British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 607376 : BGS Reference: TR35NE3
British National Grid (27700) : 636040,157550
Report an issue with this borehole

British Geological Survey

HYDROGEOLOGY RESEARCH GROUP

EASTERN LS SOUTHERN EA 290

TR35/93

Form WR-38 (BGS)

BOREHOLE RECORD

TR35 NE/3

A SITE DETAILS	
Borehole drilled for	Mr & Mrs C. CLIVE
Location	BEADLES, KINGS AVE, SANDWICH, KENT
NGR (8 fig.)	TR 3604 5755 — Please attach site plan
Ground Level (if known)	
Drilling Company	SMITH & WEBB (DRILLING) LTD
Date of Drilling	Commenced 3/3/98 — Completed 4/3/98

B CONSTRUCTION DETAILS

Borehole Datum (if not ground level) _____ above / m below GL

(point from which all measurements of depth are taken e.g. flange, edge of chamber, etc.)

Borehole drilled diameter	200	mm from	GL	to 19.5	m/depth
	150	mm from	19.5	to 30	m/depth
		mm from		to	m/depth
Casing material u PVC diameter and type (e.g. if plain steel, plastic slotted)		mm from		to	m/depth
PLAIN diameter	150	mm from	GL	to 20	m/depth
diameter		mm from		to	m/depth
diameter		mm from		to	m/depth

Grouting details _____

Water struck at 14-5 m (depth below datum — mbd)

_____ m (depth below datum — mbd)

Rest water level on completion 2-55 mbd

C TEST PUMPING SUMMARY (Please supply full details on Forms WR-39)

Test Pumping Datum (if different from borehole datum) _____ m above / below borehole datum (mbd)

Pump Suction depth _____ mbd

Water Level (Start of Test) _____ mbd

Water Level (End of Test) _____ mbd

Pumping rate _____ m^3/d:l/s

for _____ days/hours

Recovery to _____ mbd in _____ mins: hrs: days (from end of pumping)

Date(s) of measurements _____

Please supply chemical Analysis if available.

Simple pump test indicated 2m³ per hour

NGDC ACCESSION NUMBER 31476

BGS ID: 607376 : BGS Reference: TR35NE3
British National Grid (27700) : 636040,157550
Report an issue with this borehole

British Geological Survey

HYDROGEOLOGY RESEARCH GROUP

EASTERN LS SOUTHERN EA 290 TR35/93

Form WR-38 (BGS)

BOREHOLE RECORD

TR35 NE/3

A SITE DETAILS

Borehole drilled for	Mr & Mrs C. CLIVE
Location	BEADLES, KINGS AVE, SANDWICH, KENT
NGR (8 fig.)	TR 3604 5755 — Please attach site plan
Ground Level (if known)	
Drilling Company	SMITH & WEBB (DRILLING) LTD
Date of Drilling	Commenced 3/3/98 — Completed 4/3/98

B CONSTRUCTION DETAILS

Borehole Datum (if not ground level) _____ above / m below GL

(point from which all measurements of depth are taken e.g. flange, edge of chamber, etc.)

Borehole drilled diameter	200	mm from	GL	to	19.5 m/depth
	150	mm from	19.5	to	30 m/depth
		mm from		to	m/depth
Casing material u PVC diameter and type (e.g. if plain steel, plastic slotted)		mm from		to	m/depth
PLAIN diameter	150	mm from	GL	to	20 m/depth
diameter		mm from		to	m/depth
diameter		mm from		to	m/depth

Grouting details _____

Water struck at 14.5 m (depth below datum — mbd)

m (depth below datum — mbd)

Rest water level on completion 2.55 mbd

C TEST PUMPING SUMMARY (Please supply full details on Forms WR-39)

Test Pumping Datum (if different from borehole datum)		m	above / below borehole datum (mbd)
Pump Suction depth		mbd	
Water Level (Start of Test)		mbd	Simple pump test indicated 2m³ per hour
Water Level (End of Test)		mbd	
Pumping rate		m³/d:l/s	
	for	days/hours	
Recovery to (from end of pumping)	mbd	in	mins: hrs: days
Date(s) of measurements			

Please supply chemical Analysis if available.

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 607376 : BGS Reference: TR35NE3
British National Grid (27700) : 636040,157550
Report an issue with this borehole

D STRATA LOG

Geological Classification (BGS only)	Description of strata	Thickness m	Depth m
	TOP SOIL	0-20	0-20
	GOLDEN SAND	3-30	3-50
	BLACK SLIMEY SILT & CLAY & OCCASIONAL SHELLS (APPARENTLY AN OLD COAL MINE)	3-70	7-20
	MULTI-COLOURED CLAY BECOMING VERY SANDY TOWARDS THE END	7-30	14-50
	HARD FLINT	0-50	15-00
	RUBBLE CHALK	4-50	19-50
	STABLE UPPER CHALK	10-50	30-00

(continue on separate page if necessary

Other comments (e.g. gas encountered, saline water intercepted, etc.)

DOMESTIC SUPPLY

FOR OFFICIAL USE ONLY

FILE ..... CONSENT NO. ..... NGS REF NO. .....

LIC NO. ..... PURPOSE ..... NRA REF NO. .....

DATE REC: COPY TO: ENTERED BY:

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 607376 : BGS Reference: TR35NE3
British National Grid (27700) : 636040,157550
Report an issue with this borehole

D STRATA LOG

Geological Classification (BGS only)	Description of strata	Thickness m	Depth m
	TOP SOIL	0-20	0-20
	GOLDEN SAND	3-30	3-50
	BLACK SLIMEY SILT & CLAY & OCCASIONAL SHELLS (APPARENTLY AN OLD COAL MINE) MGRD	3-70	7-20
	MULTI-COLOURED CLAY BECOMING VERY SANDY TOWARDS THE END ? MGRD	7-30	14-50
	HARD FLINT	0-50	15-00
	RUBBLE CHALK	4-50	19-50
	STABLE UPPER CHALK	10-50	30-00

UCK

RAE 21/9/99

(continue on separate page if necessary

Other comments (e.g. gas encountered, saline water intercepted, etc.)

DOMESTIC SUPPLY

FOR OFFICIAL USE ONLY

FILE CONSENT NO. NGS REF NO.

LIC NO. PURPOSE NRA REF NO.

DATE REC: COPY TO: ENTERED BY:

GROUND EXPLORATIONS LTD.

TR136 SE/1
3511. 6410

BOREHOLE No. 2

Contract Name PEGWELL BAY Report No. 4033/SJB

Client Messrs. D. V. Buck & Partners, Site Address

Address 25 Victoria Street, Pegwell Bay,

London, S.W.1. Nr. Ramsgate,

Kent.

Standing Water Level — Method of Boring Shell/Auger

Water Struck — Diameter 6 inches

Ground Level c+2'AOD Start 21.3.67 Finish 23.3.67
c+0·61m AOD

Remarks:- Area covered by tide. *

JARS		CORES	BULK
5304 2'6"	5325 Water	5770 1'6"	
5305 6'6"		5306 7'6"	
5307 11'6"		5308 12'6"	
5309 17'6"		5310 17'6"	
5311 20'7"		5313 22'6"	
5312 21'6"		5315 27'0"	
5314 26'0"		5317 33'6"	
5316 31'6"		5319 38'6"	
5318 36'6"		5321 43'6"	
5320 41'6"		5323 48'6"	
5322 46'6"			
5324 50'0"			

Description	Thickness	Depth
[illegible] grey clayey silty fine sand	6'0" 1·83m	6'0" 1·83m
[illegible] grey silty clay - slightly fissured and laminated	44'0" 13·41m	50'0" 15·24m
Tidal beds. Marine Beach Deposits		
TOTALS	50'0" 15·24	50'0" 15·24m

Notes 1. Descriptions are in accordance with B.S. Code of Practice C.P. 2001
Clients are requested to compare with samples submitted.
2. Core samples are nominally 4 ins. diameter and 18 ins. long.
Depths shown are to top of [illegible]

GROUND EXPLORATIONS LTD.

BOREHOLE No. 4

TR136 SE12
3507. 6420
4033/SJB

Contract Name PEGWELL BAY
Report No.

Client Messrs. D. V. Buck & Partners,
Site Address

Address 25 Victoria Street,
Pegwell Bay,

London, S.W.1,
Nr. Ramsgate,

Kent.

Standing Water Level 5'0"
Method of Boring Shell/Auger

Water Struck 10'0"
Diameter 6 inches

Ground Level c+ 12' AOD
Start 28.3.67 Finish 30.3.67

Remarks c+ 3·66 m AOD

JARS		CORES		BULK
5326 2'6"	5349 60'6"	5330 10'6"	5353 66'6"	5327 3'0"
5328 7'6"	5351 63'6"	5332 15'6"		
5329 10'6"	5352 66'6"	5334 20'6"		
5331 15'6"	5354 69'0"	5336 25'6"		
5333 20'6"	5355 70'0"	5338 30'6"		
5335 25'6"	5356 Water	5340 35'6"		
5337 30'6"		5342 40'6"		
5339 35'6"		5344 45'6"		
5341 40'6"		5346 50'6"		
5343 45'6"		5348 55'6"		
5345 50'6"		5350 60'6"		
5347 55'6"				

Description	Thickness	Depth
Record Fine sand	2'0"	2'0" 0.61m
Coarse gravel and sand	8'0"	10'0" 3.05m
Hard grey silty clay - slightly fissured and laminated	55'0"	65'0" 19.81m
Chalk and flints	5'0"	70'0" 21.34m
TOTALS	70'0"	70'0" 21.34m

Notes
1. Descriptions are in accordance with B.S. Code of Practice C.P. 2001
Clients are requested to compare with samples submitted.
2. Core samples are nominally 4 ins. diameter and 18 ins. long

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695508 : BGS Reference: TR36SW36
British National Grid (27700) : 632910,161570
Report an issue with this borehole

<< < Prev Page 1 of 1 Next > >>

- 3 -

BORE HOLE No. 65. Ground Level 7.72 O.D.

TR 36 SW/36
3319. 6147
(DEPTH 15.54m)

Feet.		Material.
Alluvium	0 to 1 (0.3m)	Surface soil.
	1 to 6 (1.8m)	Brown Clay.
	6 to 12 (3.7m)	Blue silt.
RL ? -3.54m ? Thanet Beds	12 to 19 (3.3m)	Very Sandy Blue Silt.
	19 to 51 (16.5m)	Clean Sharp grey Sand.

BORE HOLE No. 66. Ground Level 7.69 O.D.

TR 36 SW/36 7
3309. 6187
(DEPTH 15.24m)

Alluvium	0 to 1 (0.3m)	Surface soil.
	1 to 6 (1.8m)	Brown Clay.
	6 to 18 (5.5m)	Blue Silt.
RL ? -3.18m ? Thanet Beds	18 to 24 (7.3m)	Fine Grey Sand.
	24 to 26 (7.3m)	Hard Brown Sandy Clay.
	26 to 35 (10.7m)	Fairly fine green sand.
	35 to 50 (15.2m)	Hard Grey Sandy Clay.

Driving between 35 and 40-ft. very hard.

BORE HOLE No. 67. Ground Level 7.72 O.D.

TR 36 SW/38
3278. 6192
(DEPTH 14.94m)

Alluvium	0 to 1 (0.3m)	Surface soil.
	1 to 6 (1.8m)	Brown Clay.
	6 to 18 (5.5m)	Blue silt.
RL -3.18m ? Thanet	18 to 42 (12.8m)	Clean fine grey sand.
	42 to 49 (14.9m)	Hard grey sandy clay.

BORE HOLE No. 68. Ground Level 8.22 O.D.

TR 36 SW/39
3284. 6224
(DEPTH 15.24m)

Alluvium	0 to 1 (0.3m)	Surface soil.
	1 to 5 (1.5m)	Brown Clay
	5 to 22 (6.7m)	Blue silt.
RL -4.22m Thanet Beds	22 to 28 (8.5m)	Very sandy blue silt.
	28 to 35 (10.7m)	Green sandy clay.
	35 to 42 (12.8m)	Grey sandy clay.
	42 to 50 (15.2m)	Hard grey sandy clay.

BORE HOLE No. 69. Ground Level 7.57 O.D.

TR 36 SW/40
3261. 6221
(DEPTH 15.24m)

Alluvium	0 to 1 (0.3m)	Surface soil.
	1 to 5 (1.5m)	Brown Clay.
	5 to 17 (5.2m)	Blue silt.
RL -2.84m ? Thanet Beds	17 to 24 (2.1m)	Fine grey sand.
	24 to 32 (2.8m)	Green sandy clay.
	32 to 45 (3.7m)	Grey sandy clay.
	45 to 50 (15.2m)	Hard grey sandy clay.

BGS ID: 695513 : BGS Reference: TR36SW41
British National Grid (27700) : 634990,164000
Report an issue with this borehole

GROUND EXPLORATIONS LTD.

BOREHOLE No. 1 TR36SW/41 34 99.6400

Contract Name: PEGWELL BAY
Report No. 4033/SJB

Client: D. V. Buck & Partners,
Address: 25 Victoria Street, London, S.W.1.

Site Address: Pegwell Bay, Nr. Ramsgate, Kent.

Standing Water Level: -
Water Struck:
Ground Level: c +5' AOD (c +1·52m AOD)
Remarks: Area covered by tide *

Method of Boring: Shell/Auger
Diameter: 6ins.
Start: 7.4.67
Finish: 7.4.67

JARS	CORES	BULK
5387 2'6" 5388 4'6" 5390 9'6" 5392 14'6" 5394 19'6" 5396 24'6" 5399 Water 5398 29'0"	5389 4'6" 5391 9'6" 5393 14'6" 5395 19'6" 5397 24'6"	

Description	Thickness	Depth
Dark grey silty fine sand and shells (Marine Beach Deposits)	4'0"	4'0" 1·22m
Hard, grey silty clay - slightly fissured and laminated (Thanet Beds (Marly division))	25'0"	29'0" 8·84m

BGS ID: 695514 : BGS Reference: TR36SW42
British National Grid (27700) : 634930,164090
Report an issue with this borehole

GROUND EXPLORATIONS LTD.

TR 16 SW/42
3493 6409

BOREHOLE No. 3

Contract Name: PEGWELL BAY — Report No. 4033/SJB

Client: Messrs. D. V. Buck & Partners, — Site Address: Pegwell Bay,

Address: 25 Victoria Street, London, S.W.1. — Nr. Ramsgate, Kent.

Standing Water Level: — — Method of Boring: Shell/Auger

Water Struck: — — Diameter: 6 inches

Ground Level: c + 9' AOD c + 2·74m AOD — Start 3.4.67 — Finish 6.4.67

Remarks :- Area covered by tide

JARS		CORES		BULK	
5357 2'6"	5380 59'6"	5358 4'6"	5381 59'6"		
5359 4'6"	5382 63'6"	5361 9'6"	5383 64'6"		
5360 9'6"	5384 66'0"	5363 14'6"			
5362 14'6"	5385 70'0"	5365 19'6"			
5364 19'6"	5386 Water	5367 24'6"			
5366 24'6"		5369 29'6"			
5368 29'6"		5371 34'6"			
5370 34'6"		5373 39'6"			
5372 39'6"		5375 44'6"			
5374 44'6"		5377 49'6"			
5376 49'6"		5379 54'6"			
5378 54'6"					

Description	Thickness	Depth
Soft black organic clay	4'0"	4'0"
Hard grey silty clay - slightly fissured and laminated	59'0"	63'0"
Chalk and flints	7'0"	70'0"

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

IGS SOUTHERN REGION - Borehole Reference

Signed: TEC
Date: 16/3/76

REGISTRATION NO: 6in. quarter sht. TR36SW; Accn. no. 63; Suffix

TR 36 SW/63

A Name of borehole: EBBSFLEET (RICHBOROUGH)

B Basic information: Nat. Grid Reference (within 100 km square) Easting 3371; Northing 6196; Accuracy 4; O.D. level (in metres) 3.0; Accuracy 3

Known to nearest:- metre - 6; 10 metres - 5; 100 metres - 4

Known to nearest:- .01 m - 4; .1 m - 3; 1.0 m - 2; 10.0 m - 1

Confidential (C) or Non-Confidential (N): N
Underground (U) or Surface (S): S
Vertical, down (1); Inclined, down (2); Horizontal (3); Inclined, up (4); Vertical, up (5): 1
Drilling method: R
Purpose: C

Year: 1911
Origin (For whom): ECS
V. reliable (4); Av. reliability (3); Unreliable (2); V. unreliable (1):
Geologist: GWL

Borings Dept. Actn. no. CN-
One inch sheet: 274
Hydro. Dept. well no.: 1d
EGU accn. no.
Type of rept.
Other reference

C Other data: Detailed log 1; Graphic log; NG 6in field map; County 6in field map 1; Sample descript.; List of specimens 1; Gradings; Geotech. data; Specimens to Pal.; Report from Pal.

Specimens to Pet.; Rept. from Pet.; Mineralogy; Hydro. data; Coal Pet.; Geochem.; Geophys.; Well cat. Publication 1; Other, as specified: Well Catalogue 1

Other remarks and amendments :-
Published ⇒ Concealed Mesozoic Rocks of Kent 1923
Specimens in Borings
PAL.
Dept. PR 3811-8.

LDB/F1

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

TR 33 87 61 90 TR36/19

274/10 Ebbsfleet Coal Syndicate Ltd., Ebbsfleet. Trial

Sum. Prog. Geol. Surv. for 1911, p. 70. Surface +10. Ck -100. ICS -995. 1911.

Drift 60		Clay and sand with shell-beds	60	60
T 50		Red clay	20	80
		Yellow clay	10	90
		Blue clay	20	110
Ck 785		Chalk with few flints	77	187
		Flint bed	1	188
		Chalk with many flints	242	430
		Grit bed	40	470
		Greyish coarse chalk Marly chalk Very marly chalk	425	895
G 110		Dark hard clay	3	898
		Gault clay	107	1005
F 30		Hard calcareous sandstone	5/6	1005. 5/6
		Marly sand	3. 1/6	1009
		Concretionary sandstone	¼	1009¼
		Sand	11¼	1020½
		Hard band of coarse grit and glauconite	2. 1/6	1022. 2/3
		Soft coarse glauconitic grit and pebbles up to ¼ inches in diameter	4. 1/3	1027
		Hard grit band	1	1028
		Glauconitic sand	3¾	1031¾
		Hard glauconitic grit with 2 in brilliant green glauconitic band	2¼	1034
		Coarse rather muddy grit with brown pebbles and lydites	1	1035
SaB 6		Dark, muddy, rather coarse glauconitic sand, with small brown 'pebbles' possibly phosphatic. Shell-fragments and fragments of plants	6	1041
W 15		Blue-grey clay with Cyprids and dark grey clay streaked and laminated with fine pale-grey silt. Pebbly at the base	15	1056
CM 103		Dark micaceous and black shales	103	1159
CL 230		Oolitic limestone and dark and light grey limestones	230	1389

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

REGISTRATION NO: 6in. quarter sht. TR36SW; Accn no. 63; Suffix

Signed: T.E.L.
Date: 16/8/76 Page 1 of 1

Header record: D; Author of strat. GWL; Year 1923; Other strat. classns N; Imperial or Metric Im; Y or N; I or M

TR36SW/63

Successive records:-

Accn no. of rock unit	Litho-strat	Chrono-strat	Depth to base (feet)	Lithology 1st component	2nd component	3rd component	Stratigraphy (Clear text)
1	DEFT	Q	18.3	CLAY	+ SAND		
2	T	GP	33.5	CLAY			Auc
3	CK	KU	272.8	CHLK			
4	G	KA	346.3	CLAY			
5	LGS	KP KA	317.3	SDST	SILT	CLAY	
6	W	KU KB	321.9	CLAY			Auc
7	CM	CW	353.3	SHAL			Auc
8	CL	CL	423.4	LMST			
9	END						

1/8/22

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

TR36/19 274 10

SECTION OF Boring at Ebbsfleet, Thanet

COUNTY Kent

Communicated by Ebbsfleet Coal Syndicate Ltd Date of sinking 19

One-inch Map (N.S.) 274 ~~Six-inch Map~~ N.S. 274

HEIGHT ABOVE O.D. 10 ft. DIP OF STRATA

		ft. in.	Thickness Yards.	Thickness feet.	Thickness ins.	Depth from Surface Yards.	Depth from Surface feet.	Depth from Surface ins.
[Estuarine]	River Drift (clay sand with shell beds).			60	-		60	-
[Thanet Sand]	Thanet Sand (red clay).			20	-		80	
	(yellow clay).			10	-		90	
	(blue clay).			20	-		110	
[Chalk]	Upper Chalk:-							
	Chalk with few flints.			77	1		187	1
	Flint Bed.				11		188	
	Chalk with many flints.			242	-		430	
	Grit Bed			40	-		470	
	Lower Chalk, successively greyish coarse chalk, marly chalk, chalk with marly veins and bands, very marly chalk.			430	-		900	
[Gault]	Dark hard clay.			3	-		903	
	Gault Clay.			103	-		1006	
	Greensand:-							
[Folkestone Beds]	Calcareous conglomerate sandstone	- 3½						
	Dark sand, slightly green.	- 10½						
	Calcareous sandstone	- 10						
	Running sand grey & green	10 . 6						
	Hard calcareous conglomerate sandstone, i.e. Kentish Rag.	2 . 6						
	Softer sandstone, i.e. Hassock	1 . -						
	Very hard shaly sandstone	1 . -						
	Hassock.	1 . -						
	Nodular sandstone	1 . -						
	Calcareous sandstone	1 . -						
	Soft green rock, mostly ground away	3 . 9						
	Grey sandstone with green lumps.	2 . 3						
	Hard green shaly clay.	2 . 2						
	Hard dark muddy sandstone	- . 10		29	-		1035	

* 2¼ furlongs S. S^E. of ... (... 1911, p. 70).

(18,366). Wt.25,740. 17. 2000. 12/09. A.&E.W.

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

TR 36 SW | 63

[illegible]RD OF WELL (SHAFT OR BORE)

Ref.

[illegible] Syndicate

Sandwich County Kent Six-inch quarter sheet

Grid Ref 61/3371 6196 — 274/126 (A rough sketch-map or a tracing from a map is very desirable)

in parish of

[illegible] of ground surface above sea-level (O.D.) ft. If well starts below ground surface, state how far ft.

Shaft ft., diameter ft. Bore ft. Diameter of bore: at top ins.; at bottom ins.

Details of permanent lining tubes (internal diameters preferred)

Water struck at depths of (feet)

Rest-level of water below/above top of well feet. Suction at feet. Yield on hours'/days' test

gallons per (with pump of capacity g.p.h.); depressing water level to feet below top. Time of recovery hrs. Amount normally pumped daily g.p.h. for hours.

Quality (attach copy of analysis if available)

Sunk by A. C. Potter for Mr. Date of well

Information from Le Grand ACP/52

(For Survey use only). GEOLOGICAL CLASSIFICATION.	NATURE OF STRATA (and any additional remarks).	THICKNESS Feet.	THICKNESS Inches.	DEPTH Feet.	DEPTH Inches.
	This bore is possibly the same as 274/10.				
	Sump	5	10		
	Black sand	4	2		
	Black sandy clay	24			
	Green sand	7			
	Dark clay + sand	6			
	Black sandy clay	4			
	Black + blue clay	11			
	Green sandstone	1			
	Black + blue sandy clay	8			
	Green sand	3			
	Black + blue clay	6			
	Black + green sandy clay	1	6		
	Thanet Sand	3	6		
	Blue clay	23			
	Green sandy clay	1	6		
	Flints		6	100	(30.48m)
	White chalk	2	0		
	Chalk + flints	75			
	Chalk & flints & bands of marl	533			
	Chalk	11			
	Chalk + marl	45			
	Grey chalk	20			
	Chalk + marl	12			
	Chalk	5			
	Chalk + marl	79			
	Sandy gault	85			
	Gault clay	3			
	Gault	39			
	Grey rock	3		(312.17m)	
	Green sand	2	2	1024	2

Geological Survey and Museum, South Kensington, London, S.W.7.

For Survey use only

Date received	G.S.M. Office File No.	Site marked on 1" map (use symbol)
[illegible]		

(*11815) Wt.29051/O.389 10,000 9/34 A.& E.W.Ltd. Gp.684

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

SECTION OF Boring at Ebbsfleet (Kent) TR36/19

274/10

COUNTY

Communicated by Date of sinking

One-inch Map (N.S.) Six-inch Map

HEIGHT ABOVE O.D. DIP OF STRATA 2

		Thickness.			Depth from Surface.		
		Yards.	feet.	ins.	Yards.	feet.	ins.
	Wealden.						
[Sandgate Beds]	Dark greenish grey sandy bed, gy Bone bed 4. 6 Hard calcareous clay. 1. 9						
[Wealden]	Dark hard arenaceous clay. 1 3		4	6		1042	6
	Coal Measures. –						
	Clay shale, bituminous, with plant imprints + layers of sand		4	6		1050	-
	Do. without sand + with but few plant imprints.		6	-		1056	-
	Conglomerate sandstone containing large stem with soft black powdered pith.		-	3		1056	3
[Coal Measures]	Shale full of plant imprints no sand but much iron pyrites.		23	9		1080	-
	Dark + light grey shales, plant imprints + with occasional soft sandstone bands, five inch band of hard limestone at 1088.		19	6		1099	6
	Coal.		1	-		1100	6
	Rough underclay + shale		29	6		1130	-
	Coal.		-	9		1130	9
	Shale with 3in. Coal at 1133.		2	6		1133	3
	Hard arenaceous shale with band of soft grey shaly at 1134		4	3		1140	6
	Hard grey mottled limestone		4	10		1148	4
	Rather soft grey shale, plant imprints		5	8		1154	-
	Do with wood markings at 1159'.1".		5	1		1159	1.
	Hard grey limestone closely mottled with free carbonate of lime – light porous sandy chalky shale at 1141'.6" + fossil plants at 1148.		20	5		1179	6
	Dark clay.		1	6		1181	-

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

TR 36SW | 63

Number of Sheet given by Geological Survey:
Ebbsfleet Syndicate, Sandwich, Kent

County
6" Quarter Sheet

LOGICAL SIFICATION	DESCRIPTION	THICKNESS		DEPTH	
		277	10	(312.17m)	
	Forward			1024	2
	Sandstone		3		
	Greensand	2	7		
	Green rock	40	3		
	Dark sandy clay	5	6		
	Grey rock		9		
	Shale & clay	20	6		
	Black shale	11			
	Shale & grey clay	5			
	Black shale	22			
	Coal	1			
	Shale	6			
	Sandy shale	16			
	Black shale	3			
	Coal		9		
	Black sandy shale	4	6		
	Shaley sandstone	15	7		
	Limestone	66	11		
	Black clay		9		
	Limestone	71	9		
	Black shale	6	6		
	Rock	95		1400	(426.72m)

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
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3. SECTION OF Boring at Ebbsfleet 274 TR36/19

COUNTY

Communicated by

Date of sinking

10

One-inch Map (N.S.)

Six-inch Map

HEIGHT ABOVE O.D.

DIP OF STRATA

3.

		Thickness.			Depth from Surface.		
		Yards.	feet.	ins.	Yards.	feet.	ins.
[Carboniferous Limestone]	Hard rock, very sandy, with diagonal lines, ag. pressure planes.		3	3		1184	3
	Shale.		1	-		1185	3
	Hard grey limestone mottled with very chalky lime.		3	-		1188	3
	Hard grey limestone but with very sandy light grey shale at 1195 and sandy rock with wood markings at 1202.		36	3		1224	6
	Half limestone, half shale, the cores being irregularly divided in a perpendicular direction.		11	6		1236	-
	Shale		3	6		1239	6
	Hard grey limestone - the cores were marked with lines first of carbonate of lime and afterwards of some darker matter. The latter cores upon being taken from the bore-hole could be very easily pulled to pieces by the hand along the dark lines but not afterwards as these lines in the course of a few hours turned into a very strong cement. The cores were frequently intruded upon by a muddy shale & in several places this entirely predominated for a foot or more. The dark lines in the lower cores were wholly horizontal and only a few inches apart.		149	6		1389	-

(18,366). Wt.25,740—17. 2000. 12/08. A.&E.W.

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

N.G.R. 3371.6196 TR 36 SW / 68

274/12 Ebbsfleet Coal Syndicate Ltd., Ebbsfleet. Trial

Sum. Prog. Geol. Surv. for 1911, p. 70. Surface +10. Ck -100. LGS -995. 1911.

Drift 60	Clay and sand with shell-beds	60	60
T 50	Red clay	20	80
	Yellow clay	10	90
	Blue clay	20	110
	Chalk with few flints	77	187
	Flint red	1	188
Ck 785	Chalk with many flints	242	430
	Grit bed	40	470
	Greyish coarse chalk) Marly chalk) Very marly chalk)	425	895
G	Dark hard clay	3	898
110	Gault clay	107	1005
	Hard calcareous sandstone	5/6	1005. 5/6
	Marly sand	3. 1/6	1009
	Concretionary sandstone	¼	1009¼
	Sand	11¼	1020½
	Hard band of coarse grit and glauconite	2. 1/6	1022. 2/3
F 30	Soft coarse glauconitic grit and pebbles up to ¼ inches in diameter	4. 1/3	1027
	Hard grit band	1	1028
	Glauconitic sand	3¼	1031¼
	Hard glauconitic grit with 2 in brilliant green glauconitic band	2¾	1034
	Coarse rather muddy grit with brown pebbles and lydite	1	1035
SaB 6	Dark, muddy, rather coarse glauconitic sand, with small brown 'pebbles' possibly phosphatic. Shell-fragments and fragments of plants	6	1041
W 15	Blue-grey clay with Cyprids and dark grey clay streaked and laminated with fine pale-grey silt. Pebbly at the base	15	1056
CM 103	Dark micaceous and black shales	103	1159
CL 230	Oolitic limestone and dark and light grey limestones	230	1389

Publications:

Strahan, A. 1912. On a boring for coal at Ebbsfleet, near Ramsgate. Summ. Prog. Geol. Surv. for 1911, Appendix I, pp. 70-3.

Lamplugh, G.W., Kitchin, F.L. and Pringle, J. 1923. The Concealed Mesozoic Rocks in Kent. Mem. Geol. Surv., pp. 178 – 81.

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

4. 274 Geol. TR36/19 4/1/12

10 4.

Description of Cores at the Ebbsfleet boring from personal examination by G. W. Lamplugh. Dec 5th 1911.
(from his note-book)

Examination begun with cores in shed, from depth of 986½ ft nominal (= 988 ft, as I was informed that 1½ ft. error, had to be allowed for in cores above Coal Measures).

Gault.

at 986½ ft. Palish blue marly clay, with fossils

at 994 ft. to 1005 ft. Rather darker clay for about 3 ft., but paler again below for 5 or 6 ft.; then distinctly darker toward base, & the lowest 2 ft. dark & sandy, but no nodular band (like Dover) seen.

Folkestone Beds.

Below 1005' Hard calcareous rock-band, 10 inches thick; then marly sand

at 1009' with no cores; then 3" rock-band showing concretionary structure; 4 ft. with sand (no cores) below:

from 1020'.6" to 1022'.8" 2'.2" Massive hard rock-band of coarse grit & glauconite (like some parts of the Dover rock-band)

to 1028' Softer coarse glauconitic grit, with indurations: contains pebbles up to ¼" diameter: and a 1 ft. band of hard coarse glauconitic grit at base

to 1031'. 9" Glauconitic sand, ground away in boring.

to 1034. Hard glauconitic grit rock, with a 2" brilliant green glauc. band (specimen got by Dr Strahan here)

at 1035' Coarse rather muddy grit, with brown (phosphatic?) pebbles & lydites: may be taken as base of Folkestone Beds

Sandgate Beds

from 1035 to 1041 Dark muddy coarseish sand, glauconitic, sprinkled with small brown 'pebbles' (? phosph. nods & coprol?); with shell-fragments & bits of carbonized plants; like "Sandgate Beds" of Dover.

at 1041 A layer of coarse pebbly greensand, with worn black (phosph?) nodules, resting on an eroded surface of Weald Clay with cyprids: junction quite sharp.

Weald Clay

from 1041 to 1054 Blue-grey clay with cyprids; dark grey clay streaked & dappled with pale fine silt; and in places laminated with pale silt: some bands of silt 2" to 3" thick: all well bedded, & bedding flat or nearly so.

1054 to 1056 Less silty, but otherwise like above

at 1056 Specimen missing (reported by Mr Merrick to be a pebbly band) on Coal Measures

BGS ID: 695535 : BGS Reference: TR36SW63
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Report an issue with this borehole

<< < Prev Page 11 of 31 Next > >>

3371.6196 TR 36SW 63

at Ebbsfleet

Date of sinking 1911

One-inch Map (N.S.) 274

Height above O.D. 10 ft Dip of Strata

		Thickness feet	ins.	Depth from Surface feet
[Estuarine]	River Drift (clay, sand with shell beds).	60	-	60 (18.29m)
[Thanet Sand]	Thanet Sand (red clay).	20	-	80 (24.38m)
	(yellow clay).	10	-	90 (27.43m)
	(blue clay).	20		110 (33.53m)
[Chalk]	Upper Chalk:-			
	Chalk with few flints.	77	1	187 (57.02m)
	Flint Bed.		11	188 (57.30m)
	Chalk with many flints.	242	-	430 (131.06m)
	Grit Bed.	40	-	470 (143.26m)
	Lower Chalk, successively greyish coarse chalk, marly chalk, chalk with marly veins and bands, very marly chalk.	430	-	900 (274.32m)
[Gault]	Dark hard clay.	3	-	903 (275.23m)
	Gault Clay.	103	-	1006 (306.63m)
[Folkestone Beds]	Greensand:-			
	Calcareous conglomerate (sandstone) — ft. 3, in. 3½			
	Dark sand, slightly green — 10½			
	Calcareous sandstone — 10			
	Running sand, greyish (greenish) — 10 6			
	Hard calcareous conglomerate sandstone, i.e. Kentish Rag — 2 6			
	Softer sandstone, i.e. Hassock — 1			
	Very hard shaly sandstone — 1			
	Hassock — 1			
	Nodular sandstone — 1			
	Calcareous sandstone — 1			
	Soft green rock, mostly ground away — 3 9			
	Grey sandstone with green lumps — 2 3			
	Hard green shaly clay — 2 2			
	Hard dark muddy sandstone — 10	29	-	1035 (315.47m)

2¼ furlongs S. 5°E. of Ebbsfleet Ho.
(Sum. Prog. 1911, p. 70)

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

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Report an issue with this borehole

5 Ebbsfleet Boring. Dec. 9th 1911. TR36/19

274

Fine brownish yellow sand 0 – 6'
do but more muddy at 19' – 21'
pale grey shelly mud at 40'
do. but with few shells at 47' 5.
grey clay . . . . . at 51'
Bed of Ostrea at 72'
In core-shed Brown sand at 80'
pale grey clay at 98' & 108'
White chalk with flint nodules 110'
White Chalk 140
Depths between 165' and 332 represented by irregular masses of flint and white chalk
Depths between 390' and 530' represented by stony chalk with flint: chalk slightly discoloured.

