05	L10	L50	L90
AP	54.8	51.0	40.6	38.4
16	19.8	19.8	19.8	19.8
31.5	25.8	22.2	19.8	19.8
63	30.2	28.0	23.8	21.4
125	35.2	33.4	29.4	26.4
250	39.4	36.6	30.0	28.0
500	41.6	39.0	33.4	31.8
1k	52.2	47.6	35.2	33.0
2k	48.6	44.0	30.8	26.4
4k	36.0	32.8	25.0	22.2
8k	27.4	23.8	20.0	19.8
16k	19.8	19.8	19.8	19.8

125	35.2	33.4	29.4	26.4
250	39.4	36.6	30.0	28.0
500	41.6	39.0	33.4	31.8
1k	52.2	47.6	35.2	33.0
2k	48.6	44.0	30.8	26.4
4k	36.0	32.8	25.0	22.2
8k	27.4	23.8	20.0	19.8
16k	19.8	19.8	19.8	19.8

Hz	L95	L99	L01
AP	38.0	37.6	67.2
16	19.8	19.8	24.8
31.5	19.8	19.8	31.4
63	20.8	19.8	36.8
125	25.8	25.0	44.0
250	27.6	26.8	51.4
500	31.4	31.0	53.6
1k	32.6	31.8	64.4
2k	26.0	25.0	60.2
4k	21.4	19.8	48.2
8k	19.8	19.8	34.4
16k	19.8	19.8	22.0

Cumulative Measurements

Channel A

Hz	Leq	Lmin	Lmax
AP	56.6	37.1	80.5
16	12.2	-12.2	33.4
31.5	19.5	2.4	44.3
63	26.2	17.4	45.0
125	33.0	23.7	54.2
250	38.1	25.8	62.0
500	44.5	30.1	69.6
1k	54.3	30.6	78.7
2k	50.1	23.6	75.4
4k	36.6	19.6	51.0
8k	24.7	14.1	48.3
16k	14.2	8.2	29.6

Pmax:

AP = 96.8 dB

Cumulative Lns:

Hz	L05	L10	L50	L90
AP	55.0	51.4	41.0	38.4
16	19.8	19.8	19.8	19.8
31.5	24.4	21.0	19.8	19.8
63	29.4	27.4	23.6	21.2
125	34.8	33.2	29.2	26.4
250	38.8	36.4	30.0	28.2
500	41.8	39.4	33.6	31.8
1k	52.4	48.6	36.0	32.8
2k	48.4	45.0	31.6	26.4
4k	35.6	32.0	24.6	21.8
8k	26.2	23.0	19.8	19.8
16k	19.8	19.8	19.8	19.8

AP = 96.8 dB

Cumulative Lns:

Hz	L05	L10	L50	L90
AP	55.0	51.4	41.0	38.4
16	19.8	19.8	19.8	19.8
31.5	24.4	21.0	19.8	19.8
63	29.4	27.4	23.6	21.2
125	34.8	33.2	29.2	26.4
250	38.8	36.4	30.0	28.2
500	41.8	39.4	33.6	31.8
1k	52.4	48.6	36.0	32.8
2k	48.4	45.0	31.6	26.4
4k	35.6	32.0	24.6	21.8
8k	26.2	23.0	19.8	19.8
16k	19.8	19.8	19.8	19.8

Hz	L95	L99	L01
AP	38.0	37.4	64.6
16	19.8	19.8	24.0
31.5	19.8	19.8	30.6
63	20.6	19.8	35.4
125	25.8	24.8	42.6
250	27.8	27.0	48.2
500	31.4	30.8	51.4
1k	32.2	31.4	62.6
2k	25.8	25.0	57.4
4k	21.4	20.0	44.8
8k	19.8	19.8	33.2
16k	19.8	19.8	21.4

(B)

Log Overloaded: No

Location: STATION APP GALV OFF

Operator: M S RAYNER

Signature:

User calibration: 16:10:30 on 16/12/04

Factory recal due: 01/11/05

-OR-

Castle PRO-DX Vocis M (GA131)

Serial Number: 0061959
Program Version: 1.11

Log Name: MMM

Logging Mode: FULL OCTAVE Fast A

Log Start: 01:00:15 on 17/12/04
Log End: 01:10:15 on 17/12/04

Interval: 05 Minute(s)