Outside Cores. From 504' – 750' white chalk with flints passes downwards, (1) into chalk with no flints, & (2) into a less pure-white chalk.
at 750' the chalk marl appears to begin, and continues to 895'

As no one at the boring knows the exact depths of the cores outside, the measurements inside the depths 504' & 895' can only be taken as a guess. 750' has no more value.

John Pringle

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

TR 36 SW 163

SECTION OF Boring at Boosfleet (Kent)

COUNTY

Communicated by Date of sinking

One-inch Map (N.S.) Six-inch Map

HEIGHT ABOVE O.D. DIP OF STRATA

	Thickness. Yards.	feet	ins.	Depth. Yards.
Wealden.				
[Sandgate beds] Dark greenish grey sandy bed, gr. Bone bed	1. 6			
Hard calcareous clay.	1. 9			1042 6 (3H 60m)
Dark hard arenaceous clay.	1. 3	4	6	
Coal Measures:-				
[Wealden] Clay shale, bituminous, with plant imprints & layers of sand		4	6	1050 0 (320 04m)
Do without sand & with but few plant imprints		6	-	1056 0 (321 87m)
Conglomerate sandstone containing large stem with soft black powdered pith.		-	3	1056 3 (321 95m)
Shale full of plant imprints no sand but much iron pyrites.		23	9	1080 0
Dark & light grey shales, plant imprints & with occasional soft sandstone bands, five inch band of hard limestone at 1088		19	6	(335 13m) 1099 6
Coal		1		1100 6
Rough underclay & shale.		29	6	1130 0
[Coal Measures] Coal			9	1130 9
Shale with 3in. coal at 1133		2	6	1133 3
Hard arenaceous shale with band of soft grey shale at 1139		7	3	1140 6
Hard grey mottled limestone		7	10	1148 4
Rather soft grey shale, plant imprints		5	9	1154 0
Do with wood markings at 1159'1".		5	1	(353 07m) 1159 1
Hard grey limestone closely mottled with free carbonate of lime - light porous sandy chalky shale at 1171'6" + fossil plants at 1178		20	5	1179 6
Dark clay.		1	6	(359 97m) 1181 0

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NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

Ebbsfleet Boring
Dec. 7th 1911.

274 TR36/19 2

Gault.

all the large cores obtained from the Gault and stored outside the core-house have been reduced to small. Owing to a mechanical difficulty in "drawing the cores" they were re-bored while in the borehole, and the smaller cores thus obtained were stored in the core-shed. They represent the beds between 895' — 980'. Appear by their means a fairly complete section of Gault was obtained.

Chalk Marl

? Gault ... Grey clay with glauconitic grains 2 feet 895'- 897

Gault Clay pale grey clays, very fossiliferous in their lower beds. (932-980) 897- 980

The following particulars were obtained from the cores inside the core-house.

Gault Clay

Pale grey clays with few fossils	986'6"-990
do. with Inoceramus in great abundance.	990 — 994
do. (slightly darker than beds above) at 997' they are glauconitic)	994- 997
grey clays	997- 1003
Dark garnish glauconitic clay, unfossiliferous.	1003-1005

The colour of the clays seems to suggest that they belong to the Upper Gault.

John Pringle

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BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

TR 36 SW/63

...ION OF Boring at Ebbsfleet

COUNTY

Communicated by

Date of sinking

One-inch Map (N.S.)

Six-inch Map

HEIGHT ABOVE O.D.

DIP OF STRATA 3°

[Carboniferous Limestone]

	Thickness Yards	feet	ins.	Depth from Surface Yards	feet	ins.
Hard rock, very sandy, with diagonal lines, or pressure planes.		3	3		(360·96m) 1184	3
Shale					(361·26m) 1185	3
Hard grey limestone mottled with very chalky lime.		3	-		(362·18m) 1188	3
Hard grey limestone but with very sandy light grey shale at 1195 and sandy rock with wood markings at 1202.		36	3		(373·23m) 1224	6
Half limestone, half shale, the cores being irregularly divided in a perpendicular direction.		11	6		(376·73m) 1236	-
Shale		3	6		(377·80m) 1239	6
Hard grey limestone - the cores were marked with lines first of carbonate of lime and afterwards of some dark matter. The latter cores upon being taken from the bore-hole could be very easily pulled to pieces by the hand along the dark lines but not afterwards as these lines in the course of a few hours turned into a very strong cement. The cores were frequently intruded upon by a muddy shale & in several places this entirely predominated for a foot or more. The dark lines in the lower cores were wholly horizontal and only a few inches apart.		149	6		(423·37m) 1389	0

(18,566). Wt.25,740.-17. 2000. 12/09. A.&E.W.

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

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Ellerfleet Boring Dec. 8th 1911 3

Folkestone & Sandgate Beds.

274 TR36/19

10

Folkestone Beds	Soft dark greensh sands	1005' 1009'
	Grey sandstones, greenish and soft in places. Have occasional green patches. Shell fragments seen, and where plentiful rock becomes calcareous	1009'-1034'-2
	Variegated sands with brilliant green band, passing downward into greenish sand, which in turn rests on thin bed of small angular flints imbedded in a green matrix, having a pebbly base of about 4" in thickness, large Ostrea and other shell frags. confined to base.	1034'-2"-103
Sandgate Beds	Soft greenish sandstone with plant frags. Trigonia abundant. Bed becomes more pebbly at junction with Wealden.	1035'- 1041'
Wealden		
	Thin dark clay with Cypridea 2"	1041'- 1041'-
	Grey streaked clay, hard band at top.	1041'-2"— 1053
	Dark clay 6" (no fossils seen)	1055'-6"— 105[illegible]

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

TR 36 SW 163

No. R. 3371. 6196

Description of Cores at the Ebbsfleet boring from personal examination by G. W. Lamplugh. Dec 5. 1911. (from my note-book)

Examination began with cores in shed, from depth of 986½ ft nominal (= 983 ft, as I was informed that 1½ ft. error, had to be allowed for in cores above Coal Measures).

Gault.

at 986½ ft. Paler fine marly clay with fossils
at 994 ft. Rather darker clay for about 3 ft., but paler again below
to 1005 ft. for 5 or 6 ft.; then distinctly darker towards base, & the lowest 2 ft. dark & sandy, but no nodular band (like Dover) seen.

Below 1005' Hard calcareous rock-band, 10 inches thick; then marly sand
at 1009' with no cores: 4 ft. then 3" rock-band showing concretionary structure, with sand (no cores) below.

from 1020'. 6" to 1022'. 8" 2' 2" Massive hard rock-band of coarse grit & glauconite (like some parts of the Dover rock-band)

Folkestone Beds.

Softer coarse glauconitic grit, with indurations: contains pebbles up to ¼" diameter: and a 1 ft. band of
to 1028' hard coarse glauconitic grit at base
to 1031'. 9" Glauconitic sand, ground away in boring.
to 1034. Hard glauconitic grit rock, with a 2" bed and green glauc. band (specimen got by Mr Strahan here)
at 1035' Coarse rather muddy grit, with brown (phosphatic?) pebbles & lydites: may be taken as base of Folkestone Beds

Sandgate Beds

from 1035 to 1041 Dark muddy coarsish sand, glauconitic, sprinkled with small brown "pebbles" (? phosph. nods & coprol.); with shell-fragments & bits of carbonized [illegible]; like "Sandgate Beds" of Dover.

at 1041 A layer of coarse pebbly greensand, with worn black (phosph.?) nodules, resting on an eroded surface of Weald Clay with cyprids: junction quite sharp.

Weald Clay

from 1041 to 1054 Blue-grey clay with cyprids; dark grey clay streaked & duffled with pale fine silt; and in places laminated with pale silt: some bands of silt 2" to 3" thick: all well bedded, & bedding flat or nearly so.
1054 to 1056 Less silty, but otherwise like above
at 1056 Specimen missing (reported by Mr Merrick to be a pebbly band)
Coal Measures

British Geological Survey
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8 Ebbsfleet Boring Dec. 7th 1914 274 TR36SW/9 8.

Coal Measures

10

Grey micaceous shales full of Stigmarian rootlets + poorly preserved plant fragments	10[illegible]-1080'
No core	1080 - 1086'
Black micaceous shales full of pyrites, with a light grey band. ? Goniatites	1086' - 1090'
Grey sandy micaceous shale, resting on a grey sandy shale full of Stigmarian rootlets	1090' - 1099'6
First Coal	1099'6" - 1100'6
Grey fireclay with many Stigmaria + rootlets	1100'6" - 1105'
Grey sandy shales with Sphenopteris + shells	1105' - 1130'
Second Coal 9"	
Dark micaceous shales with Stigmaria	1130' 9" - 1139'
do , but with few Stigmaria	1139' - 1152'
Black shales, full of pyrites, which occurs as nodules, and small grains which are scattered throughout the shale + gives rise to a pitted appearance.	1152' - 1159

The outstanding feature of the Coal Measures is the abundance of Stigmaria or its rootlets, and the rarity of other forms. Many of the shales are slickensided with "squeeze".

John Pringle

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

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TR 36SW 63

Ebbsfleet Boring. Dec. 9th 1911. 1

Fine brownish yellow sand	0 – 6'
do but more muddy	at 19' – 21
pale grey shelly mud	at 40'
do. but with few shells	at 47'
grey clay . . . – – – – – .	at 51'
Bed of Ostrea	at 72'
Brown sand	at 80'
pale grey clay at	98' + 108'
White Chalk with flint nodules	110'
White Chalk	140

5.

Depths between 165' and 332 represented by irregular masses of flint and white chalk

Depths between 390' and 530' represented by floury chalk with flint: chalk slightly discoloured.

From 504' – 750' white chalk with flints passes downwards, (1) into chalk with no flints, + (2) into a less pure-white chalk. ?

Outside 1915

at 750'? the chalk marl appears to begin, and continues to 895'

As no one at the boring knows the exact depths of the cores outside, the measurements inside the depths 504 + 895' can only be taken as a guess. 750' has no more value.

John Pringle

chalk + flints	
Chalk + flints + bands of marl	53
chalk	11
Chalk + marl	43
Grey chalk	22
Chalk + marl	12
chalk	5
Chalk + marl	79
Sandy gault	8
Gault clay	3
Gault	34
Grey rock	3
Green sand	2

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British National Grid (27700) : 633710,161960
Report an issue with this borehole

9 Ebbsfleet Boring 274 TR36/19

Dec. 6th 1911 9. 10

Carboniferous Limestone cores

1 Creamy oolitic limestone with corals 1164'

2 Dk grey limestone, oolitic in parts, with Productus passing down-wards into creamy oolitic lst. at 1168'. - - - - - - - 1164'-1168'

3 Dk grey limestone 3'-6". . . . - . . - 1168'-1171'-6

4 Creamy limestone passing down into very dark grey limestones, which are greatly slickensided, and contain small Productids 1171'-6"-1178

5 Broken mass of grey limestone, with many small pieces of limestone set in a mosaic of dark shaly clay, the clay resembling Coal Measure clay, especially the lowest beds 1178'-1181.

6 Light grey oolitic limestone streaked with lines of shale, which suggest bedding (see remarks) 1181'-1184'-3

7 Dark grey non-oolitic limestone 1184'-3-1196

8 Dark grey oolitic limestone (markedly oolitic) 1196'-1224

9 Decalcified limestone and dark clay (see remarks) 1224'-1228

10 Dark oolitic limestone with poorly preserved small Productids . . . . - . - 1228'-1236

11 dark clay and limestone (see remarks) 1236'-1237'-6"

(Lamming, thirty at 1276)

12 Light and dark grey oolitic limestones, greatly slickensided (see remarks) 1238'-1279

[illegible signature]

Continued

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

TR 36 SW | 63

Aug 7th 1911.

Gault.

All the large cores obtained from the Gault and stored outside the core-house have been reduced to mud. Owing to a mechanical difficulty in connection with "drawing" the cores they were re-bored while in the borehole, and the smaller cores thus obtained were stored in the core-shed. They represent the beds between 895' — 980'. By their means a fairly complete section of Gault was obtained.

Chalk Marl
? Gault ... grey clay with glauconitic grains 2 feet 895 - 897
Gault Clay pale grey clays, very fossiliferous in their lower beds (932 - 980) 897 - 980

The following particulars were obtained from the cores inside the core-house.

Gault Clay
- Pale grey clays with few fossils 986'6 - 990
- do. with Inoceramus in great abundance. 990 - 994
- do. (slightly darker than beds above) at 997' they are glauconitic) 994 - 997
- grey clays 997 - 1003
- dark greenish glauconitic clay, unfossiliferous. 1003 - 1005

The colour of the clays seems to suggest that they belong to the Gault.

John Pringle

White Chalk
- Chalk + flints 7
- Chalk + flints + bands of marl 5
- Chalk 1
- Chalk + marl 4
- Grey chalk 2
- Chalk + marl 12
- Chalk 5
- Chalk + marl 7
- Sandy gault 8
- Gault Clay 3
- Gault 3
- Grey rock 5
- Green sand 2

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

10 TR36/19

13 Light grey limestones, slickensided, with [illegible] of greenish shale; at 1279 limestone begins to have a cherty character. 1278-1289.

274

14 Dark hard cherty limestone 1'.4" . . . . 1289'- 1290'4

10

15 Light grey limestone partly oolitic . . . . 1290'4 - 1298'4

16 Black cherty limestone (see remarks) 1298'-4" — 1318'6"

17 Dark bituminous / non-oolitic limestone with crinoidal columnals at base 10. 1318'6" - 1349.

18 Limestones becoming more crinoidal, and greatly fissured; the fissures being filled with dark clay. 1349' - 1366'

[illegible signature]

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

TR 36 SW 63

3

Stoflest boring Dec. 8th 1911

Sandgate beds.

Soft dark greenish sands	1005' - 1009'
Grey sandstones, greenish and soft in places. Have occasional green patches. Shell fragments seen, and where plentiful rock becomes calcareous	1009' - 1034' 2"
Variegated sands with brilliant green band, passing downward into greenish sand, which in turn rests on thin bed of small angular stones imbedded in a green matrix, having a pebbly base of about 4" in thickness. Large Ostrea and other shell fragts. confined to base.	1034' 2" - 1035'
Soft greenish sandstone with plant fragts. Trigonia abundant. Bed becomes more pebbly at junction with Wealden.	1035' - 1041'

Sandgate Beds

Wealden

Thin dark clay with Cypris 2"	1041' - 1041' 2"
Grey streaked clay, hard band at top.	1041' 2" - 1055'
Dark clay 6" (no fossils seen)	1055' 6" - 1056'

White chalk
Chalk + flints
Chalk + flints + bands of marl
Chalk
Chalk + marl
Grey chalk
Chalk + marl
Chalk
Chalk + marl
Sandy gault
Gault clay
Gault
Grey rock
Green sand

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

Remarks on Carb. limestone cores.

TR36/19

2744

10 11

"The limestones are very unfossiliferous, there being only one or two levels (and these are confined to the upper oolitic group) that contain any fossils. Productus is the only form identified. They are usually small forms, & look dwarfed.

The next feature worthy of note is the slickensided character. Nearly every core shows it. In beds 5, 9, 11, and 12, the limestone is much broken, and mixed with dark clay which is indistinguishable from Coal Measure shale. In each case the features suggest the infilling of a "solution chamber" by limestone debris and mud, the latter probably coming down from the Coal Measures. The clayey streaks in bed 6 seem to be due to the same cause. In bed 13, no clayey matter is at present, the broken limestone having been re-cemented by a calcareous cement. In this case the "brecciation" may have been due to movement.

In bed 16. in the cherty limestone group another "filled in" cavity occurs. It differs from the foregoing examples, however. It is about three feet in lenght, and the broken pieces, which are the size of macadam, are re-cemented in a matrix of dark pyritic clay. This matrix may have been obtained from the bed 13 + not from Coal Measures.

The beds appear to be nearly horizontal. In bed 12, the limestones becomes cherty towards base.

John Pringle

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

TR 36 SW / 63

Coal Measures

Grey micaceous shales full of Stigmarian rootlets + poorly preserved plant fragments — 1056'-1080'

No core — 1080'-1086'

Black micaceous shales full of pyrites, with a light grey band. ? Tonsteins — 1086'-1090'

Grey sandy micaceous shale, resting on a grey sandy shale full of Stigmarian rootlets — 1090'-1099'6"

First Coal — 1099'6"-1100'6"

Grey fireclay with many Stigmaria rootlets — 1100'6"-1105'

Grey sandy shales with Sphenopteris — 1105'-1130'

Second Coal 9" — 1130'9"-1139'

Dark micaceous shales with Stigmaria — 1139'-1152'

do , but with few Stigmaria

Black shales, full of pyrites, which occurs as nodules, and small grains which are scattered throughout the shale + gives rise to a pitted appearance. — 1152'-1159

The outstanding feature of the Coal Measures is the abundance of Stigmaria or its rootlets, and the rarity of other forms. Many of the shales are shattered with "squeeze".

White Chalk
Chalk + flints
Chalk + flints + bands of marl
Chalk
Chalk + marl
Grey chalk
Chalk + marl
Chalk
Chalk + marl
Sandy gault
Gault Clay
Gault
Grey rock
Green sand

GEOLOGICAL SURVEY AND MUSEUM, SOUTH KENSINGTON, LONDON, S.W.7.

For Survey use only: Date received | G.S.M. Office File No | Site marked on 1/2500 (use symbol)

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

Coalburgy

CONFIDENTIAL

RECORD OF WELL (SHAFT OR BORE)

COPY

TR36/19 290

Ref. 35

At Ebbsfleet Syndicate

Town or Village Sandwich County Kent Six-inch quarter sheet

Exact site Grid Ref 61/3371 6196 274/106 (A rough sketch-map or a tracing from a map is very desirable)

~~Lot~~ ~~Sub-Lot~~ ~~Sheet~~ in parish of

Level of ground surface above sea-level (O.D.) ft. If well starts below ground surface, state how far ft.

Shaft ft., diameter ft. Bore ft. Diameter of bore: at top ins.; at bottom ins.

Details of permanent lining tubes (internal diameters preferred)

Water struck at depths of (feet)

Rest-level of water below / above top of well feet. Suction at feet. Yield on hours' / days' test

gallons per (with pump of capacity g.p.h.); depressing water level to feet below top. Time of recovery hrs. Amount normally pumped daily g.p.h. for hours.

Quality (attach copy of analysis if available)

Sunk by A.C. Potter for Mr. Date of well

Information from Le Grand ACP/52

(For Survey use only). GEOLOGICAL CLASSIFICATION.	NATURE OF STRATA (and any additional remarks).	THICKNESS Feet.	THICKNESS Inches.	DEPTH Feet.	DEPTH Inches.
	This bore is possibly the same as 274/10.				
	Lump	5	10		
	Black sand	4	2		
	Black sandy clay	24			
	Green sand	7			
	Dark clay + sand	6			
	Black sandy clay	4			
	Black + blue clay	11			
	Green sandstone	1			
	Black + blue sandy clay	8			
	Green sand	3			
	Black + blue clay	6			
	Black + green sandy clay	1	6		
	Thanet Sand	3	6		
	Blue clay	23			
	Green sandy clay	1	6		
	Flints		6	100	
	White Chalk	2	0		
	Chalk + flints	75			
	Chalk + flints + beds of marl	533			
	Chalk	11			
	Chalk + marl	45			
	Grey chalk	20			
	Chalk + marl	12			
	Chalk	5			
	Chalk + marl	79			
	Sandy gault	85			
	Gault Clay	3			
	Gault	39			
	Grey rock	3			
	Green sand	2	2	1024	2

GEOLOGICAL SURVEY AND MUSEUM, SOUTH KENSINGTON, LONDON, S.W.7.

For Survey use only

Date received	O.S.M. Office File No.	Site marked on 1" map (use symbol)
JAN 1940		

(*11815) Wt.29051/O.369 10,000 9/39 A.& E.W.Ltd. Gp.686

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

TR 36 SW | 63

Coal Measures

Grey micaceous shales full of Stigmarian rootlets + poorly preserved plant fragments	1053'-1080'
No core	1080'-1088'
Black micaceous shales full of pyrites, with a light grey band. ? Ironstones	1088'-1090'
Grey sandy micaceous shale, resting on a grey sandy shale full of Stigmarian rootlets	1090'-1099'6
First Coal	1099'6"-1100'6"
Grey fireclay with many Stigmaria + rootlets	1100'6"-1105'
Grey sandy shales with Sphenopteris + Calamites	1105"-1130'
Second Coal 9"	
Dark micaceous shales with Stigmaria	1130'9"-1139'
do , but with few Stigmaria	1139'-1152'
Black shales, full of pyrites, which occurs as nodules, and small grains which are scattered throughout the shale + gives rise to a pitted appearance.	1152'-1159

The outstanding feature of the Coal Measures is the abundance of Stigmaria or its rootlets, and the scarcity of other forms. Many of the shales are shattered with "squeeze".

John Smyth

White Chalk	2
Chalk + flints	75
Chalk + flints + bands of marl	53
Chalk	
Chalk + marl	45
Grey chalk	20
Chalk + marl	12
Chalk	5
Chalk + marl	7
Sandy gault	8
Gault Clay	3
Gault	3
Grey rock	
Green sand	2

GEOLOGICAL SURVEY AND MUSEUM, SOUTH KENSINGTON, LONDON, S.W.7.

For Survey use only

Date received	G.S.M. Office File No.	Information on 1" map (use symbol)

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

13 Name and Number of Shaft or Bore given by Geological Survey: TR36/19

Westfleet Syndicate, Sandwich, Kent.

County 290

6" Quarter Sheet

Geological Classification	Description	Thickness		Depth	
			274/10		35
	Forstard				
	Sandstone		3		
	Greensand	2	7		
	Green rock	40	3		
	Dark sandy clay	5	6		
	Grey rock		9		
	Shale & clay	20	6		
	Black shale	11			
	Shale & grey clay	5			
	Black shale	22			
	Coal		1		
	Shale		4		
	Sandy shale		4		
	Black shale		3		
	Coal				9
	Black sandy shale	4	6		
	Shaley sandstone	15	7		
	Limestone	66	1		
	Black clay		9		
	Limestone	71	9		
	Black shale	6	6		
	Rock	95		1400	

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

TR 36SW / 63

Ebbsfleet Boring
Dec. 6th 1911

Carboniferous Limestone cores

1	Creamy oolitic limestone with corals	1164'
2	Lt grey limestone, oolitic in parts, with Productus passing down-wards into creamy oolitic Lst. at 1168'	1164'-1168'
3	Lt grey limestone 3'-6"	1168-1171-6
4	Creamy limestone passing down into dark grey limestones, which are greatly slickensided, and contain small Productids	1171'-6"-1178'
5	Broken mass of grey limestone, with many small pieces of limestone set in a mosaic of dark shaly clay, the clay resembling Coal Measure clay, especially the lowest beds	1178'-1181'
6	Light grey oolitic limestone streaked with lines of shale, which suggest bedding (see remarks)	1181-1184-3
7	Dark grey non-oolitic limestone	1184'-3-1196'
8	Dark grey oolitic limestone (markedly oolitic)	1196'-1224'
9	Brecciated limestone and dark clay (see remarks)	1224'-1228'
10	Dark oolitic limestone with poorly preserved small Productids	1228'-1236'
11	Dark clay and limestone (see remarks)	1236'-1237'-6"
12	Light and dark grey oolitic limestones, greatly slickensided (see remarks) (becoming clearly at 1276)	1238'-1279'

Continued

White chalk
Chalk + flints
Chalk + flints + bands of marl
Chalk
Chalk + marl
Grey chalk
Chalk + marl
Chalk
Chalk + marl
Sandy gault
Gault clay
Gault
Grey rock
Green sand

Geological Survey and Museum, South Kensington, S.W.7.

For Survey use only

Date received	O.S.M. Office File No.	Site marked on 1" map (one-inch)

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960
Report an issue with this borehole

TR 36SW/63

6

13 Light grey limestones, slickensided, with thin beds of grey shale. At 1279 limestone begins to have a cherty character 1278-1289

14 Dark hard cherty limestone 1'4" . . . . . 1289'- 1290'4

15 Light grey limestone partly oolitic . . . . . 1290'-4"- 1298'-4"

16 Black cherty limestone (see remarks) 1298'-4"— 1318'-6"

10

17 Dark bituminous non-oolitic limestone with crinoidal columnals at base 1318'-6"- 1349'.

18 Limestones becoming more crinoidal, and greatly fissured; [illegible] filled with [illegible]. 1349'- 1366'

BGS ID: 695535 : BGS Reference: TR36SW63
British National Grid (27700) : 633710,161960

TR36SW/63

Limestone cores. 7

Limestones are very unfossiliferous, there being only one or two levels (and these are confined to the upper oolitic group) that contain any fossils. Productus is the only form plentiful. They are usually small forms, & look dwarfed.

The next feature worthy of note is the slickensided character. Nearly every core shows it. In beds 5, 9, 11, and 12, the limestone is much broken, and mixed with dark clay which is indistinguishable from Coal Measure shale. In each case the features suggest the infilling of a "solution chamber" by limestone debris and mud, the latter probably coming down from the Coal Measures. The clayey streaks in bed 6 seem to be due to the same cause. In bed 13, no clayey matrix is present, the broken limestone having been recemented by a calcareous cement. In this case the "brecciation" may have been due to movement.

In Bed 16. in the cherty limestone group another "filled in" cavity occurs. It differs from the foregoing examples, however. It is about three feet in length, and the broken pieces, which are the size of macadam, are re-cemented in a matrix of dark greenish clay. This matrix may have been obtained from the bed 13 & not from Coal Measures.

The beds appear to be nearly horizontal. In bed 12, the limestones becomes cherty towards base.

John Pringle

White chalk	2
Chalk + flints	75
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Chalk + marl	45
Grey chalk	20
Chalk + marl	12
Chalk	5
Chalk + marl	79
Sandy gault	85
Gault clay	3
Gault	39
Grey rock	3

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695537 : BGS Reference: TR36SW65/A&B
British National Grid (27700) : 633230,163070
Report an issue with this borehole

<< < Prev Page 1 of 4 Next > >>

a) TR 3323 6307

b) " " "

TR36/29 A&B

274/6 Ebbsfleet Farm, Minster

(a) (Disused). W.S.K. p. 171. Surface +13. Lining tubes: 100 x 3 in from 3 down. Ck -79. R.W.L. +0. Yield 720 g.p.h. *LeGrand, 1899.*
R.W.L. +0. P.W.L. +0. Yield 1,100 g.p.h. *1940.*
(b) Surface +14. Bore 170 x 6 in. *Mullins, 1952.*
R.W.L. -1. Yield 550 g.p.h., 12 h.p.d. *Sept. 1957.* P.W.L. -1. *May 1958.*

(a)	T	... ...	92	92
	UCk	... ...	78	170

Thanet sand:	Top Soil.	1	1
	Sand & stone.	4	5
	Loamy sand and shells.	10	15
	Loamy sand.	13	28
	Dark blue sandy clay.	62	90
	Dark sand.	2	92
Upper Chalk.	Chalk & flints.	68 or 78	160 or 170

BGS ID: 695537 : BGS Reference: TR36SW65/A&B

British National Grid (27700) : 633230,163070

Report an issue with this borehole

<< < Prev Page 2 of 4 Next > >>

[redacted]

274/6A

TR36/29 A+B

Minster (THANET.) Ebbsfleet Farm.

Ordn. Map 274, new ser.; Geol. Map 3.

Boring in the stackyard, about ½ miles south-eastward of the church. Communicated by Mr. C. TAYLOR. (*S.E. Naturalist*, 1902.)

Water rises to within 14 feet of the surface and is pronounced by the analyst to be wholesome. Yield about 10 gallons a minute.

To chalk [through Thanet Beds]	92	170 feet
Chalk	78	

Both records of same well. Bored 160' by Le Grand + then the present owners Father paid for the extra 10' Who bored. Yield 1100 pr. hour. doesn't seem to lower the water level which is 12' to 14' down. 13.2.40 JHP

Pumps 4,000 – 5000 per day.

Now disused. Visited Sept ~~August~~ 1957.

Published in 'Water Supply of Kent', p. 171

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695537 : BGS Reference: TR36SW65/A&B
British National Grid (27700) : 633230,163070
Report an issue with this borehole

RECORD OF WELL (SHAFT OR BORE)

274/6A

1" N.S. 274
1" O.S. III
Grid Ref. TR 36/29 A
Six-inch quarter sheet NE

At H. Blunt Esq. Ebbsfleet
Town or Village Minster County Kent
Exact site Ebbsfleet Farm = 274/6 (WSK p. 121) (A rough sketch-map or a tracing from a map is very desirable)
TR 3323 6307 in parish of

Level of ground surface above sea-level (O.D.) 13 ft. If well starts below ground surface, state how far ft.
Shaft ft., diameter ft. Bore 160 ft. Diameter of bore: at top ins.; at bottom ins.
Details of permanent lining tubes (internal diameters preferred) 100' X 3" from 3' down.

Water struck at depths of (feet)
Rest-level of water ~~above~~ below top of well 18 feet. Suction at feet. Yield on hours' days' test
720 gallons per hour (with pump of capacity g.p.h.); depressing water level to feet
below top. Time of recovery hrs. Amount normally pumped daily g.p.h. for hours.
Quality (attach copy of analysis if available)
Sunk by L.G.S.& G. for Mr. Date of well 1899
Information from Le Grand, S. & G 58 3/139

(For Survey use only). GEOLOGICAL CLASSIFICATION.	NATURE OF STRATA (and any additional remarks).	THICKNESS Feet.	THICKNESS Inches.	DEPTH Feet.	DEPTH Inches.
	Top soil	1		1	
Thanet Sand	Sand + stone	4		5	
	Loamy sand + shells	10		15	
	" "	13		28	
	Dark blue sandy clay	62		90	
	" sand	2		92	
Upper Chalk	Chalk + flints	68		160	
	Scatt. Jan. 1940				
	Disused				

GEOLOGICAL SURVEY AND MUSEUM, SOUTH KENSINGTON, LONDON, S.W.7.

For Survey use only

Date received	G.S.M. Office File No.	Site marked on 1" map (use symbol)
JAN 1940		

(*11815) Wt.29051/O.389 10,000 9/39 A.E.W.Ltd. Gp.686

BGS ID: 695537 : BGS Reference: TR36SW65/A&B
British National Grid (27700) : 633230,163070
Report an issue with this borehole

044860

33316321
marked W.
4860

TR36/29

Kent River Authority

Observation Well Details
Water Resources Act 1963
Section 18

1. Address of Well Site. (Site sketch on reverse)
Ebbsfleet - Cottages
2. Owner
Dyas - Swanscombe.
3. Tenant
4. Depth
Remains visible - FILLED IN.
5. Diameter
6. Lining Details (whether perforated or plain, and length)
7. Date of construction of well
8. Well Sinker
9. Details of Abstraction, if any.
10. Details of Pump including capacity and suction level
11. Institute of Geological Sciences Ref. No.
12. O.D. Level of reference point
13. Details of any existing water-level records
14. Remarks: (to include details of cover if well is sealed)

BGS ID: 695548 : BGS Reference: TR36SW76
British National Grid (27700) : 633150,162727
Report an issue with this borehole

<< < Prev Page 2 of 3 Next > >>

TR 36 SW 176

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG Borehole No. **W7**

Contract No. F9439 Method Cable Percussion.
Location Richborough W.T.W. Sheet 2 of 3 76
Borehole Diam (mm)150 Coords E 633,150 N 162,727
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc Date 03/02/92 05/02/92 Ground Level 1.57

Description of Strata (....cont.)	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing Depth(m)	TCR	( ) & N SCR RQD	Ground Water	Piezometer/ Standpipe
Very stiff grey silty CLAY with many fragments of very weakly cemented clayey silt.				J 10.30				
				U 10.50	10.95	(61)		
---becoming weakly cemented below 11.00m				J 10.95	11.00			
				SJ 11.00	11.30	51 for 150mm		
				J 11.70				
				U 12.00	12.45	(71)		
				J 12.45	12.50		2→	
				SJ 12.50	12.65	50 for 125mm		
				J 13.30				
				U 13.50	13.95	(75)		
				J 13.95	14.00			
				SW 14.00	14.30	47 for 150mm		
				J 14.70				
				U 15.00	15.45	(76)		
				J 15.45	15.50			
				SJ 15.50	15.80	53 for 150mm		
				J 16.30				
				U 16.50	16.95	(81)		
				J 16.95	17.00			
				SJ 17.00	17.30	50 for 150mm		
				J 17.70				
				U 18.00	18.45	(88)		
				J 18.45	18.50			
				SJ 18.50	18.80	48 for 150mm		
				J 19.30				
				U 19.50	19.95	(90)		

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
4/2/92	25.00	1.70	25.00
5/2/92	30.00	2.10	30.00

Hard Strata

Depth(m)	Time

Comments
Vane test at 4.00m: Peak 7 kpa, Residual 3 kpa.

Logged by: N.B.

Casing maintained just above base of borehole unless stated

Sample and Test Key

U Undisturbed U100 Sample	S Standard Penetration Test	S.P.T. or C.P.T.	* N for full 300mm penetration	T.C.R. Total Core Recovery (%)	Ground Water: 1→ First Water Strike; 2→ Subsequent Water Strike; — am/pm Standing Level; ▽ Level 20mins after strike; [] Casing Depth
B Bulk Disturbed Sample	C Cone Penetration Test	../200	For given penetration	S.C.R. Solid Core Recovery (%)	Piezometer: Upper Seal; Sand Cell; Piezometer Tip; Lower Seal Grout
W Water Sample	V Insitu Vane Test	../25*	Seating blows only	R.Q.D. Rock Quality Designation (%)	
N.R. No Recovery	PR Pressuremeter Test	N.P.	No Penetration		
	K Permeability Test				
	0 Blows to drive U100				

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695549 : BGS Reference: TR36SW77
British National Grid (27700) : 633235,162778
Report an issue with this borehole

<< < Prev Page 1 of 3 Next > >>

TR 36 SW 77

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. **W9**

Contract No. F9439 — Method Cable Percussion.
Location Richborough W.T.W. — Sheet 1 of 3
Borehole Diam (mm)150 — Coords E 633,235 N 162,778
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc — Date 06/02/92 11/02/92 — Ground Level 1.88

77.

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing Depth(m)		Sampling & Insitu Testing TCR	Sampling & Insitu Testing ( ) & N SCR RQD	Ground Water	Piezometer/ Standpipe
TOPSOIL									
Firm brown mottled grey CLAY with occasional fine subangular gravel.		0.30	1.58	J 0.30					
				UB 0.50		0.95	(16)		
				J 0.95		1.00			
				U 1.00		1.45	(14)		
---becoming grey mottled brown below 1.50m				W 1.40		1.50			
				J 1.45		1.95	(8)		
				U 1.50					
Firm to stiff grey silty sandy CLAY with occasional shell fragments.		2.00	-0.12	J 1.95		2.00			
				U 2.00		2.45	(42)		
				J 2.45		2.50			
Very soft to soft green grey odorous CLAY with occasional organic fragments.		2.70	-0.82	J 2.70					
Stiff grey very silty CLAY with occasional to some fragments of very weakly cemented clayey silt.		3.00	-1.12	U 3.00		3.45	(25)	▽ 1	
---locally becoming slightly sandy				J 3.45		3.50		1→	
				SW 3.50		3.95	"26"		
				J 4.30					
				U 4.50		4.95	(30)		
				J 4.95		5.00			
				S 5.00		5.45	"27"		
				J 5.70					
				U 6.00		6.45	(26)		
---with some to many fragments below 6.50m				J 6.45		6.50			
				SJ 6.50		6.95	"53"		
				J 7.30					
				U 7.50		7.95	(39)		
---very stiff below 8.00m				J 7.95		8.00			
				SJ 8.00		8.45	"55"		
---with many fragments below 8.70m				J 8.70				▽ 2	
				U 9.00		9.45	(60)		
				J 9.45		9.50		2→	
				SJ 9.50		9.80	45 for 150mm		

Continued Next Page

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
6/2/92	9.50	8.90	6.00
7/2/92	16.00	3.70	16.00
10/2/92	25.00	3.90	25.00
11/2/92	29.00	3.30	27.50

Hard Strata

Depth(m)	Time

Comments

Logged by: N.B.

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample; B Bulk Disturbed Sample; U Undisturbed U100 Sample; W Water Sample; N.R. No Recovery
S Standard Penetration Test; C Cone Penetration Test; V Insitu Vane Test; PR Pressuremeter Test; K Permeability Test; 0 Blows to drive U100
S.P.T. or C.P.T. '' N for full 300mm penetration; ../200 For given penetration; ../25" Seating blows only; N.P. No Penetration
Rotary Core Run; T.C.R. Total Core Recovery (%); S.C.R. Solid Core Recovery (%); R.Q.D. Rock Quality Designation (%)
Ground Water: 1→ First Water Strike; 2→ Subsequent Water Strike; ---- am/pm Standing Level; ▽ Level 20mins after strike; [] Casing Depth
Piezometer: Upper Seal; Sand Cell; Piezometer Tip; Lower Seal Grout

BGS ID: 695550 : BGS Reference: TR36SW78
British National Grid (27700) : 632757,162707
Report an issue with this borehole

<< < Prev Page 1 of 4 Next > >>

TR 36 SW/78

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG Borehole No. **W10**

78

Contract No. F9439 Method Cable Percussion.
Location Richborough W.T.W. Sheet 1 of 4
Borehole Diam (mm)150 Coords E 632,757 N 162,707
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc Date 18/02/82 21/02/82 Ground Level 1.90

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing	Depth(m)	TCR	( ) & N SCR RQD	Ground Water	Piezometer/ Standpipe
TOPSOIL				U	0.00	0.45	(22)		
		0.60	1.30	UJ	0.60	0.95	(36)		
Soft to firm brown mottled grey CLAY.				UJ	1.10	1.55	(19)		
				UJ	1.70	2.15	(48)		
		1.90	0.00						
Firm to stiff green grey mottled grey silty sandy CLAY with some shell fragments.				UJ	2.30	2.75	(63)		
---becoming more grey with depth				UJ	2.90	3.35	(92)		
				UJ	3.50	3.95	(90)		
				J	4.10				
				UJ	4.50	4.95	(105)		
				SJ	5.10	5.55	"28"		
								▽1	
				UJ	5.00	5.45	(120)		
				SJ	5.50	5.95	50 for 225mm		
		6.80	-4.90						
Very stiff dark grey silty CLAY with occasional fragments of very weakly cemented siltstone.				J	7.00			1→	
				S	7.50	7.95	50 for 175mm		
				J	8.00				
				S	8.50	8.95	50 for 175mm		
				J	9.00				
				S	9.50	9.95	50 for 190mm		

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
18/2/82	3.50		3.00
19/2/82	18.00		9.00
20/2/82	26.00	3.30	9.00
21/2/82	33.00	4.40	9.00

Hard Strata

Depth(m)	Time
13.70-14.40	1hr
17.75-18.00	30mins
18.00-20.00	3hrs
23.25-24.00	30mins

Comments: Casing maintained just above base of borehole unless stated.

Logged by: N.B.

Sample and Test Key

J Small Disturbed Sample
B Bulk Disturbed Sample
U Undisturbed U100 Sample
W Water Sample
N.R. No Recovery
S Standard Penetration Test
C Cone Penetration Test
V Insitu Vane Test
PR Piezometer Test
K Permeability Test
B Blows to drive U100
S.P.T. "N" for full C.P.T. 300mm penetration
../200 For given penetration
../75* Seating blows only
N.P. No Penetration
Rotary Core Run
T.C.R. Total Core Recovery (%)
S.C.R. Solid Core Recovery (%)
R.Q.D. Rock Quality Designation (%)

Ground Water
1→ First Water Strike
2→ Subsequent Water Strike
— Water Standing Level
▽ Level 20mins after strike
|| Casing Depth

Piezometer
Upper Seal
Sand Cell
Piezometer Tip
Lower Seal
Grout

BGS ID: 695550 : BGS Reference: TR36SW78
British National Grid (27700) : 632757,162707
Report an issue with this borehole

TR 36 SW / 78

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG

Borehole No. **W10**

78

Contract No. F9439 | Method Cable Percussion.

Location Richborough W.T.W. | Sheet 2 of 4

Borehole Diam (mm)150 | Coords E 632,757 N 162,707

Client Southern Projects Ltd.

Consultant Soil Mechanics Assoc | Date 18/02/92 21/02/92 | Ground Level 1.90

Description of Strata (....cont.)	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing	Depth(m)	TCR	( ) & N SCR RQD	Ground Water	Piezometer/ Standpipe
Very stiff dark grey silty CLAY with occasional fragments of very weakly cemented siltstone.				J	10.00				
				S	10.50	10.95	50 for 215mm		
				J	11.00				
				S	11.50	11.95	"50"		
				J	12.00				
				S	12.50	12.95	50 for 165mm		
				J	13.00				
---13.70-14.40m band of dark grey slightly weathered SILTSTONE, very weak.				S	13.50	13.95	50 for 155mm		
				J	14.00				
				S	14.50	14.95	50 for 170mm		
				J	15.00				
				S	15.50	15.95	50 for 225mm		
				J	16.00				
				S	16.50	16.95	50 for 90mm		
				J	17.00				
---17.75-18.00m band of dark grey slightly weathered SILTSTONE, very weak. ---many siltstone fragments below 18.00m				S	17.50	17.70	50 for 60mm		
				J	18.00				
				S	18.50	18.95	50 for 90mm		
				J	19.00				
				S	19.50	19.95	50 for 90mm		

Daily Progress				Hard Strata	
Date	Final Depth (m) of: Borehole	Water	Casing	Depth(m)	Time
18/2/92	3.50		3.00	13.70-14.40	1hr
19/2/92	18.00		9.00	17.75-18.00	30mins
20/2/92	26.00	3.30	9.00	18.00-20.00	3hrs
21/2/92	33.00	4.40	9.00	23.25-24.00	30mins

Comments

Logged by: N.B.

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample
B Bulk Disturbed Sample
U Undisturbed U100 Sample
W Water Sample
N.R. No Recovery

S Standard Penetration Test
C Cone Penetration Test
V Insitu Vane Test
PR Pressuremeter Test
K Permeability Test
() Blows to drive U100

S.P.T. or C.P.T. " " N for full 300mm penetration
../200 For given penetration
../25* Seating blows only
N.P. No Penetration

Rotary Core Run
T.C.R. Total Core Recovery (%)
S.C.R. Solid Core Recovery (%)
R.Q.D. Rock Quality Designation (%)

Ground Water
1→ First Water Strike
2→ Subsequent Water Strike
— am/pm Standing Level
▽ Level 20mins after strike
[] Casing Depth

Piezometer
Upper Seal
Sand Cell
Piezometer Tip
Lower Seal
Grout

BGS ID: 695550 : BGS Reference: TR36SW78
British National Grid (27700) : 632757,162707

TR 36 SW/78

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG

Borehole No. **W10**

Contract No. F8439
Method Cable Percussion.
Location Richborough W.T.W.
Sheet 3 of 4
78
Borehole Diam (mm) 150
Coords E 632,757 N 162,707
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc
Date 18/02/92 21/02/92
Ground Level 1.90

Description of Strata (....cont.)	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing	Depth(m)	TCR	( ) & N SCR RQD	Ground Water	Piezometer/ Standpipe
Very stiff dark grey silty CLAY with occasional fragments of very weakly cemented siltstone. ---becoming weakly cemented with depth				J	20.00				
				S	20.50	20.95	50 for 240mm		
				J	21.00				
				S	21.50	21.95	50 for 220mm		
				J	22.00				
				S	22.50	22.95	50 for 140mm		
				J	23.00				
---23.25-24.00m band of dark grey slightly weathered SILTSTONE, very weak				S	23.50	23.95	50 for 95mm		
				J	24.00				
				S	24.50	24.95	50 for 260mm		
				J	25.00				
				S	25.50	25.95	50 for 230mm		
				J	26.00				
				S	26.50	26.95	50 for 210mm		
				J	27.00				
				S	27.50	27.95	50 for 220mm		
				J	28.00				
				S	28.50	28.95	50 for 225mm		
				J	29.00				
				S	29.50	29.95	50 for 230mm		

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing	Hard Strata Depth(m)	Time
18/2/92	3.50		3.00	13.70-14.40	1hr
19/2/92	18.00		9.00	17.75-18.00	30mins
20/2/92	26.00	3.30	9.00	18.00-20.00	3hrs
21/2/92	33.00	4.40	9.00	23.25-24.00	30mins

Comments

Logged by: N.B.

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample	S Standard Penetration Test	S.P.T. or C.P.T. ' ' N for full 300mm penetration	Rotary Core Run
B Bulk Disturbed Sample	C Cone Penetration Test	../200 For given penetration	T.C.R. Total Core Recovery (%)
U Undisturbed U100 Sample	V Insitu Vane Test	../25* Seating blows only	S.C.R. Solid Core Recovery (%)
W Water Sample	PR Pressuremeter Test	N.P. No Penetration	R.Q.D. Rock Quality Designation (%)
N.R. No Recovery	K Permeability Test		
	() Blows to drive U100		

Ground Water
1→ First Water Strike
2→ Subsequent Water Strike
— am/pm Standing Level
▽ Level 20mins after strike
() Casing Depth

Piezometer
Upper Seal
Sand Cell
Piezometer Tip
Lower Seal
Grout

BGS ID: 695550 : BGS Reference: TR36SW78
British National Grid (27700) : 632757,162707
Report an issue with this borehole

TR 36 SW / 78

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG | Borehole No. **W10**

Contract No. F9439 | Method Cable Percussion.
Location Richborough W.T.W. | Sheet 4 of 4 | 78
Borehole Diam (mm) 150 | Coords E 632,757 N 162,707
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc | Date 18/02/92 21/02/92 | Ground Level 1.90

Description of Strata (....cont.)	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing	Depth(m)	TCR	( ) & N SCR RQD	Ground Water	Piezometer/ Standpipe
Very stiff dark grey silty CLAY with occasional fragments of very weakly cemented siltstone.				J	30.00				
				S	30.50	30.95	"39"		
		31.00	-29.10						
Structureless CHALK composed of angular to subrounded fine to coarse gravel sized grey white moderately to highly weathered fragments with much grey white clay and some flint nodules.				J	31.00				
				S	31.50	31.95	"28"		
				J	32.00				
				S	32.50	32.95	"36"		
Borehole complete at 33.00m		33.00	-31.10						

Daily Progress: Date	Final Depth (m) of: Borehole	Water	Casing	Hard Strata: Depth(m)	Time
18/2/92	3.60		3.00	13.70-14.40	1hr
19/2/92	18.00		9.00	17.75-18.00	30mins
20/2/92	26.00	3.30	9.00	18.00-20.00	3hrs
21/2/92	33.00	4.40	9.00	23.25-24.00	30mins

Comments:

Logged by: N.B.

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample	S Standard Penetration Test	S.P.T. or C.P.T. " " N for full 300mm penetration	Rotary Core Run
B Bulk Disturbed Sample	C Cone Penetration Test	../200 For given penetration	T.C.R. Total Core Recovery (%)
U Undisturbed U100 Sample	V Insitu Vane Test	../25* Seating blows only	S.C.R. Solid Core Recovery (%)
W Water Sample	PR Pressuremeter Test	N.P. No Penetration	R.Q.D. Rock Quality Designation (%)
N.R. No Recovery	K Permeability Test		
	() Blows to drive U100		

Ground Water
1→ First Water Strike
2→ Subsequent Water Strike
— am/pm Standing Level
▽ Level 20mins after strike
[] Casing Depth

Piezometer
Upper Seal
Sand Cell
Piezometer Tip
Lower Seal
Grout

BGS ID: 695551 : BGS Reference: TR36SW79
British National Grid (27700) : 632910,162642
Report an issue with this borehole

TR 36 SW/79

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. **W11**

Contract No. F9439
Location Richborough W.T.W.
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc

Method Cable Percussion.
Borehole Diam (mm)150
Date 05/02/92 13/02/92

Sheet 1 of 4
Coords E 632,910 N 162,642
Ground Level 1.72

79

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing: Depth(m)	TCR	( ) & N SCR RQD	Ground Water	Piezometer/ Standpipe
TOPSOIL								
		0.50	1.22	UJ 0.50	0.95	(45)		
Firm light brown mottled grey CLAY.				UJ 1.10	1.55	(33)		
		1.60	0.22	J 1.70				
Soft grey organic CLAY with occasional shell fragments.				P 2.00	3.00			
				J 3.50				
				P 4.00	5.00		▽ 4	
		5.75	-4.03	J 5.50				
Soft grey green very silty slightly sandy CLAY with occasional shell fragments.				U 6.00	6.45	(27)	1→	
		6.25	-4.53					
Firm dark grey silty CLAY with occasional very weakly cemented siltstone fragments.				SJ 6.80	7.05	"11"		
				U 7.10	7.55	(90)		
				SJ 7.70	8.15	"19"		
				UJ 8.50	8.95	(80)		
---becoming very stiff below 9.00m				SJ 9.00	9.40	85 for 225mm		
				UJ 9.50	9.95	(70)		
		10.00	-8.28					

Daily Progress				Hard Strata	
Date	Final Depth (m) of: Borehole	Water	Casing	Depth(m)	Time
5/2/92	7.70	5.50	7.70	16.50-17.00	30mins
6/2/92	13.00	4.50	13.00	18.50-19.00	30mins
11/2/92	21.00	3.40	21.00	29.30-30.00	45mins
12/2/92	31.00	2.10	31.00		

Comments: Casing maintained just above base of borehole unless stated

Logged by: N.B.

Sample and Test Key

J Small Disturbed Sample
B Bulk Disturbed Sample
U Undisturbed U100 Sample
W Water Sample
N.R. No Recovery

S Standard Penetration Test
C Cone Penetration Test
V Insitu Vane Test
PR Pressuremeter Test
K Permeability Test
O Blows to drive U100

S.P.T. or C.P.T. 300mm penetration
../200 For given penetration
../25* Seating blows only
N.P. No Penetration

Rotary Core Run
T.C.R. Total Core Recovery (%)
S.C.R. Solid Core Recovery (%)
R.Q.D. Rock Quality Designation (%)

Ground Water
Firm Water Strike
Subsequent Water Strike
am/pm Standing Level
Level 20mins after strike
Casing Depth

Piezometer
Upper Seal
Sand Cell
Piezometer Tip
Lower Seal
Grout

BGS ID: 695551 : BGS Reference: TR36SW79
British National Grid (27700) : 632910,162642
Report an issue with this borehole

<< < Prev Page 2 of 4 Next > >>

TR 36 SW/79

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG Borehole No. **W11**

Contract No. F9439 Method Cable Percussion.
Location Richborough W.T.W. Sheet 2 of 4 79
Borehole Diam (mm) 150 Coords E 632,910 N 162,642
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc Date 05/02/92 13/02/92 Ground Level 1.72

Description of Strata (....cont.)	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing				Ground Water	Piezometer/ Standpipe
					Depth(m)		( ) & N SCR ROD		
Very stiff dark grey silty CLAY with occasional fragments of very weakly cemented siltstone fragments.				SJ	10.00	10.40	45 for 225mm		
---increasing frequency of siltstone fragments with depth				UJ	10.50	10.85	(85)		
				SJ	11.00	11.45	"49"		
				UJ	11.50	11.95	(95)		
				SJ	12.00	12.35	48 for 225mm		
				UJ	12.50	12.95	(110)		
				SJ	13.00	13.32	50 for 170mm		
				J	14.00				
				UB	14.50	14.70	(100)		
				SJ	15.00	15.32	50 for 180mm		
				J	15.75				
---becoming weakly cemented below 16.00m				U	16.00	16.46	(120)		
				SJ	16.50	16.85	53 for 175mm		
				J	17.25				
				U	17.50	17.95	(120)		
				SJ	18.00	18.35	48 for 200mm		
				J	18.75				
				SJ	19.00	19.40	56 for 225mm		
				J	19.50				

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
5/2/92	7.70	5.50	7.70
6/2/92	13.00	4.50	13.00
11/2/92	21.00	3.40	21.00
12/2/92	31.00	2.10	31.00

Hard Strata

Depth(m)	Time
16.50-17.00	30mins
18.50-19.00	30mins
29.30-30.00	45mins

Comments Logged by: N.B.

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample	B Standard Penetration Test	S.P.T. ** N for full	Rotary Core Run	Ground Water	Piezometer
B Bulk Disturbed Sample	C Cone Penetration Test	C.P.T. 300mm penetration	T.C.R. Total Core Recovery (%)	1 First Water Strike	Upper Seal
U Undisturbed U100 Sample	V Insitu Vane Test	../200 For given penetration	S.C.R. Solid Core Recovery (%)	2 Subsequent Water Strike	Sand Cell
W Water Sample	PR Pressuremeter Test	../25" Seating blows only	R.Q.D. Rock Quality Designation (%)	Level 20mins after strike	Piezometer Tip
N.R. No Recovery	K Permeability Test	N.P. No Penetration		Casing Depth	Lower Seal Grout
	D Blows to drive U100				

BGS ID: 695551 : BGS Reference: TR36SW79
British National Grid (27700) : 632910,162642
Report an issue with this borehole

TR36SW179

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. W11

Contract No. F9439 — Method Cable Percussion.
Location Richborough W.T.W. — Sheet 3 of 4
Borehole Diam (mm)150 — Coords E 632,910 N 162,642
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc — Date 05/02/92 13/02/92 — Ground Level 1.72

79

Description of Strata (....cont.)	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing: Depth(m)	TCR	( ) & N SCR ROD	Ground Water	Piezometer/ Standpipe
Very stiff dark grey silty CLAY with occasional fragments of very weakly cemented siltstone fragments.				SJ 20.00	20.40	50 for 240mm		
				J 20.25				
				SJ 21.00	21.35	50 for 200mm		
				J 21.75				
				SJ 22.00	22.30	50 for 155mm		
				J 22.50				
				SJ 23.00	23.33	48 for 180mm		
				J 23.25				
---becoming slightly sandy with depth				SJ 24.00	24.37	49 for 225mm		
				J 24.75				
				SJ 25.00	25.38	50 for 210mm		
				J 25.50				
				SJ 26.00	26.45	53 for 290mm		
				J 26.25				
				SJ 27.00	27.45	52 for 295mm		
				J 27.75				
				B 28.00	28.45	"48"		
				J 28.50				
				S 28.00	28.45	"30"		
Structureless CHALK composed of angular to subangular fine to coarse gravel sized grey white moderately weathered very weak fragments with a little to some grey white clay with occasional flint nodules.		29.30	-27.58	SJ 29.50	29.95	"29"		

Daily Progress				Hard Strata		Comments	Logged by: N.B.
Date	Final Depth (m) of: Borehole	Water	Casing	Depth(m)	Time		
5/2/92	7.70	5.50	7.70	16.50-17.00	30mins		
6/2/92	13.00	4.50	13.00	19.50-19.00	30mins		
11/2/92	21.00	3.40	21.00	29.30-30.00	45mins		
12/2/92	31.00	2.10	31.00				

Casing maintained just above base of borehole unless stated

Sample and Test Key: J Small Disturbed Sample; B Bulk Disturbed Sample; U Undisturbed U100 Sample; W Water Sample; N.R. No Recovery; S Standard Penetration Test; C Core Penetration Test; V Insitu Vane Test; PI Pressuremeter Test; K Permeability Test; 0 Blows to drive U100; S.P.T. 1/1 N for full; C.P.T. 300mm penetration; ../200 For given penetration; ../25* Seating blows only; N.P. No Penetration; Rotary Core Run; T.C.R. Total Core Recovery (%); S.C.R. Solid Core Recovery (%); R.Q.D. Rock Quality Designation (%)

Ground Water: 1→ First Water Strike; 2→ Subsequent Water Strike; ..... on/on Standing Level; Level 20mins after strike; Casing Depth

Piezometer: Upper Seal; Sand Cell; Piezometer Tip; Lower Seal Grout

TR 36 SW/79

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. **W11**

79

Contract No. F9439 | Method Cable Percussion.
Location Richborough W.T.W. | Sheet 4 of 4
Borehole Diam (mm)150 | Coords E #32,910 N #62,642
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc | Date 05/02/92 13/02/92 | Ground Level 1.72

Description of Strata (....cont.)	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing	Depth(m)		TCR	( ) & N SCR RQD	Ground Water	Piezometer/ Standpipe
Structureless CHALK composed of angular to subangular fine to coarse gravel sized grey white moderately weathered very weak fragments with a little to some grey white clay with occasional flint nodules.				J	30.25					
				S	30.50	30.95		"34"		
Borehole complete at 31.00m depth.		31.00	-29.28							

Daily Progress				Hard Strata		Comments	Logged by: N.B.
Date	Final Depth (m) of: Borehole	Water	Casing	Depth(m)	Time		
5/2/92	7.70	6.60	7.70	16.60-17.00	30mins		
6/2/92	13.00	4.50	13.00	18.60-19.00	30mins		
11/2/92	21.00	3.40	21.00	29.30-30.00	45mins		
12/2/92	31.00	2.10	31.00				

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample	S Standard Penetration Test	S.P.T. or C.P.T. '' N for full 300mm penetration	Rotary Core Run	**Ground Water**	**Piezometer**
B Bulk Disturbed Sample	C Cone Penetration Test	../200 For given penetration	T.C.R. Total Core Recovery (%)	1 → First Water Strike	Upper Seal
U Undisturbed U100 Sample	V Insitu Vane Test	../25* Seating blows only	S.C.R. Solid Core Recovery (%)	2 → Subsequent Water Strike	Sand Cell
W Water Sample	PR Pressuremeter Test	N.P. No Penetration	R.Q.D. Rock Quality Designation (%)	— am/pm Standing Level	Piezometer Tip
N.R. No Recovery	K Permeability Test			▽ Level 20mins after strike	Lower Seal Grout
	0 Blows to drive U100			[] Casing Depth	

BGS ID: 695554 : BGS Reference: TR36SW82
British National Grid (27700) : 633170,162795
Report an issue with this borehole

TR36 SW 182

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. **W17**

Contract No. F9439 — Method Cable Percussion.
Location Richborough W.T.W. — Sheet 2 of 3 — 82
Borehole Diam (mm)150 — Coords E 633,170 N 162,795
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc — Date 12/02/92 14/02/92 — Ground Level 1.67

Description of Strata (....cont.)	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing	Depth(m)	TCR	( ) & N SCR RQD	Ground Water	Piezometer/ Standpipe
Very stiff dark grey silty CLAY with some to many very weakly cemented siltstone.				J 9.95		10.00	50 for		
				S 10.00		10.30	150mm		
---becoming weakly cemented with depth				J 10.80				▽	
				U 11.00		11.45	(73)		
				J 11.45		11.50		2→	
				S 11.50		11.80	53 for 150mm		
				J 12.30					
				U 12.50		12.95	(71)		
				J 12.95		13.00			
				S 13.00		13.30	45 for 150mm		
				J 13.70					
				U 14.00		14.45	(90)		
				J 14.45		14.50			
				S 14.50		14.65	40 for 150mm*		
				J 15.30					
				U 15.50		15.95	(74)		
				J 15.95		16.00			
				S 16.00		16.30	50 for 150mm		
				J 16.70					
				U 17.00		17.45	(88)		
				J 17.45		17.50			
				S 17.50		17.75	52 for 150mm		
				J 18.30					
				U 18.50		18.95	(82)		
				J 18.95		19.00			
				S 19.00		19.37	61 for 225mm		
				J 19.70					

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
12/2/92	13.30	8.60	7.50
13/2/92	22.50	3.20	7.50
14/2/92	29.00	3.50	7.50

Hard Strata

Depth(m)	Time

Comments

Logged by: N.B.

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample; B Bulk Disturbed Sample; U Undisturbed U100 Sample; W Water Sample; N.R. No Recovery
S Standard Penetration Test; C Cone Penetration Test; V Insitu Vane Test; PR Pressuremeter Test; K Permeability Test; 0 Blows to drive U100
S.P.T. or C.P.T. ' ' N for full 300mm penetration; ../200 For given penetration; ../25* Seating blows only; N.P. No Penetration
Rotary Core Run; T.C.R. Total Core Recovery (%); S.C.R. Solid Core Recovery (%); R.Q.D. Rock Quality Designation (%)
Ground Water: 1→ First Water Strike; 2→ Subsequent Water Strike; ___ am/pm Standing Level; ▽ Level 20mins after strike; ⊓ Casing Depth
Piezometer: Upper Seal; Sand Cell; Piezometer Tip; Lower Seal Grout

BGS ID: 695557 : BGS Reference: TR36SW85
British National Grid (27700) : 633017,162755
Report an issue with this borehole

<< < Prev Page 1 of 3 Next > >>

TR 36 SW/85

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. **W23**

Contract No. F9439 | Method Cable Percussion.
Location Richborough W.T.W. | Sheet 1 of 3 | 85
Borehole Diam (mm)150 | Coords E 633,017 N 162,755
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc | Date 19/02/92 25/02/92 | Ground Level 1.71

Description of Strata	Depth Below G.L.(m)	O.D. Level (m)	Sample	Depth(m)	TCR	( ) & N SCR RQD	Ground Water
TOPSOIL	0.20	1.51					
Soft to firm brown mottled grey silty CLAY.			UJ	0.50	0.95	(12)	
			UJ	1.00	1.45	(10)	
			UJ	1.50	1.95	(9)	
	2.00	-0.29					
Soft dark grey odorous CLAY with occasional black organic fragments and occasional bands of grey green silty sandy CLAY.			J	2.10			
			P	2.50	3.50		
			J	2.90			
			J	3.60			
			V	4.20			
			UJ	4.50	4.95	(23)	
			JW	5.00			▽1
			U	5.20	5.65	(19)	
	5.60	-3.89					
Stiff dark grey silty CLAY with occasional fragments of very weakly cemented siltstone.			J	5.70			
			U	5.80	6.25	(29)	
							1→
			J	6.40			
			S	6.50	6.95	"32"	
			J	7.25			
---very stiff below 7.60m			U	7.50	7.95	(51)	
			SJ	8.00	8.45	"36"	
			UJ	9.00	9.45	(55)	
			SJ	9.50	9.95	58 for 75mm*	

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
19/2/92	10.00	4.10	7.50
21/2/92	20.00	4.10	10.00
22/2/92	27.00	4.20	27.00

Hard Strata — Depth(m) | Time

Comments: Vane test at 4.20m; Peak 38 kpa, Residual 7 kpa.

Logged by: N.B.

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample; B Bulk Disturbed Sample; U Undisturbed U100 Sample; W Water Sample; N.R. No Recovery
S Standard Penetration Test; C Cone Penetration Test; V Insitu Vane Test; PR Pressuremeter Test; K Permeability Test; ( ) Blows to drive U100
S.P.T. or C.P.T. " N for full 300mm penetration; ../200 For given penetration; ../25* Seating blows only; N.P. No Penetration
Rotary Core Run; T.C.R. Total Core Recovery (%); S.C.R. Solid Core Recovery (%); R.Q.D. Rock Quality Designation (%)
Ground Water: 1→ First Water Strike; 2→ Subsequent Water Strike; — Standing Level; ▽ Level 20mins after strike; () Casing Depth
Piezometer: Upper Seal; Sand Cell; Piezometer Tip; Lower Seal; Grout

BGS ID: 695557 : BGS Reference: TR36SW85
British National Grid (27700) : 633017,162755

TR 36 SW/85

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG

Borehole No. **W23**

Contract No. F9439 Method Cable Percussion.
Location Richborough W.T.W. Sheet 2 of 3 85
Borehole Diam (mm) 150 Coords E 633,017 N 162,755
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc Date 19/02/92 25/02/92 Ground Level 1.71

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing	Depth(m)	TCR	( ) & N SCR RQD	Ground Water	Piezometer/ Standpipe
(....cont.)									
Very stiff dark grey silty CLAY with occasional fragments of very weakly cemented siltstone.				J	10.00				
				U	10.50	10.95	(80)		
				CJ	11.00	11.45	"60"		
				UJ	12.00	12.45	(100)		
				SJ	12.50	12.95	"91"		
---13.50-14.00m ledge of dark grey slightly weathered SILTSTONE, very weak				UJ	13.50	13.60	(50)		
				CJ	13.65	13.80	51 for 150mm*		
				J	14.00				
				C	14.50	14.68	50 for 75mm		
				J	15.00				
				C	15.50	15.80	52 for 150mm		
				J	16.00				
				C	16.50	16.70	51 for 150mm		
				J	17.00				
				C	17.50	17.72	50 for 150mm		
				J	18.00				
				CB	18.50	18.75	48 for 150mm		
				C	19.50	19.72	50 for 150mm		

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
19/2/92	10.00	4.10	7.50
21/2/92	20.00	4.10	10.00
22/2/92	27.00	4.20	27.00

Hard Strata: Depth(m) | Time

Comments: Vane test at 4.20m: Peak 38 kps, Residual 7 kps.

Logged by: N.B.

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample	S Standard Penetration Test	S.P.T. or C.P.T. " " N for full 300mm penetration	Rotary Core Run
B Bulk Disturbed Sample	C Cone Penetration Test	../200 For given penetration	T.C.R. Total Core Recovery (%)
U Undisturbed U100 Sample	V Insitu Vane Test	../25* Seating blows only	S.C.R. Solid Core Recovery (%)
W Water Sample	PR Pressuremeter Test	N.P. No Penetration	R.Q.D. Rock Quality Designation (%)
N.R. No Recovery	K Permeability Test		
	( ) Blows to drive U100		

Ground Water: 1→ First Water Strike; 2→ Subsequent Water Strike; — am/pm Standing Level; ▽ Level 20mins after strike; [] Casing Depth

Piezometer: Upper Seal; Sand Cell; Piezometer Tip; Lower Seal; Grout

BGS ID: 695557 : BGS Reference: TR36SW85
British National Grid (27700) : 633017,162755
Report an issue with this borehole

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TR 36 SW/85

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. W23

Contract No. F9439 — Method Cable Percussion.
Location Richborough W.T.W. — Sheet 3 of 3 — 85
Borehole Diam (mm) 150 — Coords E 633,017 N 162,755
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc — Date 19/02/92 25/02/92 — Ground Level 1.71

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing Depth(m)		( ) & N SCR RQD	Ground Water	Piezometer/ Standpipe
(....cont.)								
Very stiff dark grey silty CLAY with occasional fragments of very weakly cemented siltstone.				J 20.00				
				C 20.50	20.95	"88"		
				J 21.00				
				U 21.50	21.95	(81)		
				SJ 22.00	22.45	"51"		
				J 22.50				
				U 23.00	23.45	(82)		
				SJ 23.50	23.95	"60"		
				J 24.00				
				U 24.50	24.95	(85)		
				SJ 25.00	25.45	"57"		
				J 26.50				
				U 26.00	26.45	(78)		
				SJ 26.50	26.95	"57"		
				J 27.00				
Structureless CHALK composed of angular to subrounded fine to coarse gravel sized grey white highly weathered fragments with some grey white clay and some soft flint nodules.		27.55	-25.84	C 27.50	27.95	"31"		
				SJ 28.00	28.45	"42"		
				SJ 28.50	28.95	"41"		
Borehole complete at 29.00m depth		29.00	-27.29	J 29.00				

Daily Progress				Hard Strata		Comments	Logged by: N.B.
Date	Final Depth (m) of: Borehole	Water	Casing	Depth(m)	Time	Vane test at 4.20m: Peak 38 kpa, Residual 7 kpa.	
19/2/92	10.00	4.10	7.50				
21/2/92	20.00	4.10	10.00				
22/2/92	27.00	4.20	27.00				
						Casing maintained just above base of borehole unless stated	

Sample and Test Key: J Small Disturbed Sample; B Bulk Disturbed Sample; U Undisturbed U100 Sample; W Water Sample; N.R. No Recovery; S Standard Penetration Test; C Cone Penetration Test; V Insitu Vane Test; PR Pressuremeter Test; K Permeability Test; 0 Blows to drive U100; S.P.T. " " N for full C.P.T. 300mm penetration; ../200 For given penetration; ../25 " Seating Blows only; N.P. No Penetration; Rotary Core Run; T.C.R. Total Core Recovery (%); S.C.R. Solid Core Recovery (%); R.Q.D. Rock Quality Designation (%); Ground Water: First Water Strike; Subsequent Water Strike; ...mins Standing Level; Level 20mins after strike; Casing Depth; Piezometer: Upper Seal; Sand Cell; Piezometer Tip; Lower Seal; Grout

BGS ID: 695558 : BGS Reference: TR36SW86
British National Grid (27700) : 633104,162807
Report an issue with this borehole

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TR 36 SW/86

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. **W25**

86

Contract No. F9439 — Method Cable Percussion. — Sheet 1 of 3
Location Richborough W.T.W. — Borehole Diam (mm)150 — Coords E 633,104 N 162,807
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc — Date 02/03/92 04/03/92 — Ground Level 1.62

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing Depth(m)	TCR	( ) & N SCR RQD	Ground Water	Piezometer/ Standpipe
TOPSOIL		0.30	1.32	J 0.30				
Firm brown mottled grey silty CLAY.				UB 0.50	0.95	(11)		
				J 0.95	1.00			
				U 1.00	1.45	(15)		
Soft grey odorous CLAY with occasional black organic fragments and occasional shell fragments.		1.50	0.12	J 1.45	1.50			
				U 1.50	1.95	(4)		
---occasional bands of grey green silty sandy CLAY				J 1.95	2.00			
				U 2.00	2.46	(6)		
				J 2.45	2.50			
				PB 2.50	3.50			
Stiff brown-grey silty CLAY.		3.60	-1.98	UV 3.50	3.95	(20)		
				J 3.95	4.00			
				J 4.30				
				U 4.50	4.95	(30)		
				J 4.95	5.00			
				J 5.30			▽ 1	
				U 5.50	5.95	(30)	1 →	
				J 5.95	6.00			
				J 6.30				
				U 6.50	6.95	(45)		
				J 6.95	7.00			
Very stiff dark grey silty CLAY with some fragments of very weakly cemented siltstone.		7.30	-5.68	J 7.30				
				U 7.50	7.95	(43)		
				J 7.95	8.00			
				S 8.00	8.45	"46"		
				W 8.60			▽ 2	
				J 8.70				
				U 9.00	9.45	(56)		
				J 9.45	9.50			
				S 9.50	9.80	46 for 150mm		

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
2/3/92	6.00		6.00
3/3/92	19.00	2.90	7.50
4/3/92	28.50	2.30	7.50

Hard Strata

Depth(m)	Time

Comments

Vane test attempted at 3.50m - no penetration possible. Methane and oxygen measurements made to 3.0m below ground level. Methane not detected and oxygen recorded at 22% V/V.