Interval Measurements

Interval Time: 01:06:53

Channel A

Hz	Leq	Lmin	Lmax
AP	37.2	33.8	53.3
16	-5.0	-18.0	8.6
31.5	12.0	3.4	18.2
63	24.6	18.1	31.4
125	26.5	20.2	31.9
250	24.8	21.2	41.3
500	31.7	27.9	43.1
1k	31.8	27.1	43.2
2k	24.8	16.9	48.7
4k	22.9	16.6	47.8
8k	17.3	12.0	39.1
16k	10.0	7.9	29.5

Pmax:

AP = 72.7 dB

Interval Lns:

Hz	L05	L10	L50	L90
AP	38.6	38.0	36.4	35.0
16	19.8	19.8	19.8	19.8
31.5	19.8	19.8	19.8	19.8
63	26.8	26.2	24.0	21.8
125	28.2	27.8	26.0	24.0
250	26.2	25.6	24.0	22.8
500	33.4	32.8	31.2	29.8
1k	33.4	33.0	31.2	29.0
2k	28.6	25.8	20.4	19.8
4k	25.2	23.2	19.8	19.8
8k	20.2	19.8	19.8	19.8
16k	19.8	19.8	19.8	19.8

63	26.8	26.2	24.0	21.8
125	28.2	27.8	26.0	24.0
250	26.2	25.6	24.0	22.8
500	33.4	32.8	31.2	29.8
1k	33.4	33.0	31.2	29.0
2k	28.6	25.8	20.4	19.8
4k	25.2	23.2	19.8	19.8
8k	20.2	19.8	19.8	19.8
16k	19.8	19.8	19.8	19.8

Hz	L95	L99	L01
AP	34.6	34.0	41.4
16	19.8	19.8	19.8
31.5	19.8	19.8	19.8
63	21.2	20.0	28.2
125	23.4	22.4	29.4
250	22.6	22.0	28.0
500	29.4	28.8	34.4
1k	28.4	27.8	36.0
2k	19.8	19.8	34.6
4k	19.8	19.8	31.8
8k	19.8	19.8	27.2
16k	19.8	19.8	19.8

Cumulative Measurements

Channel A

Hz	Leq	Lmin	Lmax
AP	37.0	33.7	53.3
16	-4.4	-18.0	8.6
31.5	11.6	2.4	18.3
63	25.7	17.5	34.6
125	26.3	19.7	31.9
250	24.8	21.2	41.3
500	31.7	27.9	43.1
1k	31.3	27.1	43.2
2k	24.2	16.4	48.7
4k	22.6	16.6	47.8
8k	17.1	12.0	39.1
16k	9.9	7.9	29.5

Pmax:

AP = 73.3 dB

Cumulative Lns:

Hz	L05	L10	L50	L90
AP	38.4	38.0	36.4	34.8
16	19.8	19.8	19.8	19.8
31.5	19.8	19.8	19.8	19.8
63	29.4	28.2	24.4	22.0
125	28.4	27.8	25.8	23.4
250	26.2	25.8	24.2	22.8
500	33.2	32.8	31.2	29.8
1k	33.0	32.6	30.6	29.0
2k	28.0	25.4	20.2	19.8
4k	26.0	23.2	19.8	19.8
8k	20.8	19.8	19.8	19.8
16k	19.8	19.8	19.8	19.8

Hz	L05	L10	L50	L90
AP	38.4	38.0	36.4	34.8
16	19.8	19.8	19.8	19.8
31.5	19.8	19.8	19.8	19.8
63	29.4	28.2	24.4	22.0
125	28.4	27.8	25.8	23.4
250	26.2	25.8	24.2	22.8
500	33.2	32.8	31.2	29.8
1k	33.0	32.6	30.6	29.0
2k	28.0	25.4	20.2	19.8
4k	26.0	23.2	19.8	19.8
8k	20.8	19.8	19.8	19.8
16k	19.8	19.8	19.8	19.8

Hz	L95	L99	L01
AP	34.6	34.2	40.8
16	19.8	19.8	19.8
31.5	19.8	19.8	19.8
63	21.2	20.0	31.4
125	23.0	22.0	29.4
250	22.6	22.0	27.8
500	29.4	28.8	34.0
1k	28.6	28.0	35.0
2k	19.8	19.8	33.4
4k	19.8	19.8	32.0
8k	19.8	19.8	26.6
16k	19.8	19.8	19.8

(C)

Log Overloaded: No

GALV ON.

Location: Mere View

Operator: M S RAYNER

Signature: .....