Logged by: N.B.

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample
B Bulk Disturbed Sample
U Undisturbed U100 Sample
W Water Sample
N.R. No Recovery

S Standard Penetration Test
C Core Penetration Test
V Insitu Vane Test
PR Pressuremeter Test
K Permeability Test
0 Blows to drive U100

S.P.T. or C.P.T. ' ' N for full 300mm penetration
../200 For given penetration
../25* Seating blows only
N.P. No Penetration

Rotary Core Run
T.C.R. Total Core Recovery (%)
S.C.R. Solid Core Recovery (%)
R.Q.D. Rock Quality Designation (%)

Ground Water
1 → First Water Strike
2 → Subsequent Water Strike
— sm/pm Standing Level
▽Z Level 20mins after strike
|| Casing Depth

Piezometer
Upper Seal
Sand Cell
Piezometer Tip
Lower Seal
Grout

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695559 : BGS Reference: TR36SW87
British National Grid (27700) : 633190,162859
Report an issue with this borehole

<< < Prev Page 1 of 3 Next > >>

TR 36 SW/87

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG Borehole No. **W27**

Contract No. F9439 Method Cable Percussion.
Location Richborough W.T.W. Sheet 1 of 3 87
Borehole Diam (mm)150 Coords E 633,190 N 162,859
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc Date 18/02/92 21/02/92 Ground Level 1.82

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing Depth(m)	TCR	( ) & N SCR RQD	Ground Water	Piezometer/ Standpipe
TOPSOIL		0.30	1.52					
Firm brown mottled grey silty CLAY.				J 0.30				
				U 0.50	0.95	(8)		
				J 0.95	1.00			
				U 1.00	1.45	(11)		
Soft to firm green grey silty sandy CLAY.		1.50	0.32	J 1.45	1.50			
				U 1.50	1.95	(12)		
				J 1.95	2.00			
				U 2.00	2.45	(30)		
				J 2.45	2.50			
Firm brown mottled grey brown silty sandy CLAY.		2.70	-0.88	J 2.70				
				U 3.00	3.45	(17)		
				J 3.45	3.50			
				J 3.70				
				U 4.00	4.45	(50)		
				J 4.45	4.50			
				J 4.70				
				U 5.00	5.45	(53)		
				J 5.45	5.50			
				J 5.70				
				U 6.00	6.45	(45)		
				J 6.45	6.50		▽ 1	
Very stiff dark grey silty CLAY with occasional fragments of very weakly cemented siltstone.		6.70	-4.88	J 6.70			1 →	
				U 7.00	7.45	(59)		
				C 7.45	7.50		▽ 2	
				S 7.50	7.95	"47"		
				W 7.50				
				J 8.30				
				U 8.50	8.95	(52)		
				C 8.95	9.00			
				S 9.00	9.30	46 for 150mm		
				J 9.70				

Daily Progress				Hard Strata		Comments	Logged by: N.B.
Date	Final Depth (m) of: Borehole	Water	Casing	Depth(m)	Time		
18/2/92	0.50						
19/2/92	12.30	3.40	7.50				
20/2/92	24.30	2.90	7.50				
21/2/92	28.00	2.60	7.50				

Casing maintained just above base of borehole unless stated

Sample and Test Key

B Small Disturbed Sample; B Bulk Disturbed Sample; U Undisturbed U100 Sample; W Water Sample; N.R. No Recovery
S Standard Penetration Test; C Core Penetration Test; V Insitu Vane Test; PR Pressuremeter Test; K Permeability Test; D Stone to drive U100
S.P.T. "N" for full C.P.T. 300mm penetration; ../300 For given penetration; ../75" Seating blows only; N.P. No Penetration
Rotary Core Run; T.C.R. Total Core Recovery (%); S.C.R. Solid Core Recovery (%); R.Q.D. Rock Quality Designation (%)
Ground Water: 1 → First Water Strike; 2 → Subsequent Water Strike; ... on/pm Standing Level; ▽ Level 20mins after strike; Casing Depth
Piezometer: Upper Seal; Sand Cell; Piezometer Tip; Lower Seal; Grout

BGS ID: 695559 : BGS Reference: TR36SW87
British National Grid (27700) : 633190,162859
Report an issue with this borehole

<< < Prev Page 2 of 3 Next > >>

TR 36 SW/87

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG Borehole No. **W27**

87

Contract No. F9439 Method Cable Percussion.
Location Richborough W.T.W. Sheet 2 of 3
Borehole Diam (mm)150 Coords E 633,190 N 162,859
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc Date 18/02/92 21/02/92 Ground Level 1.82

Description of Strata (....cont.)	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing				Ground Water	Piezometer/ Standpipe
					Depth(m)		( ) & N TCR SCR RQD		
Very stiff dark grey silty CLAY with occasional fragments of very weakly cemented siltstone.				U	10.00	10.45	(54)		
								2 →	
				J	10.45	10.50			
				S	10.50	10.80	48 for 150mm		
				J	11.30				
				U	11.50	11.95	(62)		
				J	11.95	12.00			
				S	12.00	12.30	58 for 150mm		
				J	12.70				
---with more fragments of siltstone with depth				U	13.00	13.45	(64)		
				J	13.45	13.50			
				S	13.50	13.80	58 for 150mm		
				J	14.30				
				U	14.50	14.95	(88)		
				J	14.95	15.00			
				S	15.00	15.15	57 for 150mm*		
				J	15.70				
				U	16.00	16.45	(81)		
---becoming weakly cemented with depth				J	16.45	16.50			
				S	16.50	16.66	63 for 150mm*		
				J	17.30				
				U	17.50	17.95	(89)		
				J	17.95	18.00			
				S	18.00	18.30	48 for 150mm		
				J	18.70				
				U	19.00	19.45	(82)		
				J	19.45	19.50			
				S	19.50	19.80	51 for 150mm		

Daily Progress				Hard Strata		Comments	Logged by: N.B.
Date	Final Depth (m) of: Borehole	Water	Casing	Depth(m)	Time		
18/2/92	0.50						
19/2/92	12.30	3.40	7.50				
20/2/92	24.30	2.90	7.50				
21/2/92	29.00	2.50	7.50				

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample; B Bulk Disturbed Sample; U Undisturbed U100 Sample; W Water Sample; N.R. No Recovery
S Standard Penetration Test; C Cone Penetration Test; V Insitu Vane Test; PR Pressuremeter Test; K Permeability Test; D Blows to drive U100
S.P.T. " " N for full; C.P.T. 300mm penetration; ../200 For given penetration; ../25* Seating blows only; N.P. No Penetration
Rotary Core Run; T.C.R. Total Core Recovery (%); S.C.R. Solid Core Recovery (%); R.Q.D. Rock Quality Designation (%)
Ground Water: 1 → First Water Strike; 2 → Subsequent Water Strike; — mins/hrs Standing Level; ▽Z Level 20mins after strike; D Casing Depth
Piezometer: Upper Seal; Sand Cell; Piezometer Tip; Lower Seal Grout

BGS ID: 695559 : BGS Reference: TR36SW87
British National Grid (27700) : 633190,162859
Report an issue with this borehole

<< < Prev Page 3 of 3 Next > >>

TR36 SW 187

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG Borehole No. **W27**

87

Contract No. F9439 Method Cable Percussion. Sheet 3 of 3
Location Richborough W.T.W. Borehole Diam (mm)150 Coords E 633,190 N 162,859
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc Date 18/02/92 21/02/92 Ground Level 1.82

Description of Strata (....cont.)	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing	Depth(m)	TCR	( ) & N SCR RQD	Ground Water	Piezometer/ Standpipe
Very stiff dark grey silty CLAY with many fragments of weakly cemented siltstone.				J	20.30				
				U	20.50	20.95	(76)		
				J	20.95	21.00			
				S	21.00	21.32	48 for 175mm		
				J	21.70				
				U	22.00	22.45	(80)		
				J	22.45	22.50			
				S	22.50	22.87	53 for 175mm		
				J	23.30				
				U	23.50	23.95	(85)		
				J	23.95	24.00			
				S	24.00	24.30	51 for 150mm		
				J	24.70				
				U	25.00	25.45	(84)		
				J	25.45	25.50			
				S	25.50	25.95	50 for 200mm		
Structureless CHALK composed of angular to subrounded fine to coarse gravel sized grey white highly weathered fragments with some grey white clay and some soft flint nodules.		26.30	-24.48	J	26.30				
				S	26.50	26.95	"40"		
				J	27.30				
				SB	27.50	27.80	50 for 75mm*		
Borehole complete at 27.80m depth		27.80	-25.98						

Daily Progress				Hard Strata		Comments	Logged by: N.B.
Date	Final Depth (m) of: Borehole	Water	Casing	Depth(m)	Time		
18/2/92	0.50						
19/2/92	12.30	3.40	7.50				
20/2/92	24.30	2.90	7.50				
21/2/92	28.00	2.50	7.50				

Casing maintained just above base of borehole unless stated

Sample and Test Key: J Small Disturbed Sample; B Bulk Disturbed Sample; U Undisturbed U100 Sample; W Water Sample; N.R. No Recovery; S Standard Penetration Test; C Cone Penetration Test; V Insitu Vane Test; PR Pressuremeter Test; K Permeability Test; 0 Blows to drive U100; S.P.T. " N for full C.P.T. 300mm penetration; ./200 For given penetration; ./20* Seating blows only; N.P. No Penetration; Rotary Core Run; T.C.R. Total Core Recovery (%); S.C.R. Solid Core Recovery (%); R.Q.D. Rock Quality Designation (%); Ground Water: First Water Strike; Subsequent Water Strike; am/pm Standing Level; Level 20mins after strike; Casing Depth; Piezometer: Upper Seal, Sand Cell, Piezometer Tip, Lower Seal Grout

BGS ID: 695564 : BGS Reference: TR36SW92
British National Grid (27700) : 633124,162872
Report an issue with this borehole

<< < Prev Page 1 of 3 Next > >>

TR 36 SW/92

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. **W35**

92

Contract No. F9439 — Method Cable Percussion. — Sheet 1 of 3
Location Richborough W.T.W. — Borehole Diam (mm)150 — Coords E 633,124 N 162,872
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc — Date 12/02/92 15/02/92 — Ground Level 1.75

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing: Depth(m)		TCR	( ) & N SCR RQD	Ground Water	Piezometer/ Standpipe
TOPSOIL		0.20	1.55						
Firm to stiff brown mottled grey silty CLAY.				UJ	0.50	0.95	(19)		
				J	1.00				
				W	1.30				
				U	1.50	1.95	(20)		
				J	2.00				
		2.60	-0.85	U	2.50	2.95	(14)		
Soft to firm dark grey organic odorous CLAY with occasional shell fragments.				UJ	3.00	3.45	(55)		
				J	3.50				
				U	4.00	4.45	(35)		
		4.30	-2.55						
Firm to stiff light brown mottled grey silty sandy CLAY with occasional organic fragments.				J	4.50				
				U	5.00	5.45	(85)	1→	
				W	5.20				
				J	5.50				
				U	6.00	6.45	(80)		
				W	6.30				
				J	6.50				
				U	7.00	7.45	(87)		
		7.30	-5.55						
Very stiff dark grey silty CLAY with some very weakly cemented siltstone fragments.				SJ	7.50	7.95	"54"		
				J	8.25				
				U	8.50	8.95	(76)		
				SJ	9.00	9.45	"56"		
				J	9.75				

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
12/2/92	3.00		1.50
13/2/92	14.00	6.40	14.00
14/2/92	25.00	6.30	25.00
15/2/92	28.00	6.00	25.00

Hard Strata

Depth(m)	Time

Comments

Casing maintained just above base of borehole unless stated

Logged by: N.B.

Sample and Test Key

J Small Disturbed Sample; B Bulk Disturbed Sample; U Undisturbed U100 Sample; W Water Sample; N.R. No Recovery
S Standard Penetration Test; C Cone Penetration Test; V Insitu Vane Test; PR Pressuremeter Test; K Permeability Test; () Blows to drive U100
S.P.T. or C.P.T. " " N for full 300mm penetration; ../200 For given penetration; ../25" Seating blows only; N.P. No Penetration
Rotary Core Run; T.C.R. Total Core Recovery (%); S.C.R. Solid Core Recovery (%); R.Q.D. Rock Quality Designation (%)
Ground Water: 1→ First Water Strike; ⊉→ Subsequent Water Strike; — am/pm Standing Level; ▽ Level 20mins after strike; [] Casing Depth
Piezometer: Upper Seal; Sand Cell; Piezometer Tip; Lower Seal Grout

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695567 : BGS Reference: TR36SW95
British National Grid (27700) : 633058,162885
Report an issue with this borehole

<< < Prev Page 1 of 3 Next > >>

TR 36 SW/95

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. **W43**

Contract No. F9439 — Method Cable Percussion.
Location Richborough W.T.W. — Sheet 1 of 3 — 95
Borehole Diam (mm)150 — Coords E 633,058 N 162,885
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc — Date 07/02/92 12/02/92 — Ground Level 1.76

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing: Depth(m)	TCR	( ) & N SCR RQD	Ground Water	Piezometer/ Standpipe
TOPSOIL								
Firm to stiff brown mottled grey silty CLAY with occasional fine subangular gravel.		0.50	1.26	UJ 0.50	0.95	(31)		
				UJ 1.00	1.45	(24)		
Soft greenish brown mottled orange brown silty sandy CLAY with occasional shell fragments.		1.40	0.36	W 1.30 J 1.50				
				P 2.00	3.00		▽1	
Firm grey silty CLAY with occasional bands of light grey sandy silt.		3.20	-1.44	W 3.25			1→	
				UJ 3.50	3.95	(20)		
				SJ 4.00	4.45	"8"		
Firm to very stiff grey silty CLAY with occasional fragments of very weakly cemented clayey slightly sandy silt.		4.50	-2.74	UJ 4.50	4.95	(45)		
				SJ 5.00	5.45	"38"		
				UJ 5.50 W 5.60	5.95	(61)		
				SJ 6.00	6.45	"20"		
				J 6.75				
				U 7.00	7.45	(35)		
				SJ 7.50	7.95	"22"		
				J 8.25				
				U 8.50	8.95	(78)		
---becoming very stiff below 9.00m				SJ 9.00	9.45	"58"		
				J 9.75				

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
7/2/92	6.00	1.20	6.00
10/2/92	15.00	2.60	15.00
11/2/92	24.50	3.10	24.50
12/2/92	28.75	4.80	28.00

Hard Strata

Depth(m)	Time

Comments

Casing maintained just above base of borehole unless stated

Logged by: N.B.

Sample and Test Key

J Small Disturbed Sample; B Bulk Disturbed Sample; U Undisturbed U100 Sample; W Water Sample; N.R. No Recovery
S Standard Penetration Test; C Core Penetration Test; V Insitu Vane Test; PR Pressuremeter Test; K Permeability Test; 0 Blows to drive U100
S.P.T. or C.P.T. ''N for full 300mm penetration; ../200 For given penetration; ../25" Seating blows only; N.P. No Penetration
Rotary Core Run; T.C.R. Total Core Recovery (%); S.C.R. Solid Core Recovery (%); R.Q.D. Rock Quality Designation (%)
Ground Water: 1→ First Water Strike; 2→ Subsequent Water Strike; — am/pm Standing Level; ▽ Level 20mins after strike; [] Casing Depth
Piezometer: Upper Seal; Sand Cell; Piezometer Tip; Lower Seal; Grout

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 19293036 : BGS Reference: TR36SW113
British National Grid (27700) : 634979,164196
Report an issue with this borehole

<< < Prev Page 1 of 1 Next > >>

					Project	Pegwell Bay, for University of Sussex
					Borehole	BH2
Location	Viking Picnic Site, opposite Mount Green Avenue					
Grid Reference	TR 34979 64196					
Datum level AOD (metres)						
Run No	**Start Depth (m)**	**Stop Depth (m)**	**Sediment**	**Recovery (m)**	**Samples**	**Remarks**
1	0.00	1.00	Silt	0.89	Bag	Topsoil into brown compact, slightly cemented friable SILT (loess) with roots
2	1.00	2.00	Silt	0.87	Bag	Brown compact friable SILT with some calcareous root traces, some roots. Rounded black flint at base.
3	2.00	3.00	Silt/Sand	0.84	Bag	Top is brown compact friable SILT. Base is slightly green-brown compact SAND with some shell fragments.
4	3.00	4.00	Sand	Not recorded	Bag	Olive brown clayey(?) silty SAND (Thanet Sand)
Drilling technique	Percussion 87mm Barrel using opaque liners + casing to 4m					
Total Depth (m)	4m					
Personnel Present	S Thorpe / I Longhurst / D Morgan					
Dates of Drilling	13/09/10 1600 - 1730					
Logged by	S Thorpe					

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 19293037 : BGS Reference: TR36SW114
British National Grid (27700) : 634954,164181
Report an issue with this borehole

<< < Prev Page 1 of 1 Next > >>

					Project	Pegwell Bay, for University of Sussex
					Borehole	BH3
Location	Viking Picnic Site, opposite Mount Green Avenue					
Grid Reference	TR 34954 64181					
Datum level AOD (metres)						

Run No	**Start Depth (m)**	**Stop Depth (m)**	**Sediment**	**Recovery (m)**	**Samples**	**Remarks**
1	0.00	1.00	Silt	0.96	Bag	Topsoil into compact brown friable SILT (Loess) with roots
2	1.00	2.00	Silt	0.91	Bag	Brown compact friable SILT with roots at top of core. White calcareous nodules at base.
3	2.00	3.00	Silt	0.90	Bag	Brown compact friable SILT.
4	3.00	4.00	Silt/Sand	0.93	Bag	Base is fine and medium olive-brown mottled brown-grey compact SAND

Drilling technique	Percussion 87mm Barrel using opaque liners + casing to 4m					
Total Depth (m)	4m					
Personnel Present	S Thorpe / I Longhurst / D Morgan					
Dates of Drilling	14/09/10 1000 - 1130					
Logged by	S Thorpe					

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 19293038 : BGS Reference: TR36SW115
British National Grid (27700) : 634955,164182
Report an issue with this borehole

<< < Prev Page 1 of 1 Next > >>

					Project	Pegwell Bay, for University of Sussex
					Borehole	BH4
Location	Viking Picnic Site, opposite Mount Green Avenue					
Grid Reference	TR 34955 64182					
Datum level AOD (metres)						
Run No	**Start Depth (m)**	**Stop Depth (m)**	**Sediment**	**Recovery (m)**	**Samples**	**Remarks**
1	0.00	0.50	Soil	0.52	Bag	Topsoil
2	0.50	1.50	Silt	0.91	Bag	Soil into compact brown friable SILT (Loess) with some rootlets
3	1.50	2.50	Silt	0.92	Bag	Brown compact friable SILT with many calcareous root traces at base
4	2.50	3.50	Silt/Sand	0.91	Bag	Brown compact friable SILT at top of core. Base is brownish-grey compact fine and medium SAND (Thanet Sand)
Drilling technique	Percussion 87mm Barrel using opaque liners + casing to 3.5m					
Total Depth (m)	3.5m					
Personnel Present	S Thorpe / I Longhurst / D Morgan					
Dates of Drilling	14/09/10 1200 - 1330					
Logged by	S Thorpe					

BGS ID: 695568 : BGS Reference: TR36SW96
British National Grid (27700) : 632654,162880
Report an issue with this borehole

<< < Prev Page 1 of 3 Next > >>

TR36 SW 196

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. W46

Contract No. F9439 — Method Cable Percussion.
Location Richborough W.T.W. — Sheet 1 of 3
Borehole Diam (mm)150 — Coords E 632,654 N 162,880
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc — Date 21/02/92 26/02/92 — Ground Level 1.52

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing Depth(m)	TCR	(*) & N SCR RQD	Ground Water	Piezometer/ Standpipe
TOPSOIL								
Soft to firm brown mottled grey silty CLAY.		0.50	1.02	J 0.30 U 0.50	0.95	(12)		
				J 0.95 UB 1.00	1.00 1.45	(10)		
Soft dark grey organic CLAY.		1.50	0.02	J 1.45 U 1.50	1.50 1.95	(8)		
				J 1.95 U 2.00	2.00 2.45	(9)		
Soft grey green silty organic CLAY with occasional shell fragments.		2.50	-0.98	J 2.45 P 2.50	2.50 3.50			
				U 3.50	3.95	(18)		
				J 3.95	4.00			
Firm light brown, grey and orange brown mottled silty sandy CLAY.		4.50	-2.98	J 4.30 U 4.50	4.95	(22)		
				J 4.95	5.00		▽ 1	
				J 5.30			▽ 2	
				U 5.50	5.95	(31)		
				J 5.95	6.00		1 →	
Very stiff dark grey silty CLAY with some to many very weakly cemented siltstone fragments.		5.50	-4.98	J 6.30 U 6.50	6.95	(42)		
				J 6.95	7.00			
				J 7.30 U 7.50	7.95	(56)		
				J 7.95 S 8.00	8.00 8.45	*43*		
				J 8.70				
				U 9.00	9.45	(63)		
				J 9.45 S 9.50	9.50 9.97	53 for 226mm		

Daily Progress				Hard Strata		Comments	Logged by: N.B.
Date	Final Depth (m) of: Borehole	Water	Casing	Depth(m)	Time	Methane and oxygen measurements made to 3.0m below ground level. Methane not detected and oxygen recorded at 22% V/V.	
21/2/92	10.00		9.00				
24/2/92	22.50	3.70	9.00				
25/2/92	24.00	3.30	24.00				
26/2/92	30.00	2.80	28.50				

Casing maintained just above base of borehole unless stated

Sample and Test Key: J Small Disturbed Sample; B Bulk Disturbed Sample; U Undisturbed U100 Sample; W Water Sample; N.R. No Recovery; S Standard Penetration Test; C Cone Penetration Test; V Insitu Vane Test; PR Pressuremeter Test; K Permeability Test; () Blows to drive U100; S.P.T. */N for full 300mm penetration; C.P.T. /200 For given penetration; /25* Seating Blows only; N.P. No Penetration; T Rotary Core Run; T.C.R. Total Core Recovery (%); S.C.R. Solid Core Recovery (%); R.Q.D. Rock Quality Designation (%)

Ground Water: 1 → First Water Strike; 2 → Subsequent Water Strike; ___ am/pm Standing Level; ▽ Level 20mins after strike; () Casing Depth

Piezometer: Upper Seal; Sand Cell; Piezometer Tip; Lower Seal Grout

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 695568 : BGS Reference: TR36SW96
British National Grid (27700) : 632654,162880
Report an issue with this borehole

TR 36 SW/96

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG Borehole No. **W46**

Contract No. F9439 Method Cable Percussion.
Location Richborough W.T.W. Sheet 2 of 3 96
Borehole Diam (mm)150 Coords E 632,654 N 162,880
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc Date 21/02/92 26/02/92 Ground Level 1.52

(....cont.)

Description of Strata	Sample	Depth(m)	TCR	( ) & N / SCR RQD
Very stiff dark gray silty CLAY with some to many very weakly cemented siltstone fragments	J	10.30		
	U	10.50	10.95	(54)
	J S	10.95 11.00	11.00 11.30	44 for 150mm
	J	11.70		
--becoming weakly cemented below 12.00m	U	12.00	12.45	(70)
	J S	12.45 12.50	12.50 12.68	48 for 150mm*
	J	13.30		
	U	13.50	13.95	(90)
	J S	13.95 14.00	14.00 14.15	50 for 150mm*
	J	14.70		
	UB	15.00	15.40	(5) N.R.
	J S	15.45 15.50	15.50 15.80	57 for 150mm
	J	16.30		
	U	16.50	16.95	(94)
	J S	16.95 17.00	17.00 17.30	49 for 150mm
	J	17.70		
	U	18.00	18.45	(92)
	J S	18.45 18.50	18.50 18.80	63 for 150mm
	J	19.30		
	U	19.50	19.95	(76)

Ground Water: N.B.

Daily Progress — Final Depth (m) of:

Date	Borehole	Water	Casing
21/2/92	10.00		9.00
24/2/92	22.50	3.70	9.00
25/2/92	24.00	3.30	24.00
26/2/92	30.00	2.90	28.50

Hard Strata: Depth(m) Time

Comments: Methane and oxygen measurements made to 3.0m below ground level. Methane not detected and oxygen recorded at 22% V/V.

Logged by: N.B.

Casing maintained just above base of borehole unless stated

Sample and Test Key
J Small Disturbed Sample; B Bulk Disturbed Sample; U Undisturbed U100 Sample; W Water Sample; N.R. No Recovery
S Standard Penetration Test; C Cone Penetration Test; V Insitu Vane Test; PR Pressuremeter Test; K Permeability Test; () Blows to drive U100
S.P.T. or C.P.T. * * N for full 300mm penetration; ../200 For given penetration; ../25* Seating blows only; N.P. No Penetration
Rotary Core Run; T.C.R. Total Core Recovery (%); S.C.R. Solid Core Recovery (%); R.Q.D. Rock Quality Designation (%)
Ground Water: First Water Strike; Subsequent Water Strike; am/pm Standing Level; Level 20mins after strike; Casing Depth
Piezometer: Upper Seal; Sand Cell; Piezometer Tip; Lower Seal Grout

BGS ID: 695568 : BGS Reference: TR36SW96
British National Grid (27700) : 632654,162880
Report an issue with this borehole

TR 36 SW/96

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG

Borehole No. W46

Contract No. F9439
Method Cable Percussion.
Location Richborough W.T.W.
Sheet 3 of 3
96
Borehole Diam (mm) 150
Coords E 632,654 N 162,880
Client Southern Projects Ltd.
Consultant Soil Mechanics Assoc
Date 21/02/92 26/02/92
Ground Level 1.52

Description of Strata	Depth Below G.L.(m)	O.D. Level (m)	Sample type	Depth(m)	TCR	( ) & N SCR RQD	Ground Water
(....cont.) Very stiff dark grey silty CLAY with some to many weakly cemented siltstone fragments.			J	19.95	20.00	50 for 150mm	
			S	20.00	20.30		
			J	20.70			
			U	21.00	21.45	(80)	
			J	21.45	21.50	53 for 150mm	
			S	21.50	21.80		
			J	22.30			
			UB	22.50	22.95	(88)	
			J	22.95	23.00	50 for 175mm	
			S	23.00	23.32		
			J	23.70			
			U	24.00	24.45	(87)	
			J	24.45	24.50	56 for 150mm	
			S	24.50	24.80		
			J	25.30			
			U	25.50	25.95	(90)	
			J	25.95	26.00	50 for 175mm	
			S	26.00	26.32		
			J	26.70			
			U	27.00	27.45	(89)	
			J	27.45	27.50	49 for 150mm	
			S	27.50	27.80		
			J	28.30			
	28.50	-26.98					
Structureless CHALK, composed of subangular to angular fine to coarse gravel sized white moderately weathered moderately weak to weak fragments and much grey white silty clay with occasional flint nodules.			S	28.50	28.95	"37"	
			J	29.30			
			S	29.50	29.95	"50"	
Borehole complete at 30.00m depth	30.00	-28.48					

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
21/2/92	10.00		9.00
24/2/92	22.50	3.70	9.00
25/2/92	24.00	3.30	24.00
26/2/92	30.00	2.90	28.50

Hard Strata

Depth(m)	Time

Comments

Methane and oxygen measurements made to 3.0m below ground level. Methane not detected and oxygen recorded at 22% V/V.

Casing maintained just above base of borehole unless stated

Logged by: N.B.

Sample and Test Key

J Small Disturbed Sample; B Bulk Disturbed Sample; U Undisturbed U100 Sample; W Water Sample; N.R. No Recovery

S Standard Penetration Test; C Cone Penetration Test; V Insitu Vane Test; PR Pressuremeter Test; K Permeability Test; () Blows to drive U100

S.P.T. or C.P.T. " N for full 300mm penetration; ../200 For given penetration; ../25* Seating blows only; N.P. No Penetration

Rotary Core Run; T.C.R. Total Core Recovery (%); S.C.R. Solid Core Recovery (%); R.Q.D. Rock Quality Designation (%)

Ground Water: 1→ First Water Strike; 2→ Subsequent Water Strike; — am/pm Standing Level; ▽ Level 20mins after strike; ‖ Casing Depth

Piezometer: Upper Seal; Sand Cell; Piezometer Tip; Lower Seal; Grout

Date: 26/04/17
Our Ref: WK/201709089
Your Ref: 292485

AMEC Foster Wheeler
Floor 4
60 London Wall

London EC2M 5TQ

38199 – Sandwich Road, Ramsgate, Kent – Environmental Data Search

Thank you for your letter and payment, received by this Department. A receipt of payment is attached for your records.

I refer to your request for information on contaminated land held by this Office. As you will be aware, the proposed cable route is located close to a number of potentially contaminated features within the Thanet District (see reports attached). For any enquiries regarding the Sandwich side of the cable route please contact Dover District Council.

In addition to the information held by this department, we are aware of an investigation at the Pegwell PFS which has been conducted in liaison with Jonathan Atkinson at the Environment Agency (please contact Lisa Westcott on 01732 223191 for further details) and reports relating to the demolition of the Richborough Power Station site which are available via UK Planning (www.ukplanning.co.uk), ref. F/TH/11/0727.

Information concerning previous underground high voltage DC cable applications from Pegwell Bay to Richborough Power Station can be found under refs. F/TH/13/0760 and F/TH/13/0144.

Under Part IIA of the Environmental Protection Act 1990, Local Authorities have the responsibility to identify contaminated land and initiate enforcement / remedial measures where necessary. Officers are currently prioritising sites for further investigation using historical land use information, geological and hydrogeological information and current land use data.

I would emphasise that any information provided by Thanet District Council does not act as a guarantee against the Authority taking further action in respect of land contamination at the above, in the future.

Having researched our records and additional data in the vicinity of the route using our in-house contaminated land and historic mapping databases (see appendices attached), I am able to provide the following information in answer to the specific points raised in your letter. To the best of our knowledge:

1. A number of potentially contaminated sites are present along the proposed cable route. These include old military rifle ranges, PFS sites (see permitted installations), an old KCC landfill site which has been partly capped and is currently a nature reserve, the Richborough Power station site and a railway line.

Environmental Health

Environmental Protection Manager

Thanet District Council
PO Box 9
Cecil Street
Margate
Kent
CT91XZ
01843 577000
www.thanet.gov.uk

2. Please find list of 2017 permitted installations at: https://www.thanet.gov.uk/your-services/noise-and-air-quality/industrial-air-pollution-control-(authorised-processes)/part-b-register/ (copy enclosed).

3. This department has no record of pollution incidents at the application site or surrounding sites and there are no private water supplies in proximity to the application site.

4. Pegwell Bay has a number of designations, including status as a SSSI and Ramsar Site (see: https://designatedsites.naturalengland.org.uk/SiteList.aspx?siteName=sandwich&countyCode=&responsiblePerson=).

5. Based on the information currently held regarding the potential contamination risk along the cable route, this Department is not intending to take action under Part IIA of the EPA 1990. However, if new information should come to light, this department would re-evaluate any potential risk to human health or the wider environment at this time.

If you wish to research this matter further, the following additional sources of information may be useful: Environment Agency website, old Ordnance Survey maps, trade directories and local archives and histories. Further information on potential petrol tanks of concern in the area can be obtained from the Petroleum Officer at Kent County Council, Trading Standards.

If you have any queries or require any further information please do not hesitate to contact me.

Yours Sincerely,

Environmental Protection Manager

Environmental Health

Environmental Protection Manager

Thanet District Council
PO Box 9
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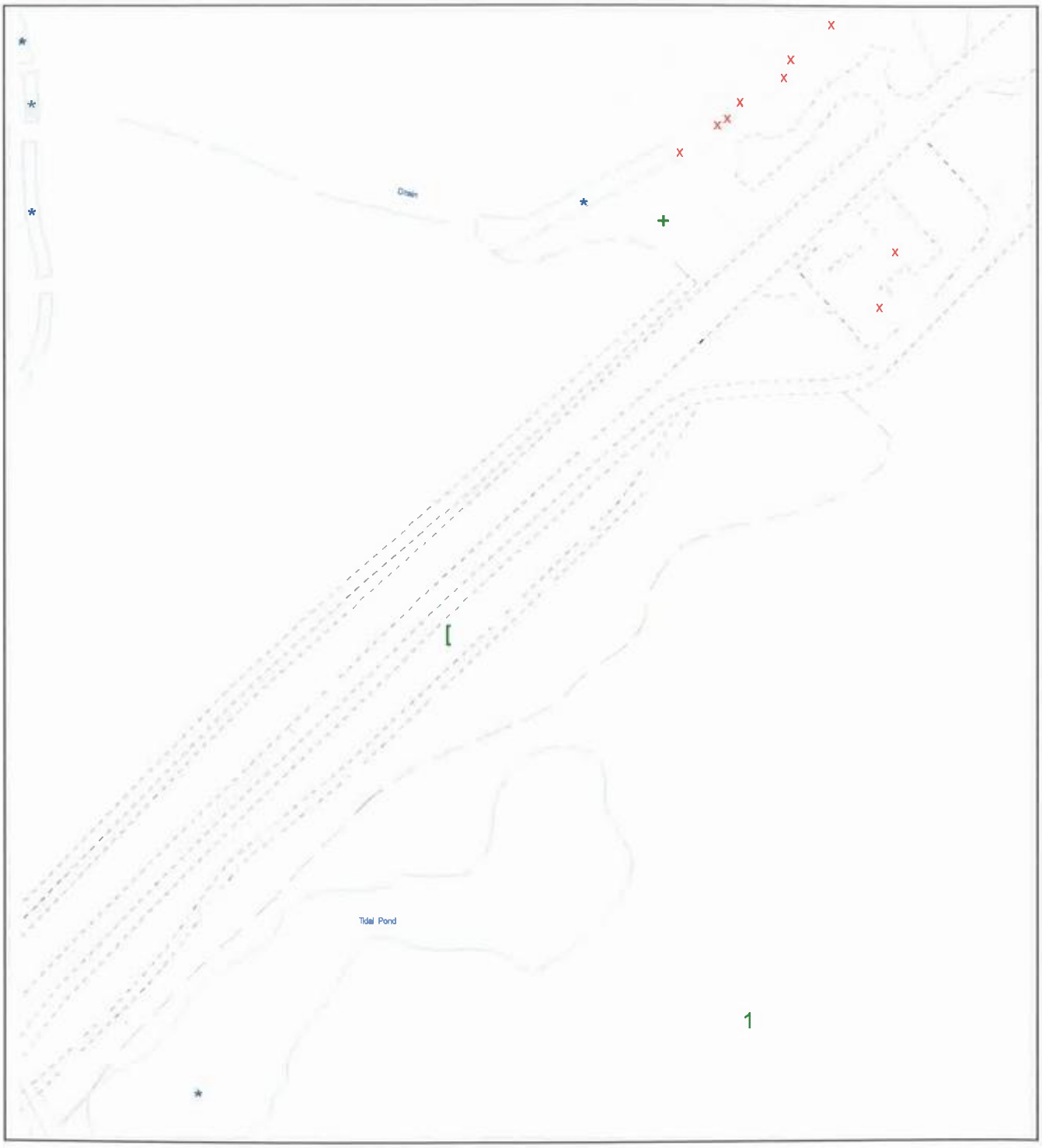
Margate
Kent
CT9 1XZ
01843 577000
www.thanet.gov .uk

NORTHGATE SE GIS Print Template

NORTHGATE SE GIS Print Template



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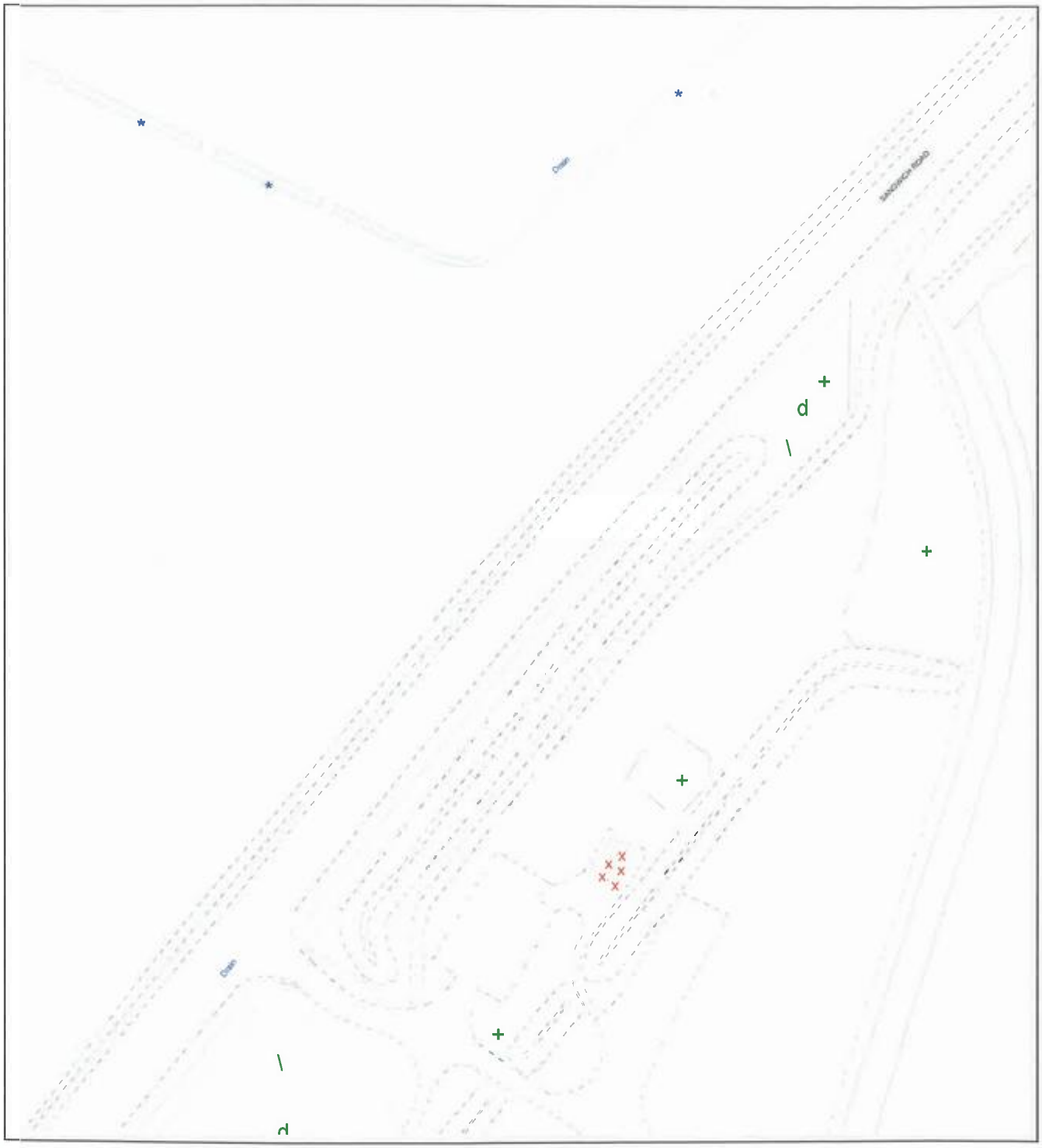
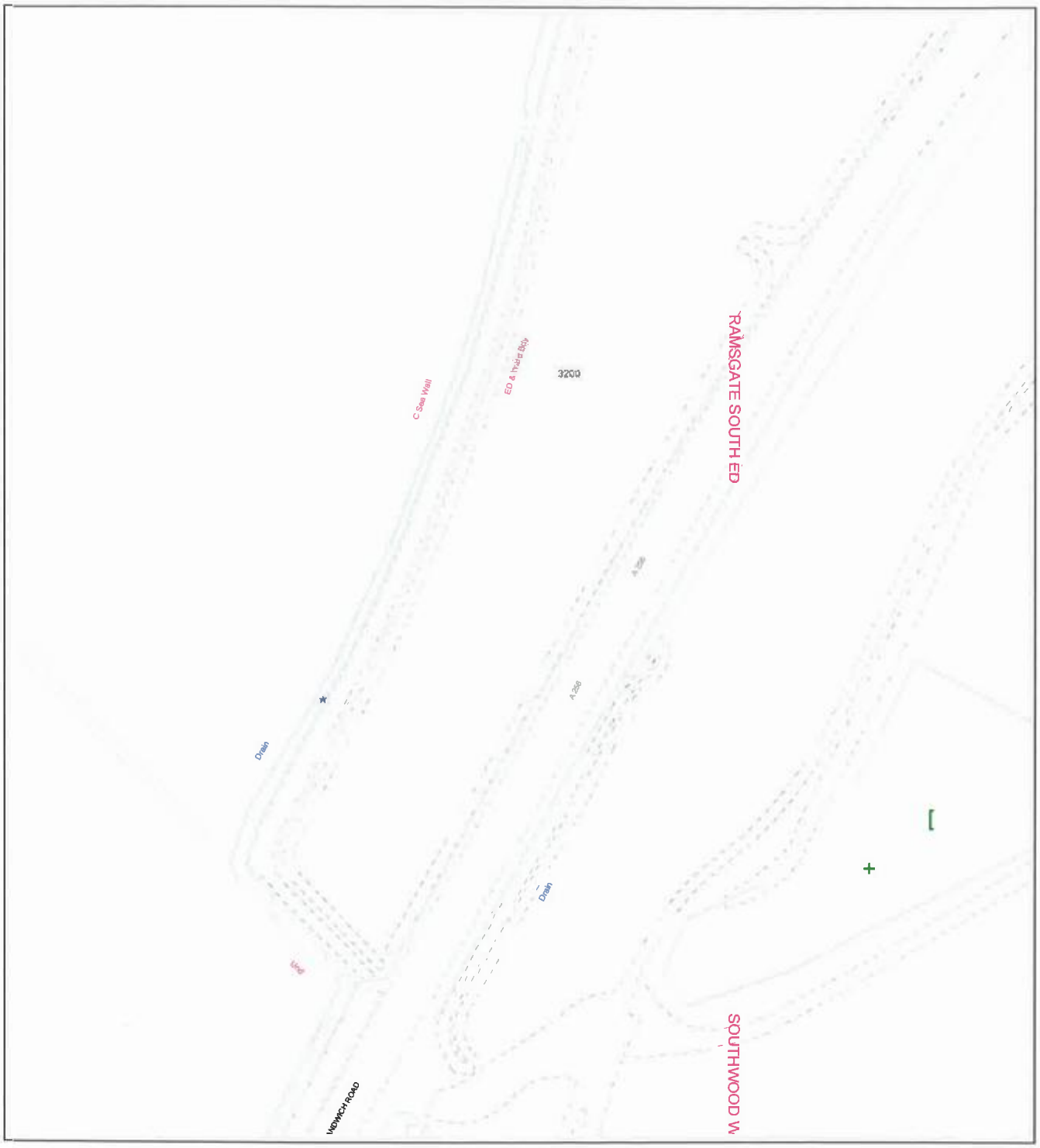


NORTHGATE SE GIS Print Template

NORTHGATE SE GIS Print Template



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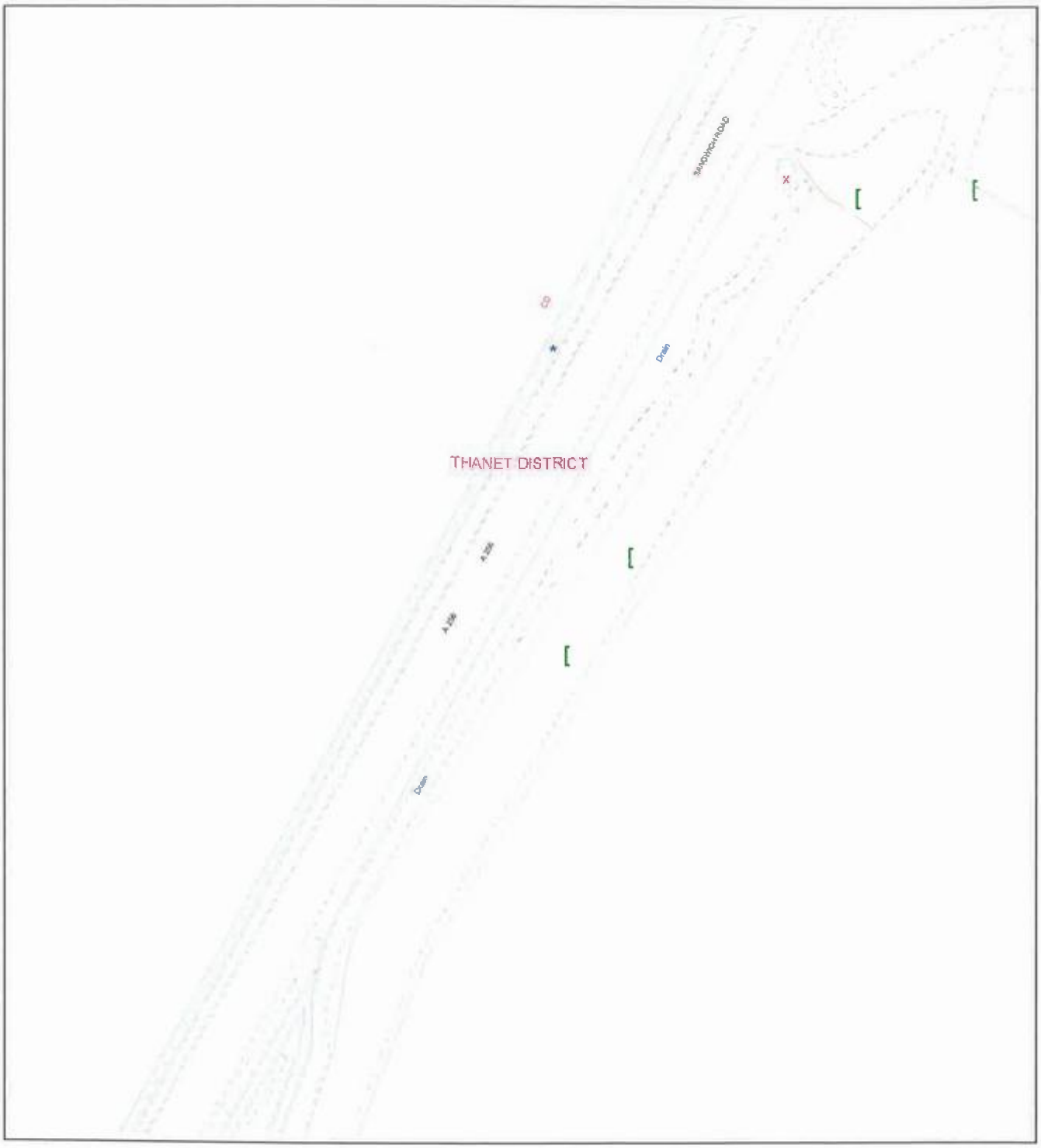

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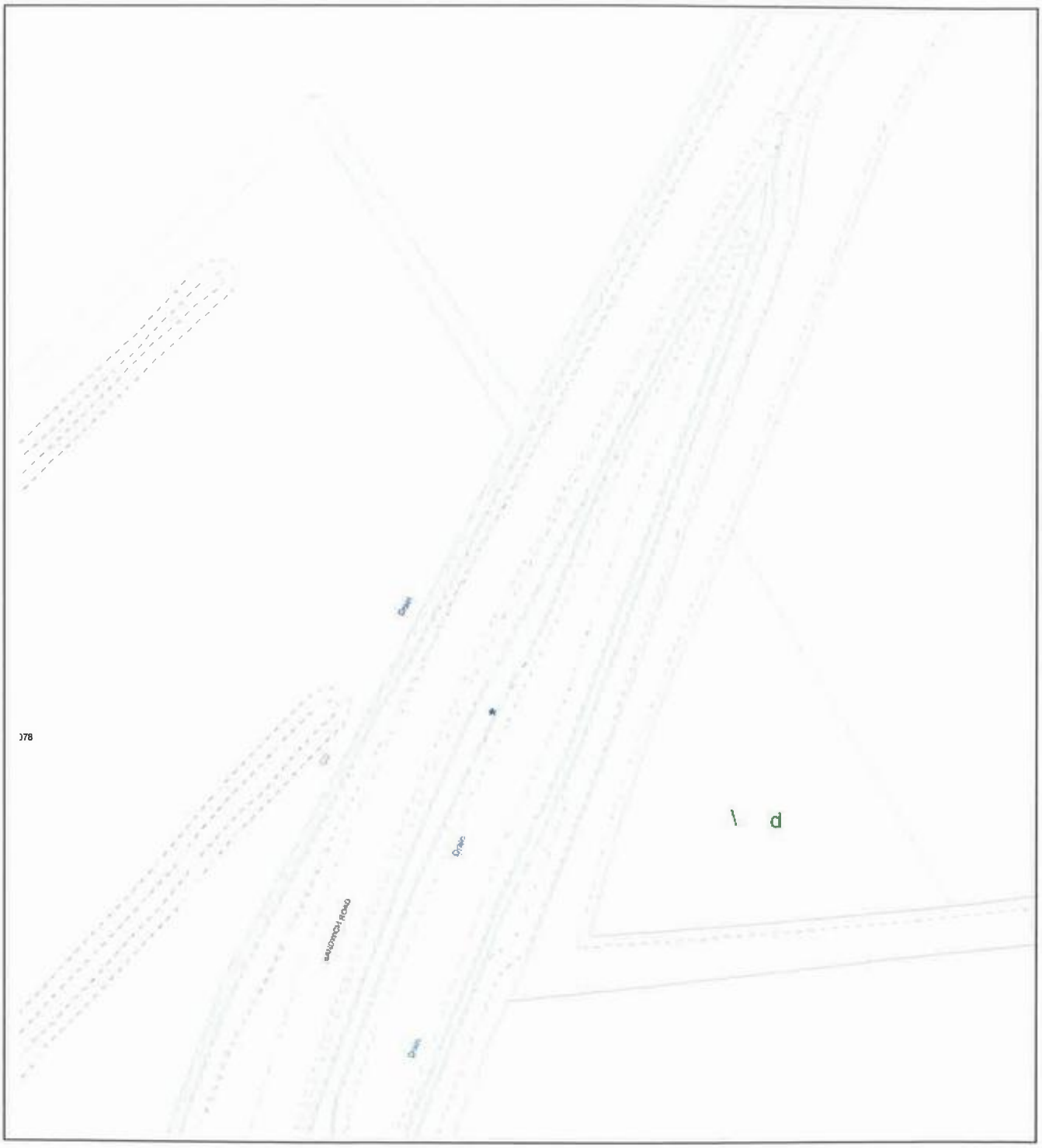

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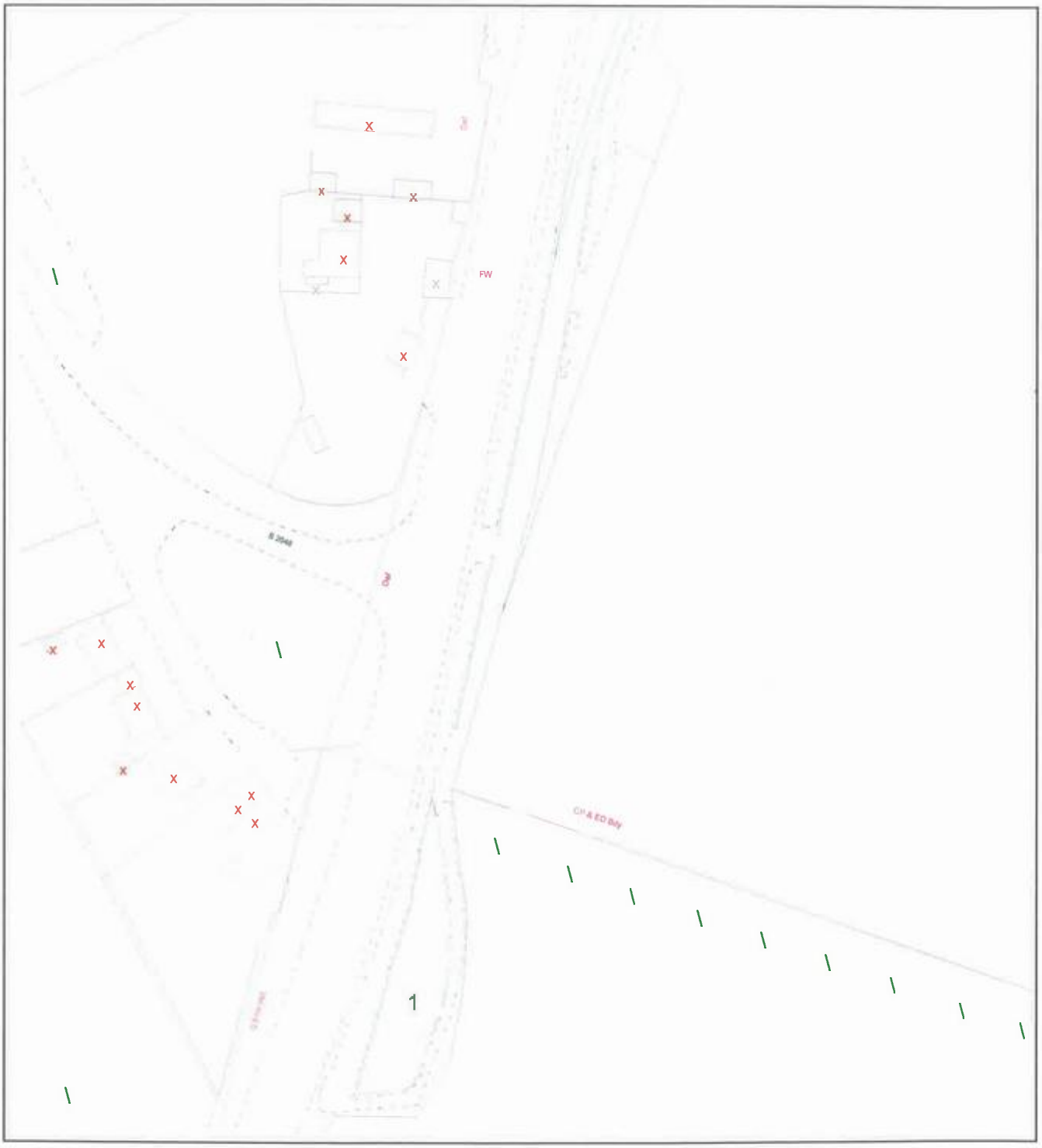

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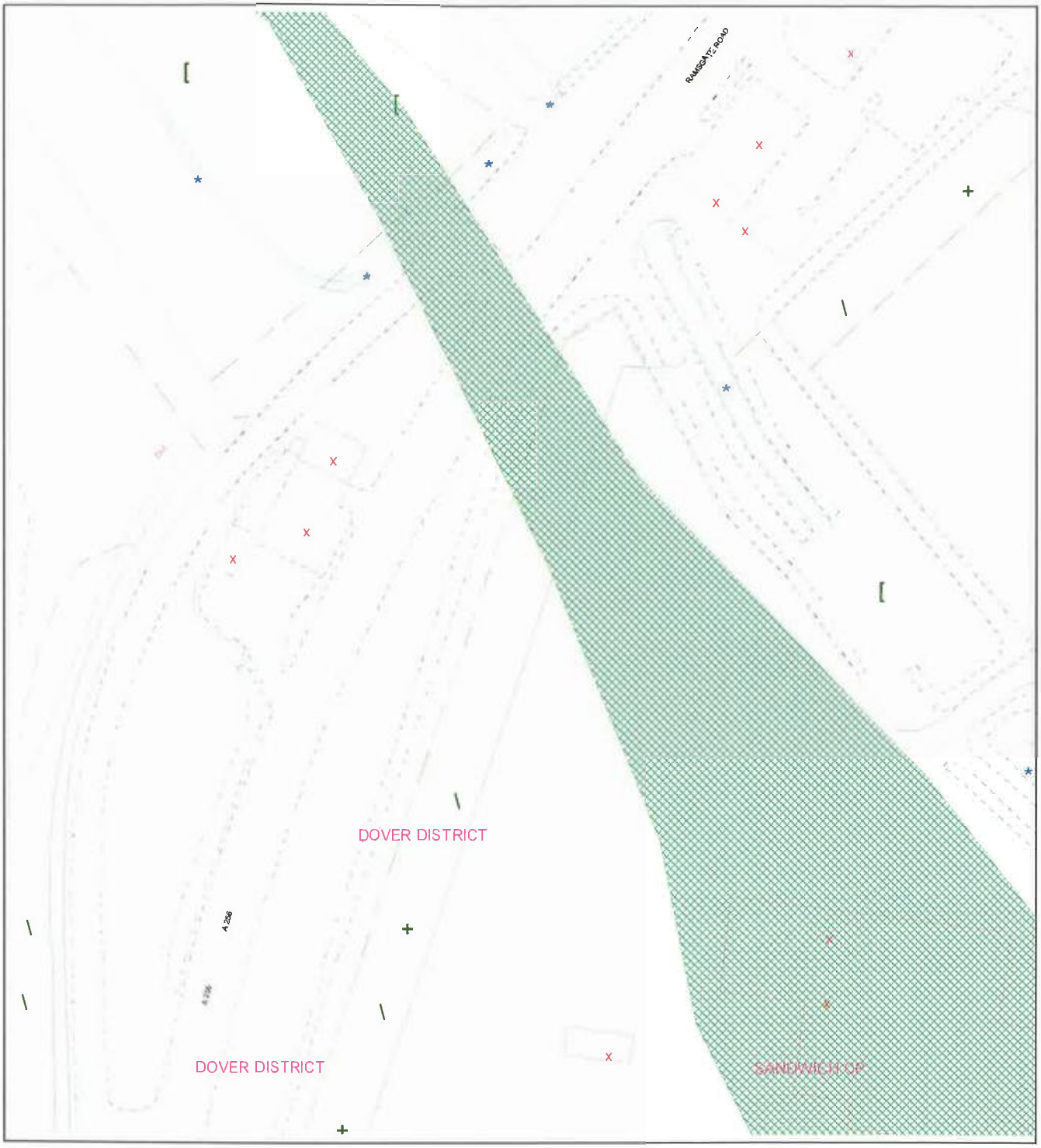

NORTHGATE SE GIS Print Template

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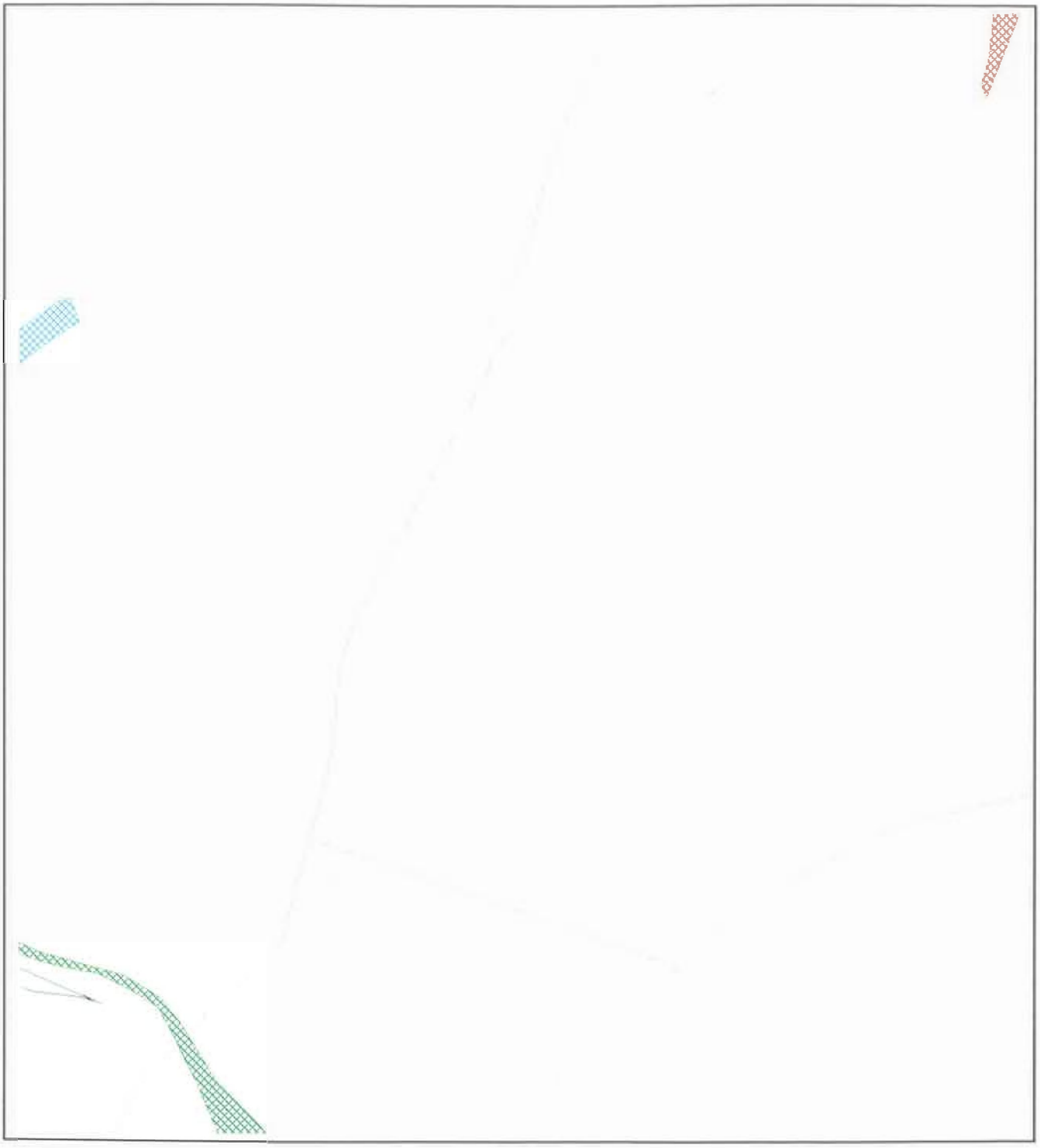
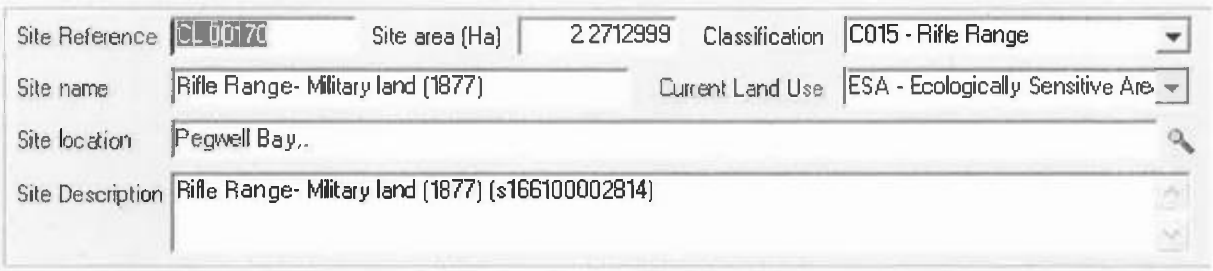
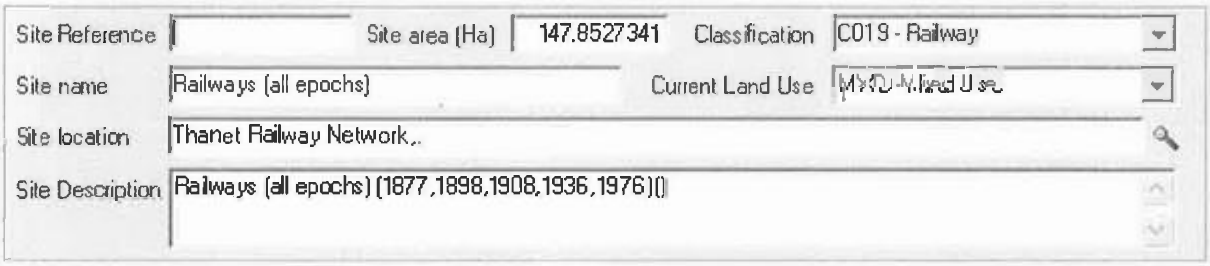


SITE DATA– Sandwich Road Cable Route

Sites of Potential Concern

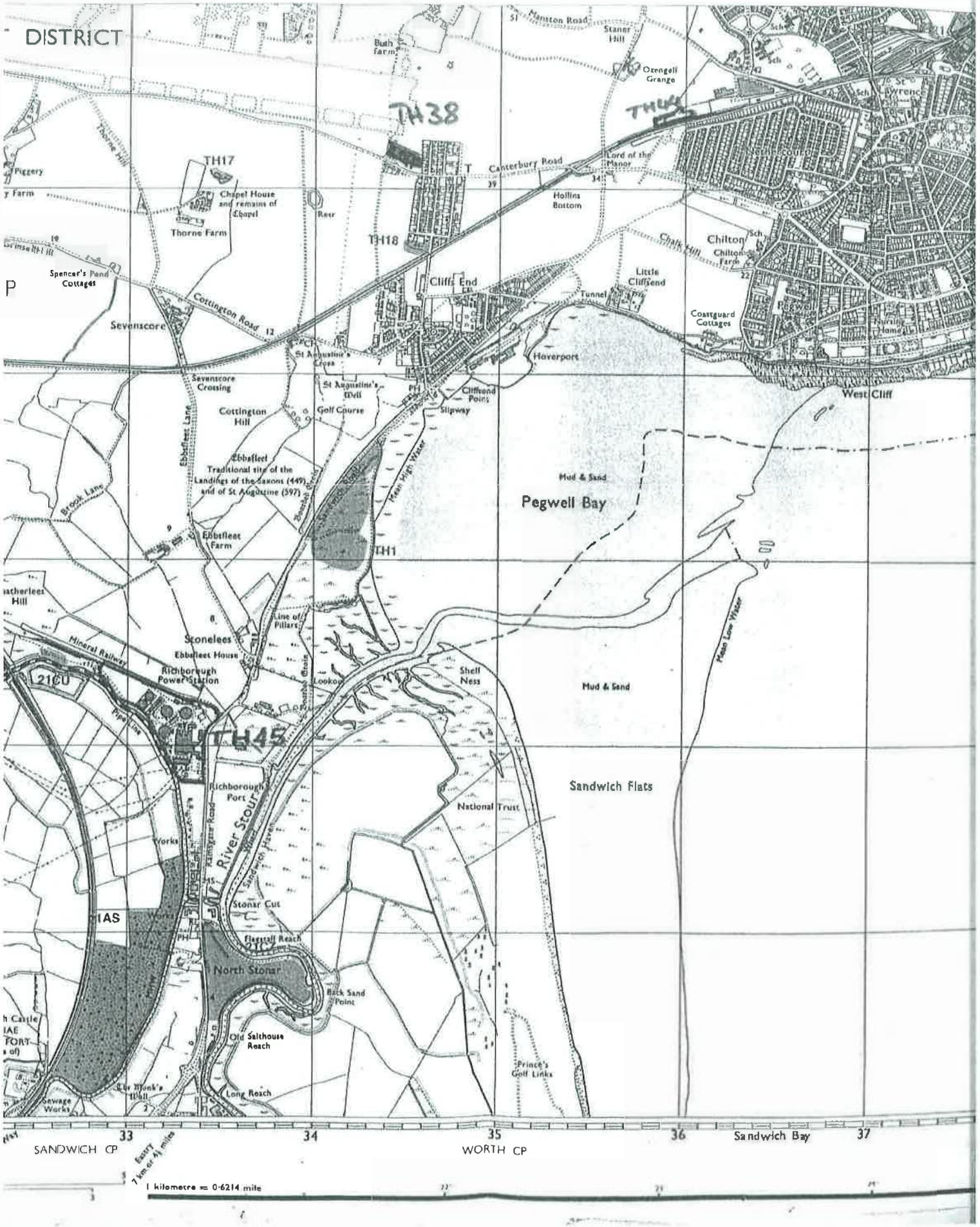




Landfill Data

Ref.	Name	Category	Comments
TH1	Cliffsend	Inert, putrescible and difficult waste	Closed
TH45	Former Richborough Power station	Power Station Use, Asbestos	Closed 1996