User calibration: 16:10:30 on 16/12/04

Factory recal due: 01/11/05

Castle PRO-DX Vocis M (GA131)

Serial Number: 0061959
Program Version: 1.11

Log Name: R0P

Logging Mode: FULL OCTAVE Fast A

Log Start: 00:38:11 on 17/12/04
Log End: 00:48:11 on 17/12/04

Interval: 05 Minute(s)

Interval Measurements

Interval Time: 00:43:53

Channel A

Hz	Leq	Lmin	Lmax
AP	40.3	33.3	58.6
16	-3.2	-17.3	15.5
31.5	10.5	-0.6	24.0
63	22.8	15.8	32.1
125	26.6	19.9	34.6
250	28.5	21.1	42.6
500	33.4	27.1	53.1
1k	34.3	27.3	51.5
2k	32.3	18.8	54.9
4k	30.6	17.5	51.2
8k	26.4	13.1	49.4
16k	17.9	7.8	37.3

Pmax:

AP = 78.9 dB

Interval Lns:

Hz	L05	L10	L50	L90
AP	43.6	41.2	37.0	35.2
16	19.8	19.8	19.8	19.8
31.5	19.8	19.8	19.8	19.8
63	25.2	24.4	22.0	19.8
125	29.0	28.0	25.8	23.8
250	33.4	30.8	24.6	22.8
500	36.0	34.0	30.6	29.2
1k	37.6	35.8	31.4	29.6
2k	36.2	33.6	25.8	21.6
4k	33.8	31.2	22.6	19.8
8k	29.0	26.0	19.8	19.8
16k	19.8	19.8	19.8	19.8

125	29.0	28.0	25.8	23.8
250	33.4	30.8	24.6	22.8
500	36.0	34.0	30.6	29.2
1k	37.6	35.8	31.4	29.6
2k	36.2	33.6	25.8	21.6
4k	33.8	31.2	22.6	19.8
8k	29.0	26.0	19.8	19.8
16k	19.8	19.8	19.8	19.8

Hz	L95	L99	L01
AP	34.6	34.0	51.4
16	19.8	19.8	19.8
31.5	19.8	19.8	19.8
63	19.8	19.8	27.2
125	23.4	22.4	32.0
250	22.4	21.8	39.4
500	28.8	28.2	42.2
1k	29.0	28.2	44.2
2k	20.8	19.8	44.6
4k	19.8	19.8	43.4
8k	19.8	19.8	39.4
16k	19.8	19.8	29.6

Cumulative Measurements

Channel A

Hz	Leq	Lmin	Lmax
AP	41.1	33.3	58.6
16	-4.0	-17.5	15.5
31.5	10.5	-0.6	24.0
63	23.8	15.8	36.4
125	34.0	19.9	50.9
250	32.8	21.1	54.3
500	33.3	27.1	53.0
1k	33.5	27.3	51.5
2k	30.7	18.8	54.9
4k	28.8	17.5	51.2
8k	24.4	12.6	49.4
16k	16.0	7.8	37.3

Pmax:

AP = 78.9 dB

Cumulative Lns:

Hz	L05	L10	L50	L90
AP	46.6	42.6	37.2	35.2
16	19.8	19.8	19.8	19.8
31.5	19.8	19.8	19.8	19.8
63	27.8	25.4	22.2	20.0
125	41.6	30.6	25.8	23.8
250	38.2	34.0	25.2	23.0
500	36.6	34.8	31.0	29.2
1k	36.4	34.6	31.6	29.8
2k	34.6	32.2	25.4	21.8
4k	32.0	29.6	22.4	19.8
8k	26.8	24.4	19.8	19.8
16k	19.8	19.8	19.8	19.8

63	27.6	25.4	22.2	20.6
125	41.6	30.6	25.8	23.8
250	38.2	34.0	25.2	23.0
500	36.6	34.8	31.0	29.2
1k	36.4	34.6	31.6	29.8
2k	34.6	32.2	25.4	21.8
4k	32.0	29.6	22.4	19.8
8k	26.8	24.4	19.8	19.8
16k	19.8	19.8	19.8	19.8

Hz	L95	L99	L01
AP	34.8	34.2	51.6
16	19.8	19.8	19.8
31.5	19.8	19.8	19.8
63	19.8	19.8	31.0
125	23.2	22.2	47.0
250	22.6	22.0	44.8
500	28.8	28.2	41.4
1k	29.4	28.4	42.2
2k	21.0	19.8	42.0
4k	19.8	19.8	40.4
8k	19.8	19.8	35.8
16k	19.8	19.8	26.4

Log Overloaded: No

(C)

Location: MOREVIEW SALU OFF

Operator: M S RAYNER

Signature: MR

User calibration: 16:10:30 on 16/12/04

Factory recal due: 01/11/05