LANDFILL MAPPING



Environmental Permits 2017

Permit Reference	Site Address	Grid Ref	Operator	Date Applied	Regulation	PGN Ref	Process Description
PC001	Manston Road Margate,	635305 169225	Thanet Crematorium	2.8.91	Section 5.1	PG 5/2	Incinerator
PC21-06/07	Manston Road Margate CT9 4LX	635129 168924	Cemex	26.3.92	Section 3.1	PG 3/1	Cement & Lime
PC007	Patricia Way Pysons Road Broadstairs CT10 2XZ	637422 167275	Blaze Neon	15.1.93	Section 6.5	PG 6/23	Coating Process
PC005	Pysons Road Broadstairs CT10 2LE	637613 167231	Fujifilm	15.8.96	Section 6.5	PG 6/11	Manufacture of Printing Ink
PC002	71 Monkton Street Monkton Kent CT12 4JF	628946 165041	DDS	28.5.97	Section 3.4	PG 3/16	Concrete Crushing
PC004	Manston Park Columbus Avenue Manston Ramsgate	631391 166794	Cummins	19.12.00	Section 6.5	PG 6/23	Coating Process
PC006	Port Ramsgate Berth 4 Ramsgate New Port Ramsgate Harbour Ramsgate CT11 8RP	637947 163928	Bretts Concrete	1.6.10	Section 3.1	PG3/1	Cement & Lime
PC010	Groundwork Solutions Ltd 424 Margate Road Ramsgate CT12 6SJ		Groundwork Solutions Ltd	9.4.15	Section 3.4	PG 3/16	Mobile Concrete Crushing
04-05/06	292 Northdown Road Cliftonville, Margate CT9 2PT	636800 170756	Shell Northdown	19.5.97	Section 1.4	PG 1/14	Vapour Recovery
09-05/06	Canterbury Road East Ramsgate CT11 OLB	636026 165012	Shell Royal Oak	11.11.98	Section 1.4	PG 1/14	Vapour Recovery
12-05/06	155 Hereson Road Ramsgate CT11 7EL	638777 165964	Murco	10.12.98	Section 1.4	PG 1/14	Vapour Recovery

thanet
district council

Permit Reference	Site Address	Grid Ref	Operator	Date Applied	Regulation	PGN Ref	Process Description
05-05	361 Canterbury Road Birchington CT7 9TZ	629763 168462	Shell Birchington	31.12.98	Section 1.4	PG 1/14	Vapour Recovery
14-05/06	36-40 High Street St Lawrence Ramsgate CT11 0QW	637051 165258	J C Morrison	16.2.99	Section 1.4	PG 1/14	Vapour Recovery
13-05/06	Broadway Garage Broadstairs Kent CT10 2AY	638979 168016	J C Morrison	16.2.99	Section 1.4	PG 1/14	Vapour Recovery
PC008	425 Margate Road Westwood Broadstairs, Kent	636506 167707	J Sainsbury PLC	10.7.14	Section 1.4	PG 1/14	Vapour Recovery
15-05/06	Sandwich Road Cliffsend Ramsgate CT12 5JB	634538 163812	Pegwell	12.1.00	Section 1.4	PG 1/14	Vapour Recovery
11-05/06	233 – 235 Canterbury Road, Garlinge Kent	633420 169841	BP	20.3.00	Section 1.4	PG 1/14	Vapour Recovery
07-05/06	475 Margate Rd, Westwood, Broadstairs	636587 167695	Tesco Westwood	14.9.01	Section 1.4	PG1/14	Vapour Recovery
01-05/06	Manston Rd Ramsgate CT12 6NT	636218 165608	Tesco Manston	16.06.03	Section 1.4	PG 1/14	Vapour Recovery
01-05/06	Tothill Street Minster CT12 4AU	631162 165640	Somerfield Minster	29/7/05	Section 1.4	PG 1/14	Vapour Recovery
03-07/08	Northwood Road Ramsgate CT12 6RR	637011 167106	K Laundry	Jul 07	Section 7	PG 6/46	Dry Cleaners
04-07/08	4 Cuthbert Road Westgate CT8 8NR	632296 169991	Clothescare	Jul 07	Section 7	PG 6/46	Dry Cleaners
05-07/08	5 New Street Margate CT9 1EG	635417 170901	Mark Michaels	Jul 07	Section 7	PG 6/46	Dry Cleaners
06-07/08	374 Northdown Road Margate CT9 3PQ	637238 170703	Fox Dry Cleaners	Jul 07	Section 7	PG 6/46	Dry Cleaners
07-07/08	58 Station road Birchington CT7 9RA	630066 169229	Jons Dry Cleaners	Jul 07	Section 7	PG 6/46	Dry Cleaners
09-07/08	74 Queen Street Ramsgate CT11 9ER	638073 164771	Paris Dry Cleaners	Jul 07	Section 7	PG 6/46	Dry Cleaners
10-07/08	61 High Street Broadstairs CT10 1JL	639502 167827	Silvesters	Jul 07	Section 7	PG 6/46	Dry Cleaners

thanet
district council

Permit Reference	Site Address	Grid Ref	Operator	Date Applied	Regulation	PGN Ref	Process Description
01-08/09	138 High Street Broadstairs CT10 1JB	639325 167913	Alibabas	Jul 08	Section 7	PG 6/46	Dry Cleaners

thanet
district council

DOVER DISTRICT COUNCIL

Environmental Health
White Cliffs Business Park
Dover Kent CT16 3PJ

Telephone:	**Dover(01304)872428**
Fax:	**(01304) 872316**
DX:	**6312**
Minicom:	**(01304) 820115**
Website:	**www.doveruk.com**
Contact:	envhealth@dover.gov.uk
Direct line:	BKG/WK/201726688
E-mail:	
Our ref:	
Your ref:	
Date:	18th October 2017

Amec Foster Wheeler
Environment & Infrastructure UK Ltd
Floor 12, 25 Canada Square,
Canary Wharf,
London
E14 5LQ

Contaminated Land
Site Name: Vattenfall offshore wind project Project, Richborough, Kent

Further to your recent enquiry regarding the above, you should be aware that authorisations under the Environmental Permitting (England & Wales) Regulations 2016 exist within 250m of the site for:

3. BCA Fleet Solutions 2 Limited – Re-spraying of road vehicles Permit Ref # TDS/156/V3/P5

4.**Rana Petroleum – Petrol Vapour recovery Stage I Permit ref# PTL/**004

5. Richborough Service Petrol Stn – Petrol Vapour recovery Stage I Permit Ref# SH/247

The computerised Landmark data system used by the Council indicates that there are 7 sites within the land identified and hatchcd on the plan providcd by Amec FosterWheeler that **may potentially** be contaminated, as shown on the attached plans. Unfortunately, the only details shown for these sites are as follows;

***Site 1 Port Richborough – Transport supply & cargo handling 1946.123.**

***Site 2 same 1946, 2066**

***Site 3 Depot 1960 – currently BCA Fleet Solutions 2 Limited – see above. 293**

***Site 4 Petrol station, petrol storage 115**

***Site 5 Petrol station, petrol storage 139**

Site 6 Richborough Pwer Station 1990 – Electricity production & distribution

Site 7 Unknown filled ground 1874, 1908

'Potential contamination' simply denotes the possible presence of one or more potentially harmful substance in or on the land. It is not a judgement that the land cannot be used for a

given purpose. The onus is on the prospective purchasers or occupiers to ensure that the land is suitable for any proposed use. I can advise you that Dover District Council will soon be reviewing all potentially contaminated land in the District in compliance with its statutory responsibilities under Part IIA of the Environmental Protection Act 1990 which came into force on 1/4/00. At present there is no register of contaminated sites under Part IIA. Sites 1, 2, 3, 4, 5 are listed as a potentially contaminated site and prioritised out of 398 sites. The priority given to these sites is shown in red on the above list.

Records may be available within the planning department relating to remediation treatment being undertaken at these sites. Typically, such reports are made by prospective developers for the sites, and are submitted to the Planning Department.

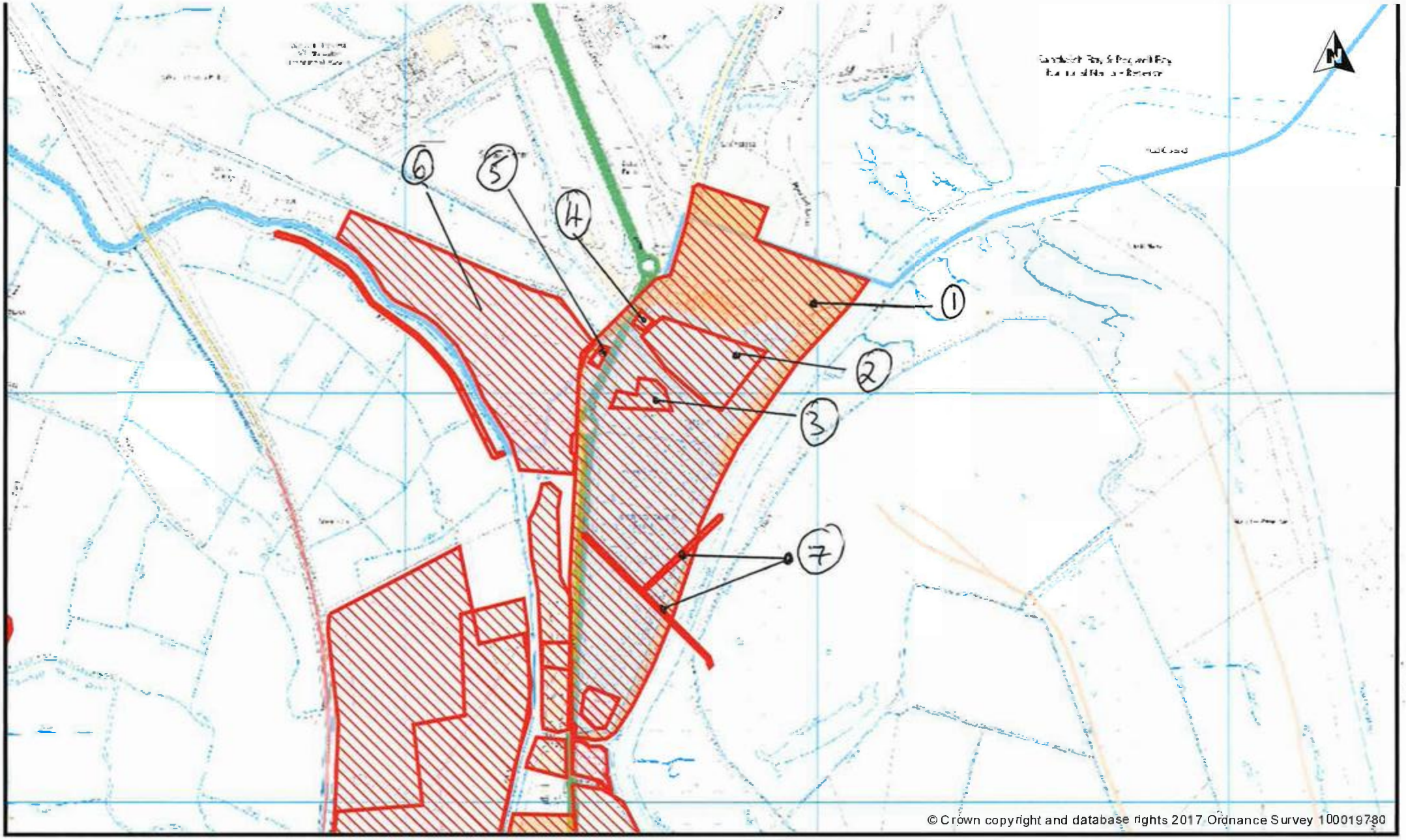
The Kent landfill atlas shows no landfill sites within the target area.

There are no further records indicating that the site in question has been affected by any current or historic pollution incidents. These are however, retained primarily by the Environment Agency who may be contacted on 0800 80 70 60

Yours sincerely

Senior Environmental Protection Officer

Note: This reply has been given after the appropriate enquiries and in the belief that they are in accordance with the information available to the officers of this Council but on the distinct understanding that neither the Council nor any Council Officer is legally responsible for their content except in the case of negligence



Title: Dover District Council

Author: Planning

Scale 1:12,000

Date: 19/09/2017

Dover District Council
Honeywood Close
White Cliffs Business Park
Whitfield
DOVER
CT16 3PJ

DOVER DISTRICT COUNCIL

Tipping Details

The aerial photographs suggest that tipping started in or shortly before 1961 until shortly after 1972.

The control of waste sites prior to the passing of the Control of Pollution act 1974 (CoPA), was generally carried out with little forward planning and without consideration of the environment, or what future use the site may have. Even after the passing of CoPA it was generally poorly implemented until 1980. As this site was filled post 1960 it is probable there is a significant amount of putrescible waste in it.

The total area of the site is approximately 20 hectares. Assuming the height of land raising was approximately 5 metres gives an estimated potential volume of approximately one million cubic metres of waste.

There are no details of site restoration.

Made Ground and Refuse

The driller's logs for the installation of the monitoring points HA8 and HA13 indicate 0.4-0.6 metres of cover including 200mm of topsoil. In HA8 the remaining cover consists 0.4 metres of brown sandy clay with occasional flints. In HA13 it comprises 0.2 metres of brick rubble.

Refuse in HA8 contains in excess of 3.4 metres of sandy clay mixed with ash and general rubbish. Between 1.3 - 1.8m BGL chalk is also mixed in. In HA13 the refuse consists of 2.1 metres of chalk mixed with ash, clay, wood, cardboard, paper, glass and rubber.

The made ground encountered in several of the 1998 boreholes that were located around the perimeter was clearly placed as containment bunds to raise the land for the purposes of infilling with refuse. This made ground was typically sandy clay with flints and brick fragments. Some refuse was encountered in the boreholes very close to the boundary.

(1)

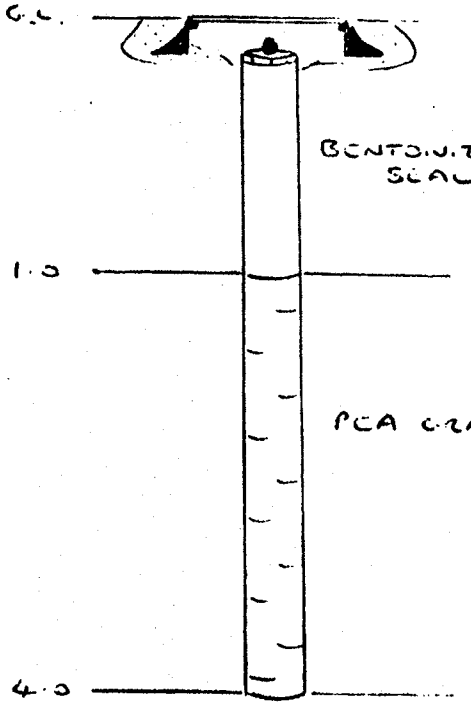
KENT COUNTY COUNCIL HIGHWAYS LABORATORY

LOCATION PEGWELL BAY RAMSGATE | RIG No. BM102 | DRILLERS:- No. 1 M. WILSON | BOREHOLE No. HA8

METHOD SHELL AND AUGER. | VEHICLE No. J 316 X | No. 2 R. WILLS | BOREHOLE DIA. 200 MM

DATE MON 1.3.93

TIME	DEPTH (m) Casing	Water	Borehole	SAMPLE No.	TYPE	DEPTH from	to	U100 BLOWS	SPT Penetration (mm) 75	75	75	75	75	75	Water added	Chiselling (hours)	DESCRIPTION & COMMENTS
				1	BULK	G.L.	1.0								NO	NONE	FIRST PART OF MORNING SPENT IN LAB SORTING OUT PAPERWORK AND DRILLING GEAR
				2	BULK	1.0	2.0										WENT TO SOILTEC, LEEDS TO PICK UP GAS CAPS AND METAL COVERS.
				3	BULK	2.0	2.5										THEN WENT TO DYMCHURCH TO TAKE WATER SAMPLE FROM UNDER CHAPEL BRIDGE FOR J. TYSON
				4	BULK	2.5	3.0										
				5	BULK	3.0	4.0										
PM	—	3.8	4.0														



WL IN LINER 3.4 m AFTER INSTALATION

SET UP RIG AND GEAR

G.L.

0.2 TOPSOIL

0.6 BROWN SILTY SANDY CLAY WITH SOME FLINT.

1.3 BROWN SILTY SANDY CLAY MIXED WITH TIP RUBBISH

1.8 CHALK, BROWN SILTY SANDY CLAY, BLACK ASH AND TIP RUBBISH

BROWN SILTY SANDY CLAY BLACK ASH AND TIP RUBBISH.

HIT WATER AT 4.0 MTRS.

INSTALLED 150 MM PLASTIC LINER WITH SCREW CAP AND GAS VALVE. CONCRETED METAL COVER ON TOP AND MARKED POSITION WITH TWO CHESTNUT POSTS PAINTED RED.

DROP RIG AND MOVE

HOURS ON SITE:- FROM 12 00 TO 4.00 TOTAL 4

BORING: 3 MOVING: ½ BREAK ½

GENERAL WENT TO ISH HAIS TO FINISH OFF INSTALATION

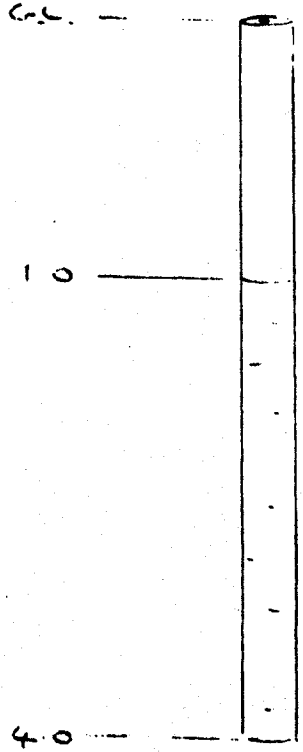
KENT COUNTY COUNCIL HIGHWAYS LABORATORY

LOCATION PEGWELL BAY RAMSGATE | RIG No. BM32 | DRILLERS:- No. 1 M. WILSON | BOREHOLE No. HA13

METHOD SHELL AND AUGER. | VEHICLE No. J 396 AX | No. 2 R. WILES. | BOREHOLE DIA 200 MM

DATE FRI 26.2.93

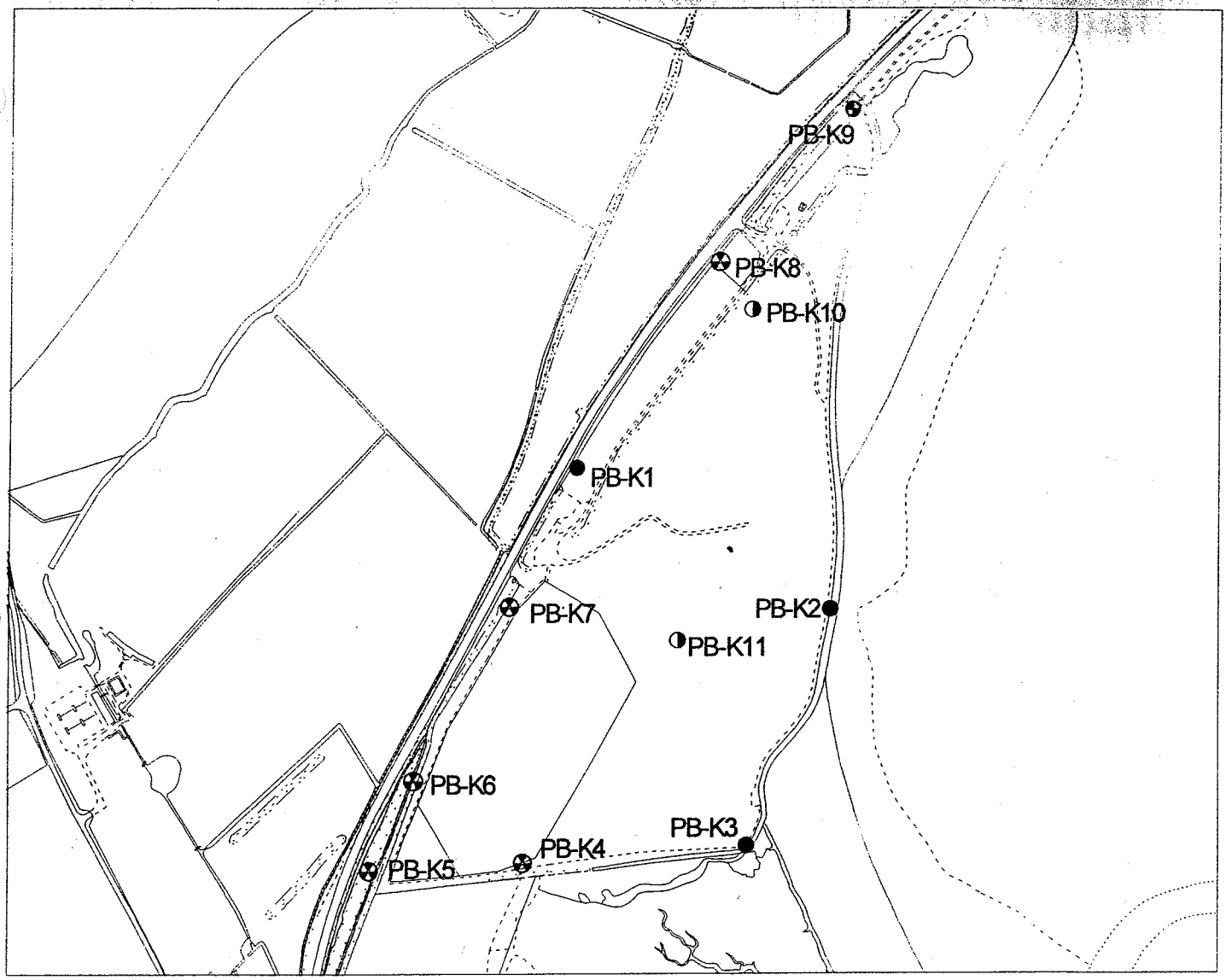
TIME	DEPTH (m) Casing	Water	Borehole	SAMPLE No.	TYPE	DEPTH from	to	U100 BLOWS	SPT Penetration (mm) 75	75	75	75	75	75	Water added	Chiselling (hours)	DESCRIPTION & COMMENTS
				1	BULK	G.L.	1.0								NIL	NIL	TOW RIG TO SITE SET UP RIG AND GEAR
				2	BULK	1.0	1.8										G.L.
				3	BULK	1.8	3.0										TOPSOIL.
				4	BULK	3.0	3.5										0.2
				5	BULK	3.5	4.0										BRICK RUBBLE
																	0.4
																	CHALK MIXED WITH DARK BLUE ASH AND SMALL AMOUNT OF CLAY. SOME WOOD, CARDBOARD, PAPER GLASS AND RUBBER AT 1.6 MTRS
																	HIT WATER AT 1.8 MTRS SEALED OFF WITH CASING
																	2.5
																	GREY BLUE SANDY ALLUVIAL CLAY WITH ORANGE PATCHES.
																	WATER SEEPAGE AT 3.4 MT
																	INSTALLED 150MM PLASTIC LINER
																	PULL CASING
																	DROP RIG AND MOVE.
PM	3.0	DAMP	4.0														



HOURS ON SITE:- FROM 11.00 TO 4.30 TOTAL 5½

BORING: 3 MOVING: BREAK ½ 2 HEAVY RAIN.

GENERAL



- COMBINED
- GAS
- GAS & LEACHATE
- GROUNDWATER

N
W E
S

0 0.3 0.6 Kilometers

Kent County Council
STRATEGIC PLANNING

PEGWELL LANDFILL SITE

BOREHOLE MONITORING LOCATION PLAN

	INTLS	DATE
DRAWN BY:	NAC	12/98
CHECKED BY:		22/12/98
APPROVED BY:	SAH	23/12/98
DRG. No.:	1/98E/FR/3	

Environmental Monitoring Pegwell Bay Landfill Site	BOREHOLE NO: K1	PROJECT NO: 1/98
BORING EQUIPMENT & BOREHOLE DIAMETER	LOCATION:	SHEET 1 OF 1
Light Percussion Rig 150mm	E= 634030 N= 163219	GROUND LEVEL METRES A.O.D. 4.63
	DATE COMMENCED 2.3.98	DATE COMPLETED 3.3.98

SAMPLES AND INSITU TESTING DEPTH (m)	TYPE	DRILLING AND CASING DEPTH	WATER LEVEL	( )U100 Blows "N" Value	DESCRIPTION OF STRATA	DEPTH (m)	LEVEL m (OD)	Legend
					Topsoil.	0.25	4.38	
1.00	●				Firm brown and grey gravelly CLAY. Gravels comprise flint and chalk (<30mm). (MADE GROUND)	1.85	2.78	
2.00	●		3 ▽		Buff orange white black sandy GRAVEL. Gravels comprise flint and shell fragments (<40mm). (ALLUVIAL GRAVEL)			
3.00	●		2 ▽s (15 min)		... from 3m some flint cobbles (<80mm).	3.60	1.03	
4.00	●				Firm becoming very soft brown grey silty CLAY. Many black organic inclusions.			
5.00	●							
6.00	●				(ALLUVIUM)			
7.00	●		3 ▼					
8.00	●					8.50	-3.88	
9.00	●	2.3.98			Grey green slightly clayey fine SAND. Some soft grey clay and black amorphous peat inclusions. (ALLUVIUM)	9.20	-4.58	
					PEAT (DD). (ALLUVIUM)	9.80	-5.18	
10.00	●				Grey green slightly clayey very silty fine SAND. Some firm brown clay patches and black amorphous peat inclusions. (ALLUVIUM)	10.50	-5.88	
11.00	●		2 ▽		Firm fissured green brown clayey SILT mixed with yellow green fine SAND. Some dark orange staining on fissures.			
12.00	●	2.3.98			(THANET BEDS)	12.50	-7.88	
13.00	●				Firm dark brown clayey SILT. Occasional patches of grey fine sand.			
14.00	●		(15 min)		(THANET BEDS)			
15.00	●	3.3.98				15.50	-10.88	
16.00	●				Dark green clayey fine SAND.			
17.00	●				(THANET BEDS)	17.80	-13.18	
18.00	●				Dark green slightly clayey fine SAND. Occasional thin flint flakes (<30mm). (THANET BEDS)			
					Mixed with putty CHALK at 19m.	19.00	-14.38	
19.00	●	3.3.98	3					

REMARKS *Scale 1:100*

Borehole terminated at 19m. Groundwater strikes at 2.8m and 19m. Water added during drilling between 2m and 9m. Groundwater monitoring standpipe installed.

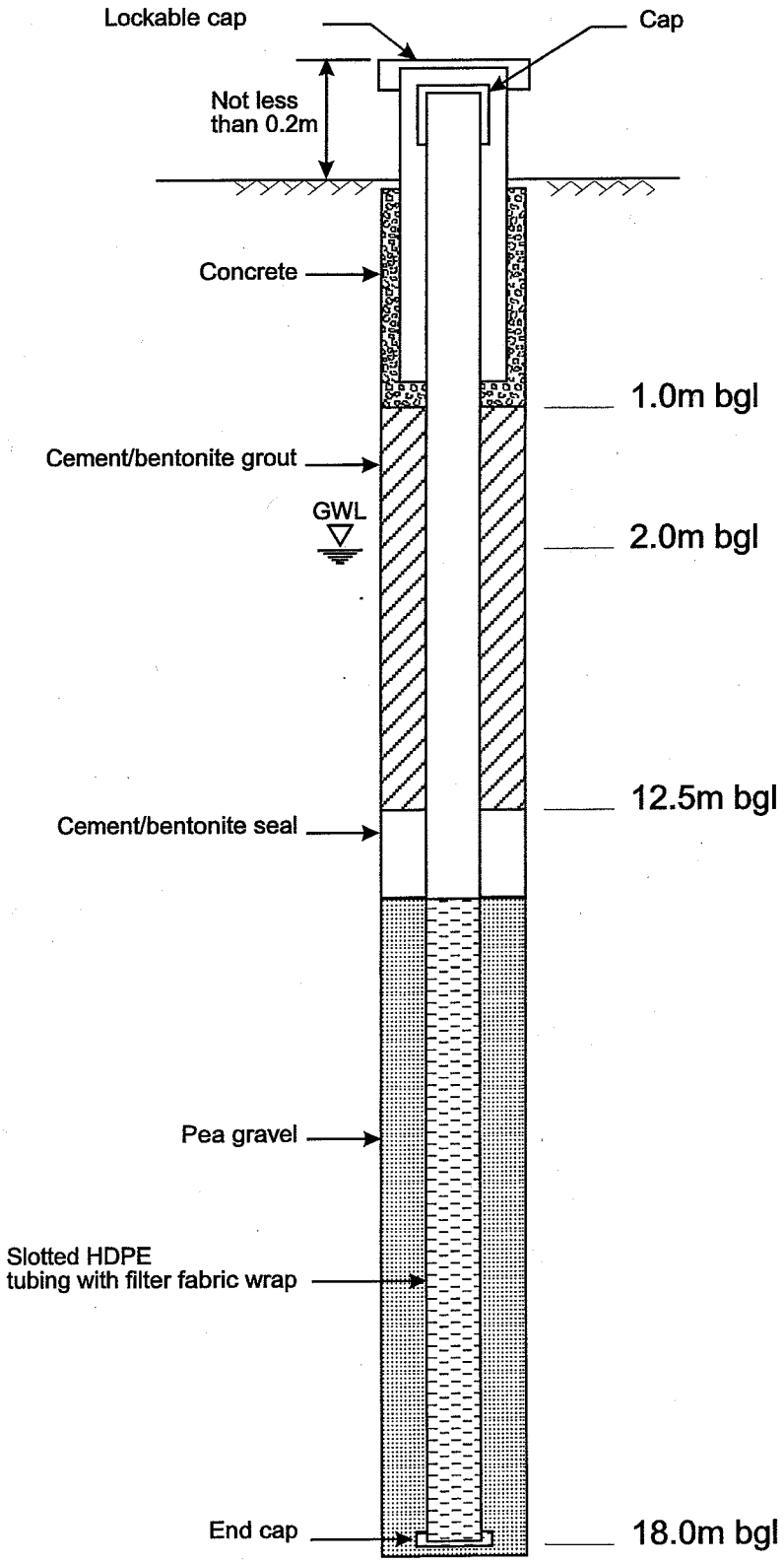
KEY

- ● Level after ( ) min
- ▽s Water struck
- ▼ Morning water level
- ▽ Evening water level
- △ Water Sample
- (DD) Drillers Description
- ● Disturbed Sample
- ↓ Bulk Disturbed Sample
- ■ 105mm Undisturbed Sample
- ——— Drilling Depth
- P Piston Sample
- I Standard Penetration Test
- * Incomplete test (see notes)
- (c) Solid Cone Used
- ═══ Casing Depth

Kent County Council

ENGINEERING CONSULTANCY
Geotechnical Group

AMENDMENT STATUS:



Kent County Council
STRAGETIC PLANNING

KCC Waste Management Group - Environmental Monitoring
Landfill Gas and Groundwater Monitoring

Groundwater Sampling Standpipe Details

PROJECT No. 1/98

BOREHOLE No. PB-K1

Environmental Monitoring Pegwell Bay Landfill Site	BOREHOLE NO: K2	PROJECT NO: 1/98
BORING EQUIPMENT & BOREHOLE DIAMETER	LOCATION:	SHEET 1 OF 1
Light Percussion Rig 150mm	E= 634324 N= 163057	GROUND LEVEL METRES A.O.D. 4.40
	DATE COMMENCED 5.3.98	DATE COMPLETED 5.3.98

SAMPLES AND INSITU TESTING DEPTH (m)	TYPE	DRILLING AND CASING DEPTH	WATER LEVEL	( )U100 Blows "N" Value	DESCRIPTION OF STRATA	DEPTH (m)	LEVEL m (OD)	Legend
1.00	●		▽ (15 min) 5		Firm black and dark brown sandy CLAY. Some flints and brick fragments. (MADE GROUND)	2.80	1.60	
2.00	●							
3.00	●				Very soft dark grey green fine sandy CLAY thinly interlaminated with black amorphous peat. (ALLUVIUM)			
4.00	●					4.80	-0.40	
5.00	●				Black coarse sub angular to rounded GRAVEL. (ALLUVIAL GRAVEL)	5.30	-0.90	
6.00	●				Very soft dark brown and black organic silty CLAY. (ALLUVIUM)	6.50	-2.10	
7.00	●				Soft to firm brown silty CLAY. Much becoming some black moderately decayed and brown poorly decayed vegetation. (ALLUVIUM)			
		5.3.98						
8.00	●					8.40	-4.00	
		5.3.98						

REMARKS *Scale 1:50*

Borehole terminated at 8.4m. Groundwater strike at 1.9m. Water added during drilling between 4m and 7m. Groundwater monitoring standpipe installed.

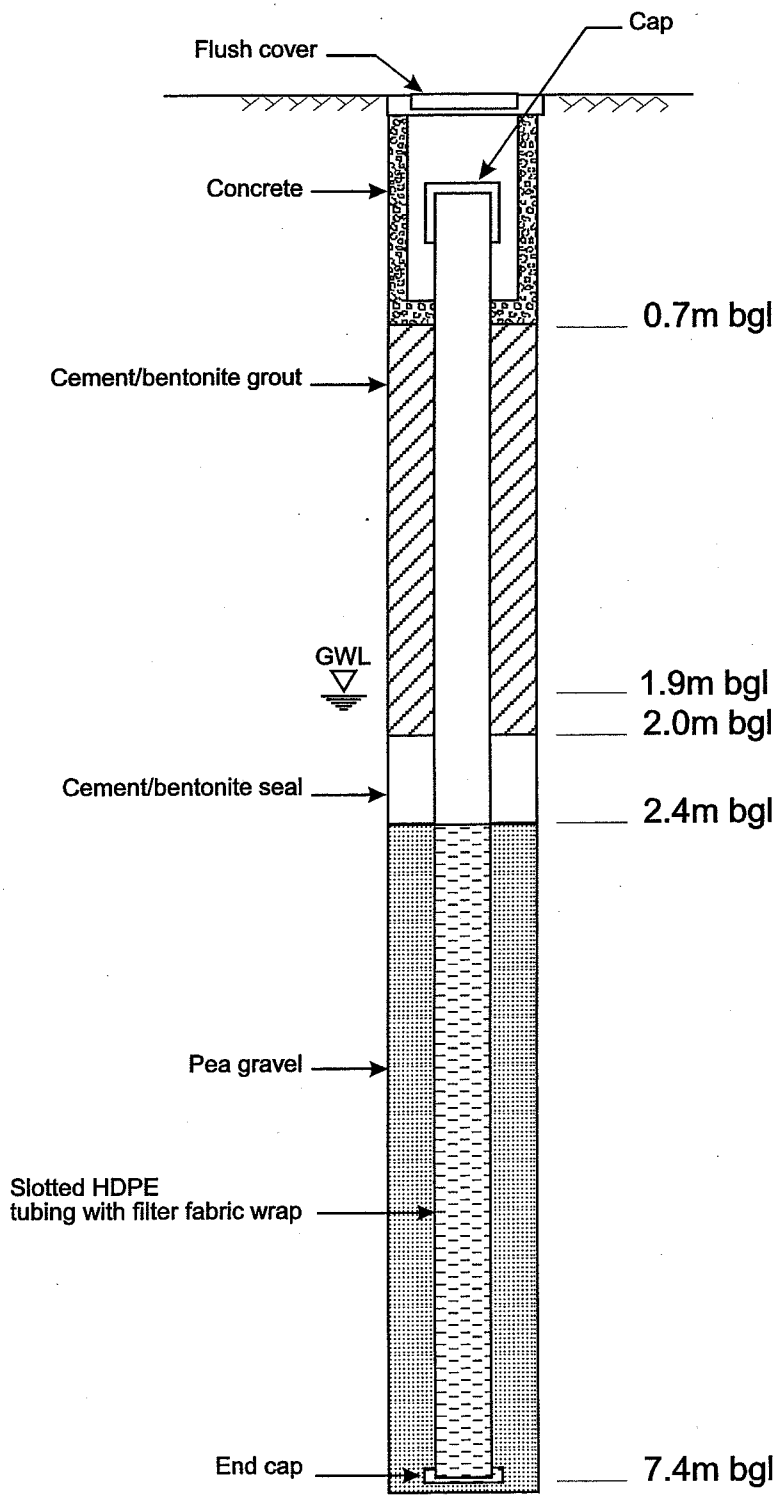
KEY

- ● Level after ( ) min
- ▽s Water struck
- ▼ Morning water level
- ▽ Evening water level
- △ Water Sample
- (DD) Drillers Description
- ● Disturbed Sample
- ↓ Bulk Disturbed Sample
- ■ 105mm Undisturbed Sample
- ——— Drilling Depth
- P Piston Sample
- I Standard Penetration Test
- * Incomplete test (see notes)
- (c) Solid Cone Used
- ═══ Casing Depth

Kent County Council

ENGINEERING CONSULTANCY
Geotechnical Group

AMENDMENT STATUS:



Kent County Council
STRAGETIC PLANNING

KCC Waste Management Group - Environmental Monitoring
Landfill Gas and Groundwater Monitoring

Groundwater Sampling Standpipe Details

PROJECT No. 1/98

BOREHOLE No. PB-K2

Environmental Monitoring Pegwell Bay Landfill Site	BOREHOLE NO: K3	PROJECT NO: 1/98

BORING EQUIPMENT & BOREHOLE DIAMETER	LOCATION:	SHEET 1 OF 1
Light Percussion Rig 150mm	E= 634218 N= 162802	GROUND LEVEL METRES A.O.D. 4.75
	DATE COMMENCED 4.3.98	DATE COMPLETED 4.3.98

SAMPLES AND INSITU TESTING DEPTH (m)	TYPE	DRILLING AND CASING DEPTH	WATER LEVEL	()U100 Blows "N" Value	DESCRIPTION OF STRATA	DEPTH (m)	LEVEL m (OD)	Legend
					Topsoil.	0.10	4.65	
1.00	●				Brown, grey, black and white gravelly SAND. Gravels comprise chalk, ballast and flints (<100mm). Some poorly decayed paper. (MADE GROUND)			
2.00	●		▽ (15 min) 4			2.60	2.15	
3.00	●				Soft becoming very soft dark brown silty CLAY mixed with grey green fine sandy CLAY. Some moderately decayed vegetation becoming amorphous peat. Some bivalve shells. (ALLUVIUM)	3.80	0.95	
4.00	●				Dark grey green slightly clayey fine SAND. Occasional black organic patches. (ALLUVIUM)			
5.00	●							
6.00	●					6.40	-1.65	
7.00	●				Very soft grey brown becoming grey green silty CLAY. Some black organic patches. (ALLUVIUM)			
8.00	●	4.3.98			... from 8m becoming slightly sandy and interlaminated with black amorphous peat.	8.90	-4.15	
		4.3.98						

REMARKS *Scale 1:50*

Borehole terminated at 8.9m. Groundwater strike at 2.2m. Water added during drilling from 4m. Groundwater monitoring standpipe installed.

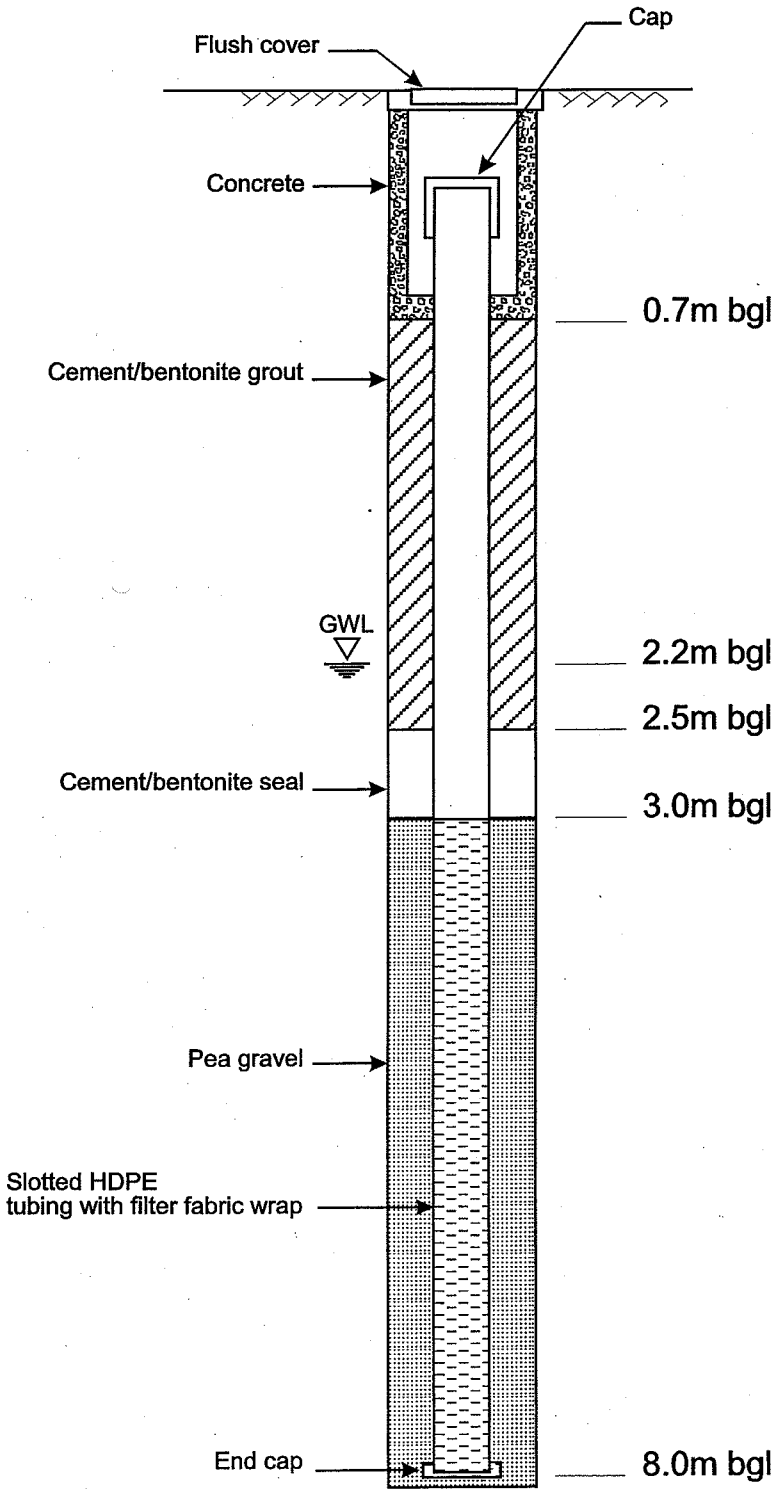
KEY

- Level after ( ) min
- ▽s Water struck
- ▼ Morning water level
- ▽ Evening water level
- △ Water Sample
- (DD) Drillers Description
- ● Disturbed Sample
- ↓ Bulk Disturbed Sample
- ■ 105mm Undisturbed Sample
- ——— Drilling Depth
- P Piston Sample
- T Standard Penetration Test
- * Incomplete test (see notes)
- (c) Solid Cone Used
- ═══ Casing Depth

Kent County Council

ENGINEERING CONSULTANCY
Geotechnical Group

AMENDMENT STATUS:



Kent County Council
STRAGETIC PLANNING

KCC Waste Management Group - Environmental Monitoring
Landfill Gas and Groundwater Monitoring

Groundwater Sampling Standpipe Details

PROJECT No. 1/98

BOREHOLE No. PB-K3

Environmental Monitoring Pegwell Bay Landfill Site	BOREHOLE NO: K4	PROJECT NO: 1/98
BORING EQUIPMENT & BOREHOLE DIAMETER	LOCATION:	SHEET 1 OF 1
Light Percussion Rig 150mm	E= 633968 N= 162766	GROUND LEVEL METRES A.O.D. 6.14
	DATE COMMENCED 23.2.98	DATE COMPLETED 23.2.98

SAMPLES AND INSITU TESTING DEPTH (m)	TYPE	DRILLING AND CASING DEPTH	WATER LEVEL	( )U100 Blows "N" Value	DESCRIPTION OF STRATA	DEPTH (m)	LEVEL m (OD)	Legend
					Topsoil.	0.20	5.94	
					Household waste mixed with brown SILT.			
1.00	●				(REFUSE)			
2.00	●				... at 2m with many chalk fragments (<60mm).	2.20	3.94	
					Soft brown and grey green silty CLAY. Some light brown sand on partings. Occasional fine roots and orange staining.			
3.00	●				(ALLUVIUM)	3.60	2.54	
					Soft brown and grey green fine sandy CLAY. Many black amorphous peat inclusions.			
4.00	●				(ALLUVIUM)	4.50	1.64	
					Soft fissured grey green slightly clayey fine SAND. Some orange staining on fissure faces to approximately 6m. Occasional black amorphous peat inclusions.			
5.00	●				(ALLUVIUM)			
6.00	●	23.2.98	▽ (30 min) 23					
7.00	●	23.2.98				7.00	-0.86	

REMARKS *Scale 1:50*

Borehole terminated at 7m. Groundwater strike at 6.2m. No water added during drilling. Combined gas and groundwater monitoring standpipe installed.

KEY

- Level after ( ) min
- ▽s Water struck
- ▼ Morning water level
- ▽ Evening water level
- △ Water Sample
- (DD) Drillers Description
- ● Disturbed Sample
- ↓ Bulk Disturbed Sample
- ■ 105mm Undisturbed Sample
- ——— Drilling Depth
- P Piston Sample
- I Standard Penetration Test
- * Incomplete test (see notes)
- (c) Solid Cone Used
- ═══ Casing Depth

Kent County Council

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Geotechnical Group

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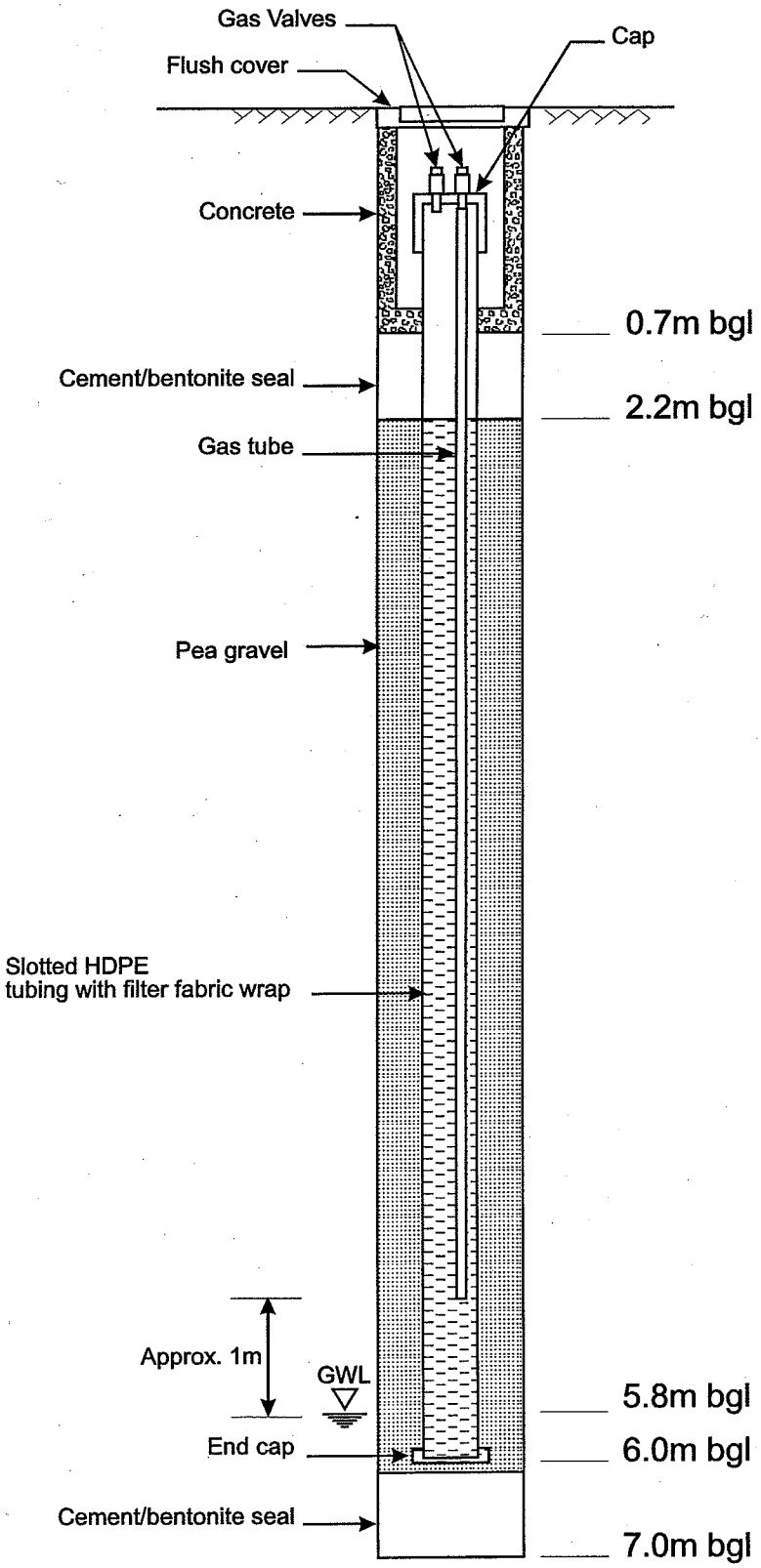

Kent County Council
STRAGETIC PLANNING

KCC Waste Management Group - Environmental Monitoring
Landfill Gas and Groundwater Monitoring

Gas & Groundwater Sampling Standpipe Details

PROJECT No. 1/98

BOREHOLE No. PB-K4

Environmental Monitoring Pegwell Bay Landfill Site	BOREHOLE NO: K5	PROJECT NO: 1/98

BORING EQUIPMENT & BOREHOLE DIAMETER	LOCATION:	SHEET 1 OF 1
Light Percussion Rig 150mm	E= 633790 N= 162757	GROUND LEVEL METRES A.O.D. 4.00
	DATE COMMENCED 25.2.98	DATE COMPLETED 25.2.98

SAMPLES AND INSITU TESTING DEPTH (m)	TYPE	DRILLING AND CASING DEPTH	WATER LEVEL	( )U100 Blows "N" Value	DESCRIPTION OF STRATA	DEPTH (m)	LEVEL m (OD)	Legend
					Topsoil.	0.20	3.80	
0.50	●				Brown slightly clayey fine SAND. Many roots (<2mm). (ALLUVIUM)	0.70	3.30	
1.00	●				Soft thinly laminated brown and green grey slightly sandy CLAY. Many fine roots with dark orange staining along tracts. Traces of black organic patches. (ALLUVIUM)	1.30	2.70	
2.00	●		▽ (30 min)	25	Very soft black and dark green grey organic CLAY. (ALLUVIUM)	2.50	1.50	
3.00	●				Soft dark greyish green clayey fine SAND. Traces of black organic lenses. (ALLUVIUM)	3.50	0.50	
4.00	●				Soft becoming very soft dark green grey silty CLAY. Traces of thin black amorphous peat laminae and lenses.			
5.00	●				(ALLUVIUM)			
6.00	●							
		25.2.98				7.00	-3.01	
7.00	●	25.2.98						

REMARKS *Scale 1:50*

Borehole terminated at 7m. Groundwater strike at 2.4m. No water added during drilling. Combined gas and groundwater monitoring standpipe installed.

KEY

- ● Level after ( ) min
- ▽s Water struck
- ▼ Morning water level
- ▽ Evening water level
- △ Water Sample
- (DD) Drillers Description
- ● Disturbed Sample
- ↓ Bulk Disturbed Sample
- ■ 105mm Undisturbed Sample
- ——— Drilling Depth
- P Piston Sample
- I Standard Penetration Test
- * Incomplete test (see notes)
- (c) Solid Cone Used
- ═══ Casing Depth

Kent County Council

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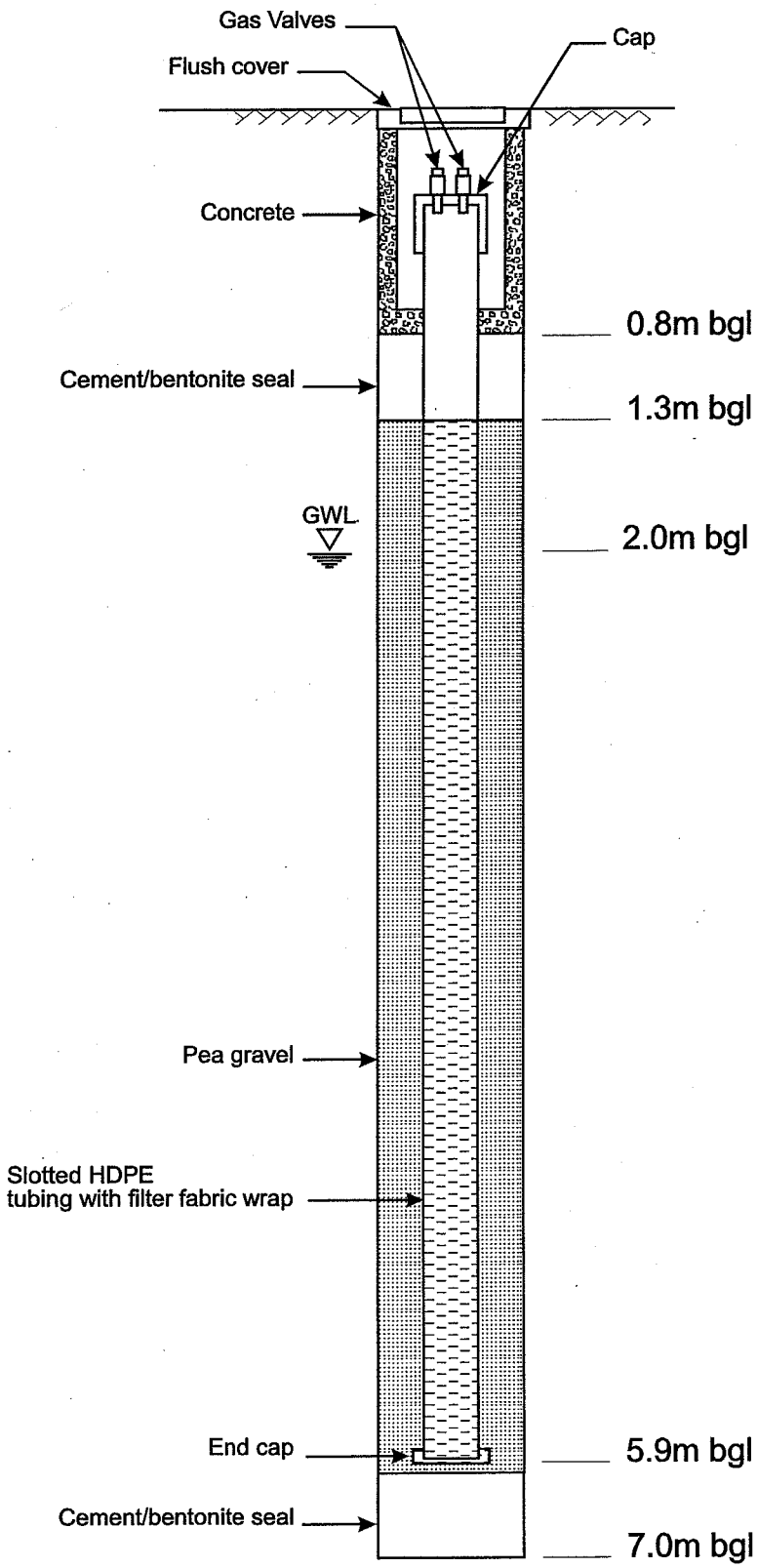
Geotechnical Group

AMENDMENT STATUS:



Kent County Council
STRAGETIC PLANNING

KCC Waste Management Group - Environmental Monitoring
Landfill Gas and Groundwater Monitoring

Gas & Groundwater Sampling Standpipe Details

PROJECT No. 1/98

BOREHOLE No. PB-K5

Environmental Monitoring Pegwell Bay Landfill Site	BOREHOLE NO: K6	PROJECT NO: 1/98

BORING EQUIPMENT & BOREHOLE DIAMETER	LOCATION:	SHEET 1 OF 1
Light Percussion Rig 150mm	E= 633841 N= 162860	GROUND LEVEL METRES A.O.D. 5.21
	DATE COMMENCED 24.2.98	DATE COMPLETED 24.2.98

SAMPLES AND INSITU TESTING DEPTH (m)	TYPE	DRILLING AND CASING DEPTH	WATER LEVEL	( )U100 Blows "N" Value	DESCRIPTION OF STRATA	DEPTH (m)	LEVEL m (OD)	Legend
					Topsoil.	0.30	4.91	
0.80	●				Friable brown and off-white gravelly SILT. Gravels comprise weathered chalk fragments (<70mm). Some roots (<2mm). (MADE GROUND)	0.90	4.31	
1.50	●				LANDFILL mixed with a little silty gravel. (REFUSE)	1.80	3.41	
2.50	●				Soft grey brown and orange brown very clayey fine SAND. Traces of part decayed wood and occasional torn plastic bags. (MADE GROUND)	3.25	1.96	
3.50	●				Very soft dark green grey silty CLAY interlaminated with black amorphous peaty CLAY. (ALLUVIUM)	4.00	1.21	
4.50	●		▽ (20 min) 24		Soft becoming very soft green brown and orange brown silty CLAY. Some chalk and shell fragments (<12mm). Slightly sandy in parts.			
5.50	●				(ALLUVIUM)			
		24.3.98						
6.50	●					7.00	-1.79	
		24.3.98						

REMARKS *Scale 1:50*

Borehole terminated at 7m. Groundwater strike at 5.2m. No water added during drilling. Combined gas and groundwater monitoring standpipe installed.

KEY

- Level after ( ) min
- ▽s Water struck
- ▼ Morning water level
- ▽ Evening water level
- △ Water Sample
- (DD) Drillers Description
- ● Disturbed Sample
- ↓ Bulk Disturbed Sample
- ■ 105mm Undisturbed Sample
- ——— Drilling Depth
- P Piston Sample
- I Standard Penetration Test
- * Incomplete test (see notes)
- (c) Solid Cone Used
- ═══ Casing Depth

Kent County Council

ENGINEERING CONSULTANCY
Geotechnical Group

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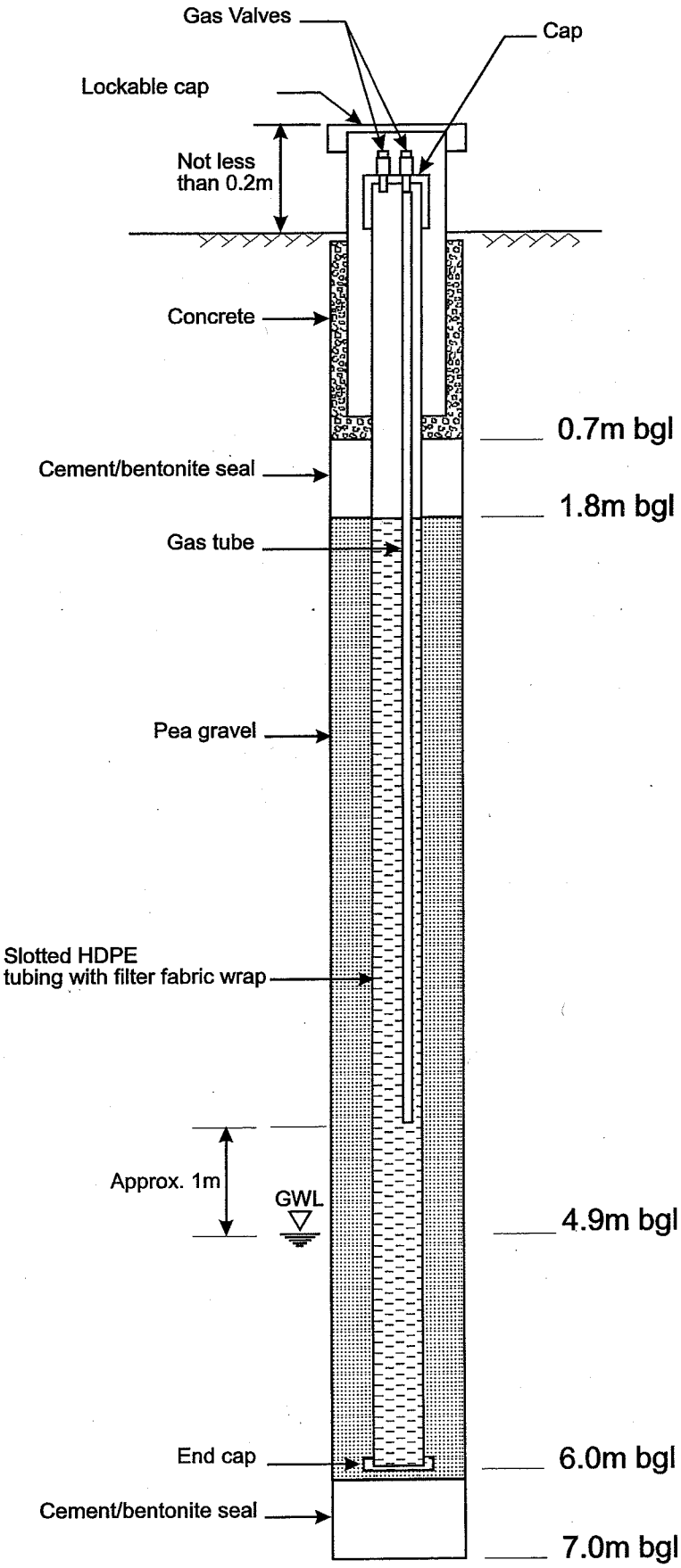

Kent County Council
STRAGETIC PLANNING

KCC Waste Management Group - Environmental Monitoring
Landfill Gas and Groundwater Monitoring

Gas & Groundwater Sampling Standpipe Details

PROJECT No. 1/98

BOREHOLE No. PB-K6

Environmental Monitoring Pegwell Bay Landfill Site	BOREHOLE NO: K7	PROJECT NO: 1/98
BORING EQUIPMENT & BOREHOLE DIAMETER	LOCATION:	SHEET 1 OF 1
Light Percussion Rig 150mm	E= 633952 N= 163060	GROUND LEVEL METRES A.O.D. 4.47
	DATE COMMENCED 24.2.98	DATE COMPLETED 24.2.98

SAMPLES AND INSITU TESTING DEPTH (m)	TYPE	DRILLING AND CASING DEPTH	WATER LEVEL	( )U100 Blows "N" Value	DESCRIPTION OF STRATA	DEPTH (m)	LEVEL m (OD)	Legend
					Topsoil.	0.30	4.17	
1.00	●		(30 min) 24		Dark brown gravelly SAND. Gravels comprise weathered chalk (<20mm) with some flint and concrete cobbles (<130mm). Occasional roots. (MADE GROUND)	1.90	2.57	
2.00	●				Very soft fissured green grey silty CLAY with some flint and chalk fragments (<20mm). Abundant orange staining on fissure faces. Traces of black organic matter.	2.50	1.97	
3.00	●				Very soft dark green grey silty CLAY with occasional becoming many black amorphous peat laminae. Some orange iron staining. (ALLUVIUM)			
4.00	●		24 (15 min) 24					
5.00	●							
6.00	●							
		24.2.98				7.00	-2.53	
7.00	●	24.2.98						

REMARKS *Scale 1:50*

Borehole terminated at 7m. Groundwater strikes at 1.4 and 4.7m. Water added during drilling between 4m and 6m. Combined gas and groundwater monitoring standpipe installed.

KEY

- ● Level after ( ) min
- ▽s Water struck
- ▼ Morning water level
- ▽ Evening water level
- △ Water Sample
- (DD) Drillers Description
- ● Disturbed Sample
- ↓ Bulk Disturbed Sample
- ■ 105mm Undisturbed Sample
- ——— Drilling Depth
- P Piston Sample
- I Standard Penetration Test
- * Incomplete test (see notes)
- (c) Solid Cone Used
- ═══ Casing Depth

Kent County Council

ENGINEERING CONSULTANCY
Geotechnical Group

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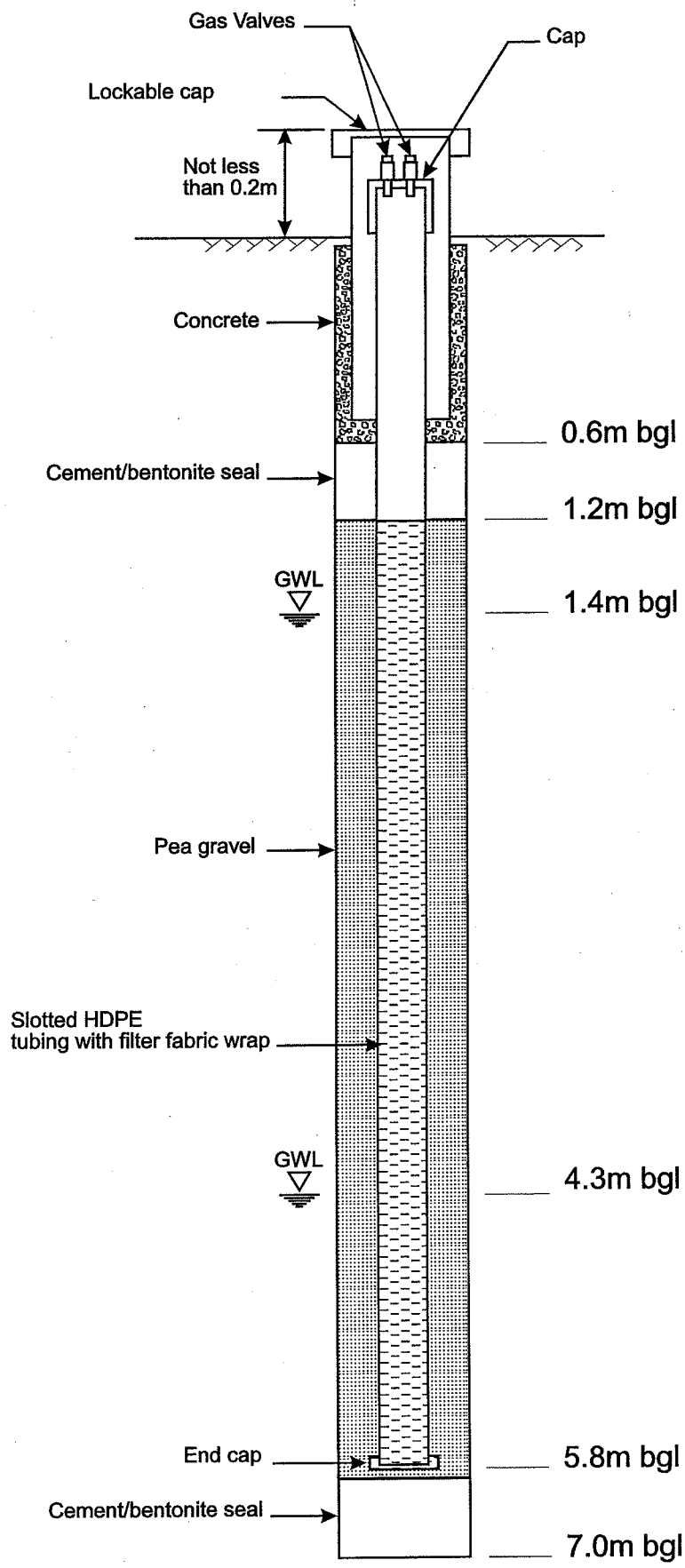

Kent County Council
STRAGETIC PLANNING

KCC Waste Management Group - Environmental Monitoring
Landfill Gas and Groundwater Monitoring

Gas & Groundwater Sampling Standpipe Details

PROJECT No. 1/98

BOREHOLE No. PB-K7

Environmental Monitoring Pegwell Bay Landfill Site	BOREHOLE NO: K8	PROJECT NO: 1/98
BORING EQUIPMENT & BOREHOLE DIAMETER	LOCATION:	SHEET 1 OF 1
Light Percussion Rig 150mm	E= 634195 N= 163455	GROUND LEVEL METRES A.O.D. 4.76
	DATE COMMENCED 23.2.98	DATE COMPLETED 23.2.98

SAMPLES AND INSITU TESTING DEPTH (m)	TYPE	DRILLING AND CASING DEPTH	WATER LEVEL	( )U100 Blows "N" Value	DESCRIPTION OF STRATA	DEPTH (m)	LEVEL m (OD)	Legend
					Topsoil.	0.15	4.61	
1.00	●				Firm fissured brown slightly fine sandy CLAY. Some roots (<2mm). Some dark orange staining on fissure faces and along root tracts. (ALLUVIUM)	1.60	3.16	
2.00	●		(15 min) ▽ 23		Yellow brown gravelly SAND. Gravels comprise flint and shell fragments (nominally <10mm with occasional flints <30mm).			
3.00	●				... at 3m with some flints (<80mm). (ALLUVIUM)	3.80	0.96	
4.00	●				Soft becoming very soft grey and brown silty CLAY. Traces of peat inclusions.			
5.00	●				(ALLUVIUM)			
6.00	●	23.2.98				7.00	-2.24	
7.00	●	23.2.98						

REMARKS *Scale 1:50*

Borehole terminated at 7m. Groundwater strike at 2.6m. Water added during drilling between 3m and 6m. Combined gas and groundwater monitoring standpipe installed.

KEY

- ● Level after ( ) min
- ▽s Water struck
- ▼ Morning water level
- ▽ Evening water level
- △ Water Sample
- (DD) Drillers Description
- ● Disturbed Sample
- ↓ Bulk Disturbed Sample
- ■ 105mm Undisturbed Sample
- ——— Drilling Depth
- P Piston Sample
- I Standard Penetration Test
- * Incomplete test (see notes)
- (c) Solid Cone Used
- ═══ Casing Depth

Kent County Council

ENGINEERING CONSULTANCY
Geotechnical Group

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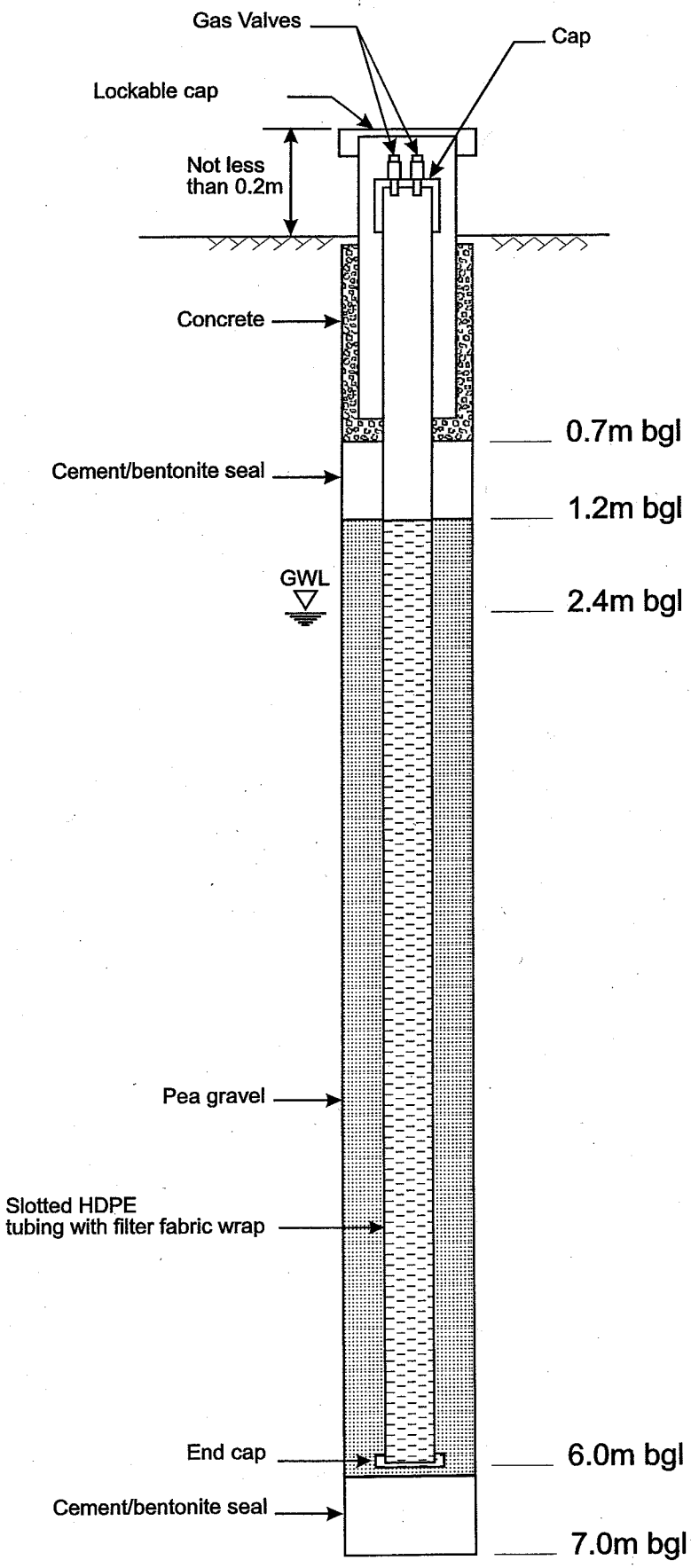

Kent County Council
STRAGETIC PLANNING

KCC Waste Management Group - Environmental Monitoring
Landfill Gas and Groundwater Monitoring

Gas & Groundwater Sampling Standpipe Details

PROJECT No. 1/98

BOREHOLE No. PB-K8

Environmental Monitoring Pegwell Bay Landfill Site	BOREHOLE NO: K9	PROJECT NO: 1/98

BORING EQUIPMENT & BOREHOLE DIAMETER	LOCATION:	SHEET 1 OF 1
Light Percussion Rig 150mm	E= 634357 N= 163673	GROUND LEVEL METRES A.O.D. 5.23
	DATE COMMENCED 25.2.98	DATE COMPLETED 25.2.98

SAMPLES AND INSITU TESTING DEPTH (m)	TYPE	DRILLING AND CASING DEPTH	WATER LEVEL	( )U100 Blows "N" Value	DESCRIPTION OF STRATA	DEPTH (m)	LEVEL m (OD)	Legend
					Topsoil.	0.50	4.73	
1.00	●				Black asphalt and flint fragments (<40mm) in black comminuted asphalt matrix. (MADE GROUND)	1.20	4.03	
2.00	●		▽ (20 min) 25		White brown orange black sandy GRAVEL comprising shell and flint fragments predominantly fine-medium gravel size with occasional coarser flints. (ALLUVIAL GRAVEL)			
3.00	●							
4.00	●					4.10	1.13	
5.00	●				Very soft grey green silty CLAY. Traces of black amorphous peat. (ALLUVIUM)			
6.00	●							
		25.2.98				7.00	-1.77	
7.00	●	25.2.98						

REMARKS *Scale 1:50*

Borehole terminated at 7m. Groundwater strike at 2.3m. Water added during drilling from 3m. Combined gas and groundwater monitoring standpipe installed.

KEY

- ● Level after ( ) min
- ▽s Water struck
- ▼ Morning water level
- ▽ Evening water level
- △ Water Sample
- (DD) Drillers Description
- ● Disturbed Sample
- ↓ Bulk Disturbed Sample
- ■ 105mm Undisturbed Sample
- ——— Drilling Depth
- P Piston Sample
- I Standard Penetration Test
- * Incomplete test (see notes)
- (c) Solid Cone Used
- ═══ Casing Depth

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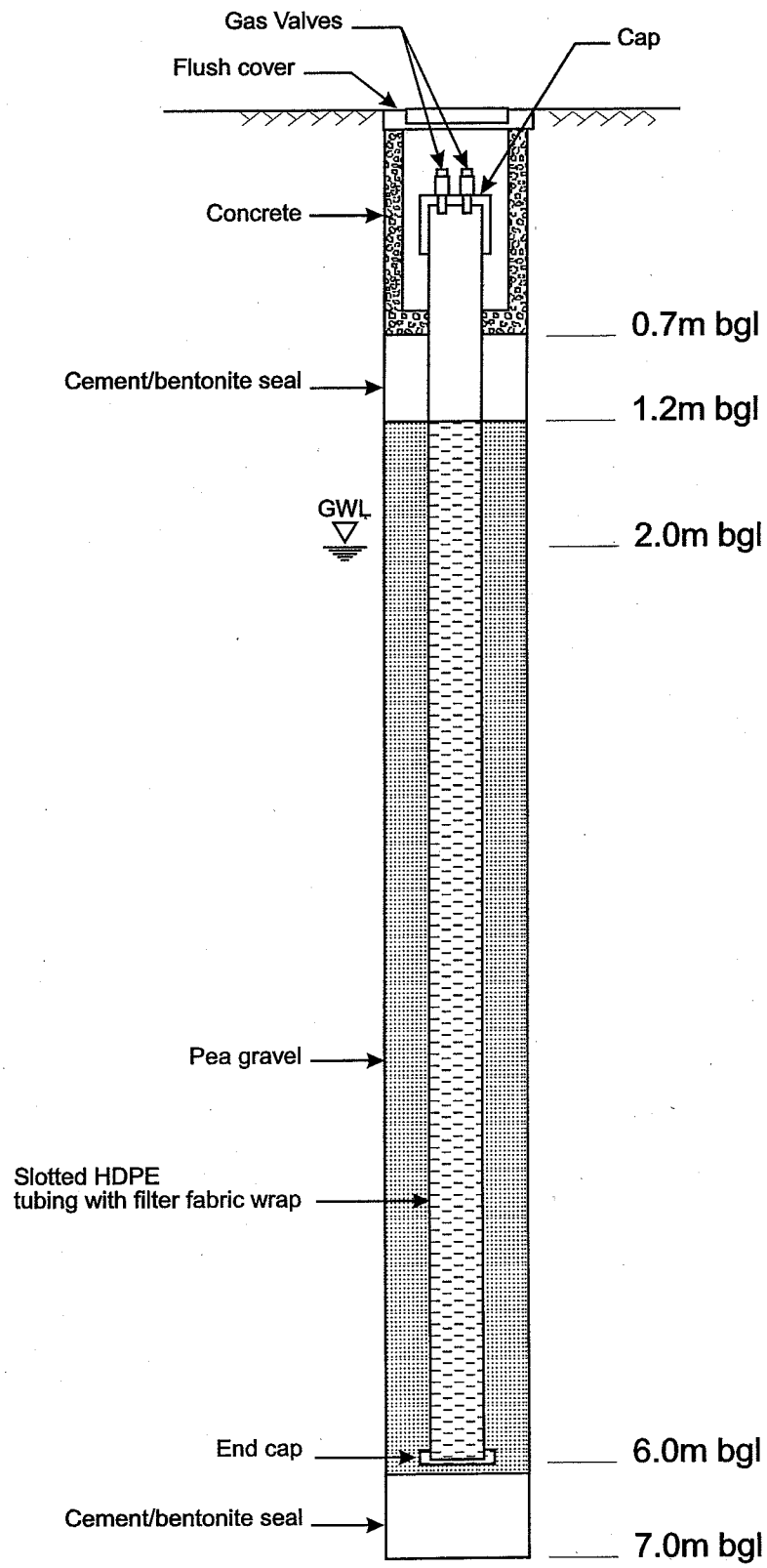

Kent County Council
STRAGETIC PLANNING

KCC Waste Management Group - Environmental Monitoring
Landfill Gas and Groundwater Monitoring

Gas & Groundwater Sampling Standpipe Details

PROJECT No. 1/98

BOREHOLE No. PB-K9

Environmental Monitoring Pegwell Bay Landfill Site	BOREHOLE NO: K10	PROJECT NO: 1/98

BORING EQUIPMENT & BOREHOLE DIAMETER	LOCATION:	SHEET 1 OF 1
Light Percussion Rig 150mm	E= 634232 N= 163400	GROUND LEVEL METRES A.O.D. 6.03
	DATE COMMENCED 5.3.98	DATE COMPLETED 5.3.98

SAMPLES AND INSITU TESTING DEPTH (m)	TYPE	DRILLING AND CASING DEPTH	WATER LEVEL	( )U100 Blows "N" Value	DESCRIPTION OF STRATA	DEPTH (m)	LEVEL m (OD)	Legend
					Topsoil.	0.10	5.93	
					Light brown chalky CLAY (DD).	1.40	4.63	
			5 ▽s		Landfill (DD).			
					Alluvial CLAY at base of borehole (DD).	5.80	0.23	
		5.3.98						

REMARKS *Scale 1:50*

Borehole terminated at 5.8m. Groundwater encountered at 4.9m. No water added during drilling. Combined gas and leachate monitoring standpipe installed.

KEY

- ● Level after ( ) min
- ▽s Water struck
- ▼ Morning water level
- ▽ Evening water level
- △ Water Sample
- (DD) Drillers Description
- ● Disturbed Sample
- ↓ Bulk Disturbed Sample
- ■ 105mm Undisturbed Sample
- ——— Drilling Depth
- P Piston Sample
- I Standard Penetration Test
- * Incomplete test (see notes)
- (c) Solid Cone Used
- ═══ Casing Depth

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ENGINEERING CONSULTANCY
Geotechnical Group

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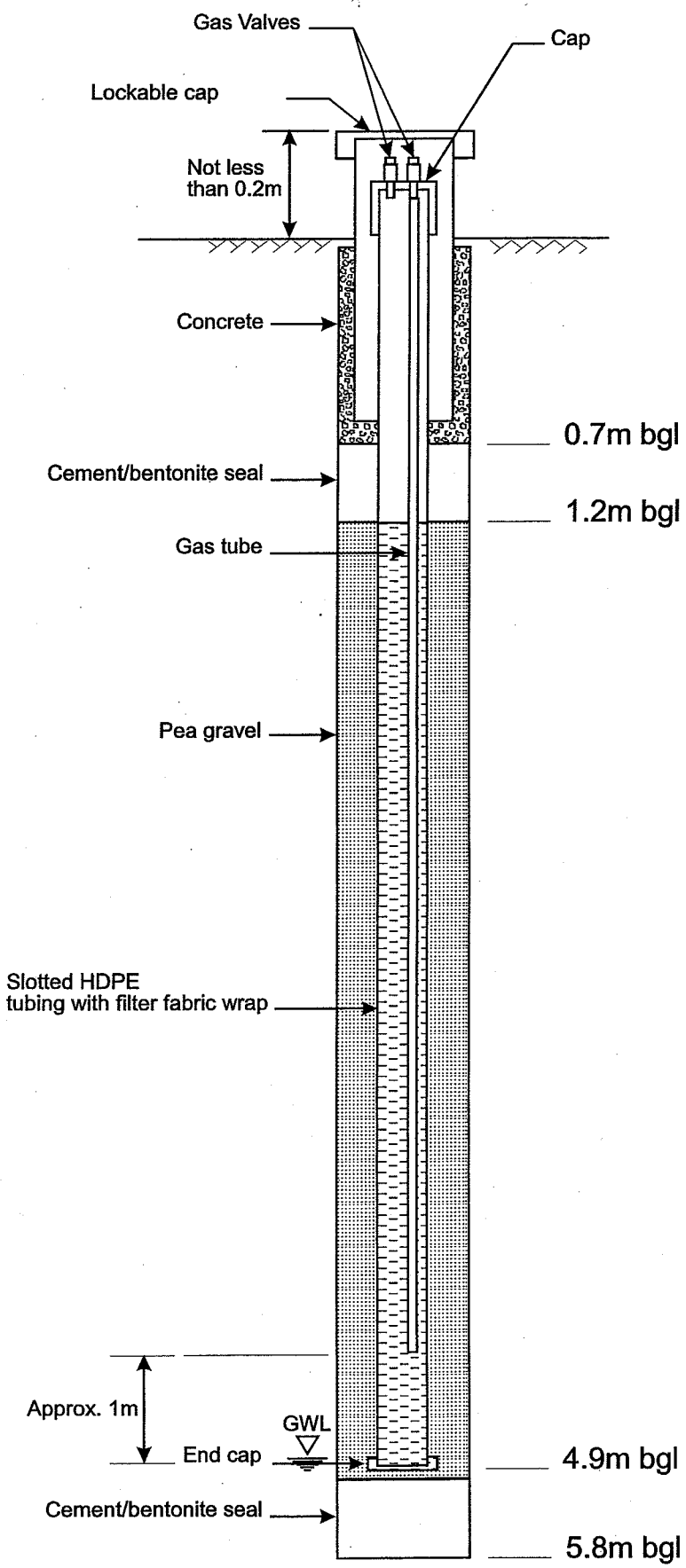

Kent County Council
STRAGETIC PLANNING

KCC Waste Management Group - Environmental Monitoring
Landfill Gas and Groundwater Monitoring

Gas & Leachate Sampling Standpipe Details

PROJECT No. 1/98

BOREHOLE No. PB-K10

Environmental Monitoring Pegwell Bay Landfill Site	BOREHOLE NO: K11	PROJECT NO: 1/98

BORING EQUIPMENT & BOREHOLE DIAMETER	LOCATION:	SHEET 1 OF 1
Light Percussion Rig 150mm	E= 634149 N= 163021	GROUND LEVEL METRES A.O.D. 6.25
	DATE COMMENCED 4.3.98	DATE COMPLETED 4.3.98

SAMPLES AND INSITU TESTING DEPTH (m)	TYPE	DRILLING AND CASING DEPTH	WATER LEVEL	( )U100 Blows "N" Value	DESCRIPTION OF STRATA	DEPTH (m)	LEVEL m (OD)	Legend
					Topsoil.	0.15	6.10	
					Brown clay FILL (DD).	0.70	5.55	
					Landfill (DD).	3.10	3.15	
					Alluvial clay FILL (DD).			
					Alluvial CLAY at base of borehole (DD).	5.40	0.85	
		4.3.98						

REMARKS *Scale 1:50*

Borehole terminated at 5.4m. No groundwater encountered. No water added during drilling. Combined gas and leachate monitoring standpipe installed.

KEY

- Level after ( ) min
- Water struck
- Morning water level
- Evening water level
- Water Sample
- (DD) Drillers Description
- Disturbed Sample
- Bulk Disturbed Sample
- 105mm Undisturbed Sample
- Drilling Depth
- P Piston Sample
- Standard Penetration Test
- * Incomplete test (see notes)
- (c) Solid Cone Used
- Casing Depth

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ENGINEERING CONSULTANCY
Geotechnical Group

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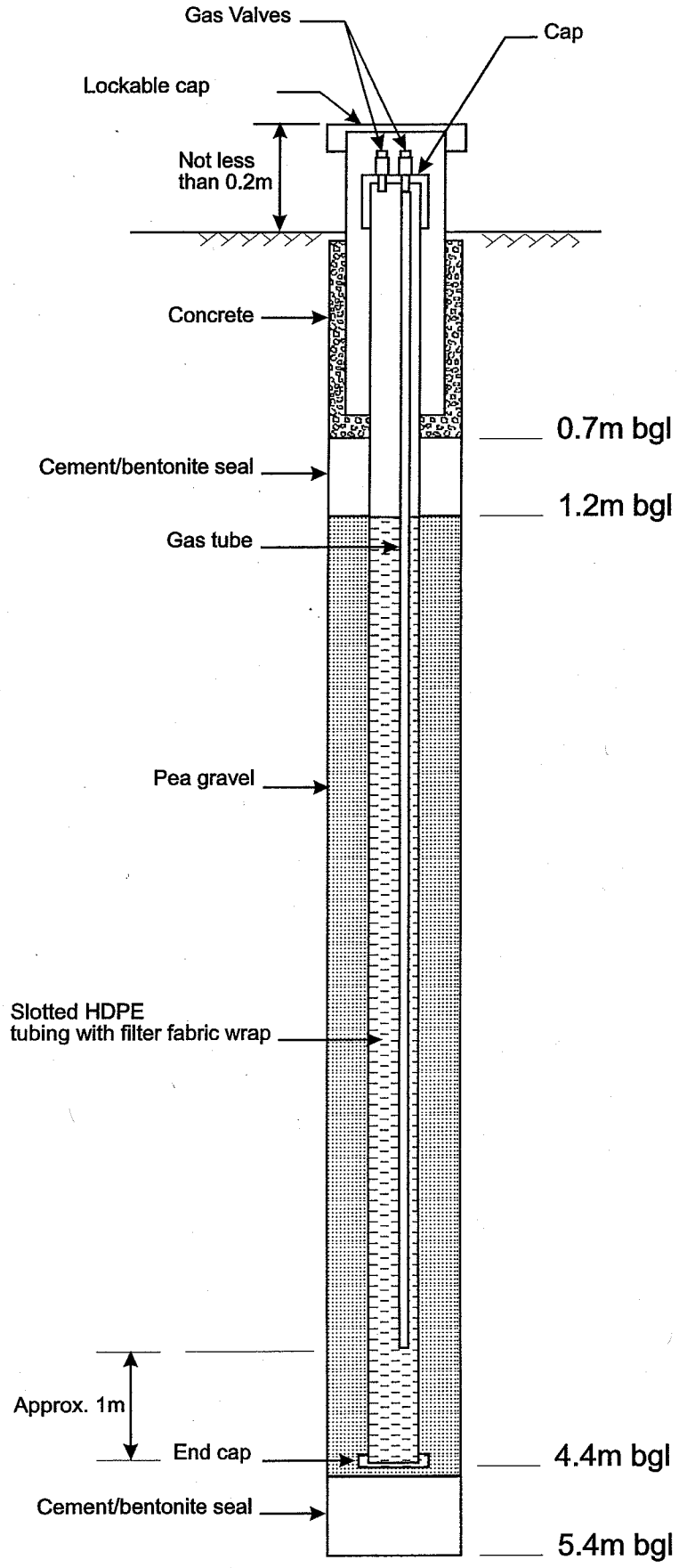


Kent County Council
STRAGETIC PLANNING

KCC Waste Management Group - Environmental Monitoring
Landfill Gas and Groundwater Monitoring

Gas & Leachate Sampling Standpipe Details

PROJECT No. 1/98

BOREHOLE No. PB-K11

Kent County Council
Waste Management

Pegwell Bay Closed Landfill Site, Ramsgate

Environmental Monitoring Summary

Rev.2, October 2016

Environmental Monitoring Summary

Pegwell Bay Closed Landfill Site, Ramsgate

Client Name: Kent County Council
Document Reference: WIE10136-100-R-9-3-1-BG
Project Number: WIE10136

Quality Assurance – Approval Status

This document has been prepared and checked in accordance with Waterman Group's IMS (BS EN ISO 9001: 2008, BS EN ISO 14001: 2004 and BS OHSAS 18001:2007))

Issue	Date	Prepared by	Checked by	Approved by
9.1.4	July 2016	Ben Greenfield	Kerstin Hagenhoff	Carl Slater
9.2.3	September 2016	Ben Greenfield	Kerstin Hagenhoff	Carl Slater
9.3.1	October 2016	Ben Greenfield	Kerstin Hagenhoff	Carl Slater

Contents

Figures

Tables

1 Introduction

Waterman Infrastructure & Environment ("Waterman") was instructed by Kent County Council's Waste Management Unit (WMU) to undertake an environmental assessment for Pegwell Bay Closed Landfill Site, Ramsgate (Site).

The initial Environmental Monitoring Report (EMR) was issued by Jacobs in September 2006, with subsequent reports providing an information update to the original. The EMR details both historical information and a current monitoring assessment.

This Environmental Monitoring Summary (EMS) reviews gas and water data from the date of the last EMS (February 2013) until present, and includes information from the recent site walkover, undertaken by Waterman (15/03/2016).

This EMS has been designed to be supplementary to the EMR. Providing an update to the current monitoring assessment. This EMS should therefore be read in conjunction with the most recent EMR.

1.1 Site Setting

Pegwell Bay Closed Landfill Site is located on the coastal marshes to the west of Pegwell Bay. The Site is bounded by the salt marsh to the south east, east, and north east, and by a golf course and associated club building to the west. A sewage treatment centre, solar farm, and the former Richborough Power Station lies to the west and south west.

The Site has been reinstated as a nature reserve and is used for the grazing of cattle. The Site lies two to five metres above the level of the surrounding saltmarsh, from which it is separated by relatively steep slopes. A track cuts through the eastern and southern slopes, resulting in two tier slopes. The lower slopes have been stabilised with concrete, limestone, and sandstone boulders.

Photographic and mapping data suggests the Site was utilised as a landfill between 1961 and 1972. The Site was landraised with approximately one million cubic metres of waste. Details of the waste deposited have not been retained. Given the post 1960 date of the landraising, it is considered likely putrescible waste was deposited.

The Site's underlying geology and hydrogeology comprises Alluvial Deposits underlain by the Thanet Sand Formation (Secondary (A) Aquifer), and the Chalk Formation (Principal Aquifer). The Thanet Sand Formation is in hydraulic continuity with the Chalk Formation. Groundwater flow on-site and in the immediate surrounding area is towards the south east and Pegwell Bay. Owing to the Site's coastal location, the groundwater is influenced by the estuarine environment.

2 Walkover Survey

A walkover survey was conducted on 15 March 2016, details of which are given below with locations of photographs shown on Figure 1. The current environmental monitoring locations are also shown on Figure 1 prefixed with the site identifier, PB.

The walkover survey was conducted on a cold and damp day. Some small puddles and muddy areas were noted. However, the ground surface on the whole was not saturated.

The Site's topography is uneven with undulating surfaces, some higher ground, and some depressions indicative of preferential settlement of the buried waste.

The Site is managed by Kent Wildlife Trust as 'Sandwich and Pegwell Bay National Nature Reserve'. Grassland is managed in part by grazing highland cattle that are moved between grazing enclosures. Grazing enclosures were previously numbered 1 to 6 and this approach has been adopted here. At the time of the walkover, cattle were grazing in enclosure 4 that contained long grass in addition to shrubs and small trees.

Footpaths, cycle ways, a playground, and areas for picnics in addition to a car park and amenities are maintained.

Overall, the Site was in various stages of vegetation succession ranging from recently grazed grassland, such as enclosure 5, to overgrown verges with brambles up to 1.5m high and areas of shrubs and small trees. The visit took place during a period of natural vegetation die back. Nonetheless, the vegetation appeared to be healthy and vegetation cover was good.

Some areas of bare ground and vegetation die back were noted along the footpaths crossing the Site and are attributed to disturbance by footfall or vehicles.

3 Landfill Gas Assessment

The major components of landfill gas are methane (CH_4) and carbon dioxide (CO_2). Both are colourless and odourless and can represent a hazard to human health (Table 1).

Table 1: Landfill Gas Characteristics

Gas	Hazard	Human Health Effects	Comment
Methane	Explosive	0.1% negligible 1% typical trigger level 5-15% explosive range	Formed by anaerobic decomposition of organic material
Carbon dioxide	Asphyxiant	0.5% long term (8 hours) WEL 1.5% short term (15 minutes) WEL 3% headaches and shortness of breath 10-11% loss of consciousness 22% death	1-9% natural occurrence in carbonate rich soils (i.e. chalk)
Hydrogen sulphide	Flammable Asphyxiant	45,000-455,000ppm flammable range 400-500ppm asphyxiation 5ppm long term (8 hours) WEL 10ppm short term (15 minutes) WEL	Rotten egg odour
Carbon monoxide	Explosive Asphyxiant	125,000-742,000ppm explosive range 30ppm long term (8 hours) WEL 200ppm short term (15 minutes) WEL	Indicator of underground fire

WEL = workplace exposure limit

CIRIA Report 149 describes a strong correlation between high concentrations of methane and carbon dioxide in soils, and vegetation dieback in areas surrounding landfill sites. Carbon dioxide is toxic to roots and both carbon dioxide and methane depress oxygen.

In addition, methane may be oxidised by soil bacteria, causing both a depression of oxygen and an increase in carbon dioxide. This phenomenon is highly exothermic and so elevated ground temperatures usually result. The CIRIA Report also states that if methane conversion is incomplete, phytotoxic intermediate products (such as methanol, formaldehyde, and formic acid) will persist in the soil.

This gas assessment summarises the results since the previous EMS was issued in February 2013. The summary information given here is relative to the overall trend that each monitoring point has demonstrated since installation.

The Site is located close to Pegwell Bay. Groundwater underlying the Site is tidally influenced. The cyclical movement of the water causes alternate displacement of gas from the waste and intake of atmospheric oxygen into the waste, potentially resulting in differing gas concentrations dependent on the tidal stage. During an ebbing tide atmospheric oxygen may be drawn in returning the Site to aerobic conditions and promoting an increase in carbon dioxide. During a rising tide ground gas is displaced by groundwater potentially resulting in an increase in ground gas concentrations.

Historically the tidal effect on the ground gas regime has not been quantified. Based on the data available, the tidal effect cannot be quantified within this EMS.

3.1 Ground Gas Boreholes

Ten monitoring points are part of the ground gas monitoring strategy on-site. Four monitor ground gas only (PB-K4 to PB-K7), four are combined ground gas and leachate (PB-HA8, PB-K11, PB-K10, PB-HA13), and one is combined ground gas and groundwater (PB-K9). The locations of the monitoring points are included in Figure A1, Appendix A.

The anthropogenic and geological strata recorded on-site include Made Ground, landfill refuse, Alluvium Deposits, Thanet Sand Formation, and the Chalk Formation. The geological and anthropogenic strata identified within each specific borehole is detailed in Table 2.

Table 2: Borehole geological and anthropogenic strata

Borehole	Made Ground (m)	Landfill Refuse (m)	Alluvium Deposits (m)	Thanet Sand Formation (m)
PB-K1	0.00 - 1.85	None present	1.85 -10.50	10.50 – 19.00
PB-K2	0.00 – 2.80	None present	2.80 – 8.40	Not reached
PB-K3	0.00 – 2.60	None present	2.60 – 8.90	Not reached
PB-K4	None present	0.00 – 2.20	2.20 – 7.00	Not reached
PB-K5	None present	None present	0.00 – 7.00	Not reached
PB-K6	0.00 – 0.90	0.90 – 3.25	3.25 – 7.00	Not reached
PB-K7	0.00 – 1.90	None present	1.90 – 7.00	Not reached
PB-K8	None present	None present	0.00 – 7.00	Not reached
PB-K9	0.00 – 1.20	None present	1.20 – 7.00	Not reached
PB-K10	0.00 1.40	1.40 – 5.80	None present	Not reached
PB-K11	0.00 – 0.70	0.70 – 3.10	3.10 – 5.40	Not reached
PB-HA8	0.00 – 0.60	0.60 – 4.00	Not reached	Not reached
PB-HA13	0.00 – 0.40	0.40 – 2.50	2.50 – 4.00	Not reached

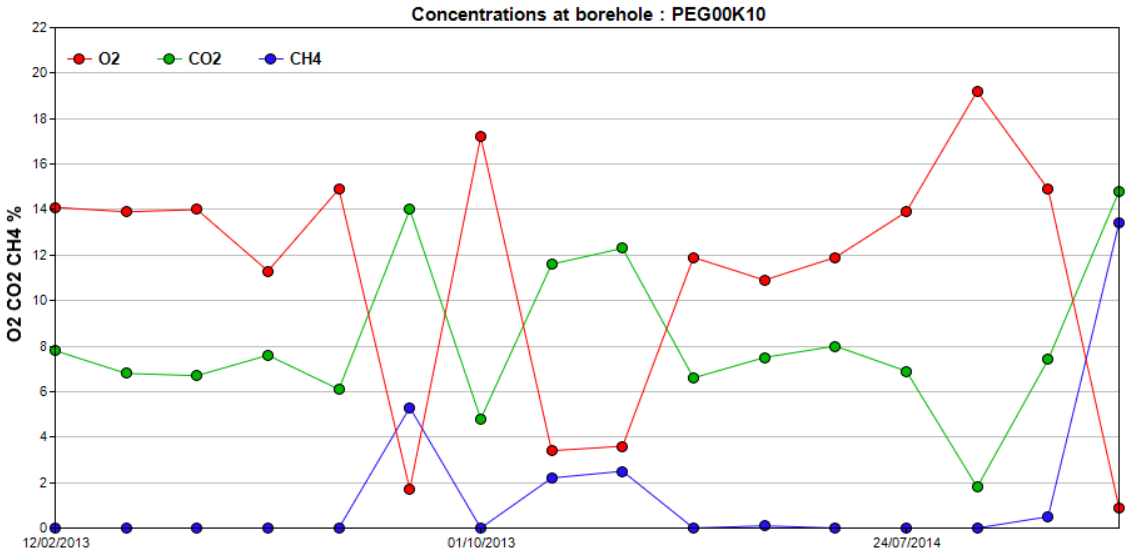
Made Ground, landfill refuse, and Alluvium Deposits are potential sources of ground gas. Landfill refuse is considered to be the principal ground gas source.

3.2 Site Centre

Four boreholes are located in the Site centre, PB-K11, PB-K10, PB-HA13, and PB-HA8, and were installed in-waste. As detailed in Table 2, between 2.10m and 4.40m of landfill refuse are present within these boreholes, with thicker deposits recorded within PB-K10, and PB-HA8.

Ground gas within PB-K10 has continued to follow the trend identified during the previous EMS period with methane recorded above the equipment's limit of detection (0.1%) during the winter months. The peak methane level (15.3%, November 2015) has declined relative to the previous EMS period. Carbon dioxide levels have remained relatively stable, generally being around 7%, with peak carbon dioxide levels (12%-14%) recorded during the winter, coinciding with the peak methane levels. Oxygen has been depressed below atmospheric levels, as a result of the elevated carbon dioxide and methane displacing oxygen, and are generally around 12%.

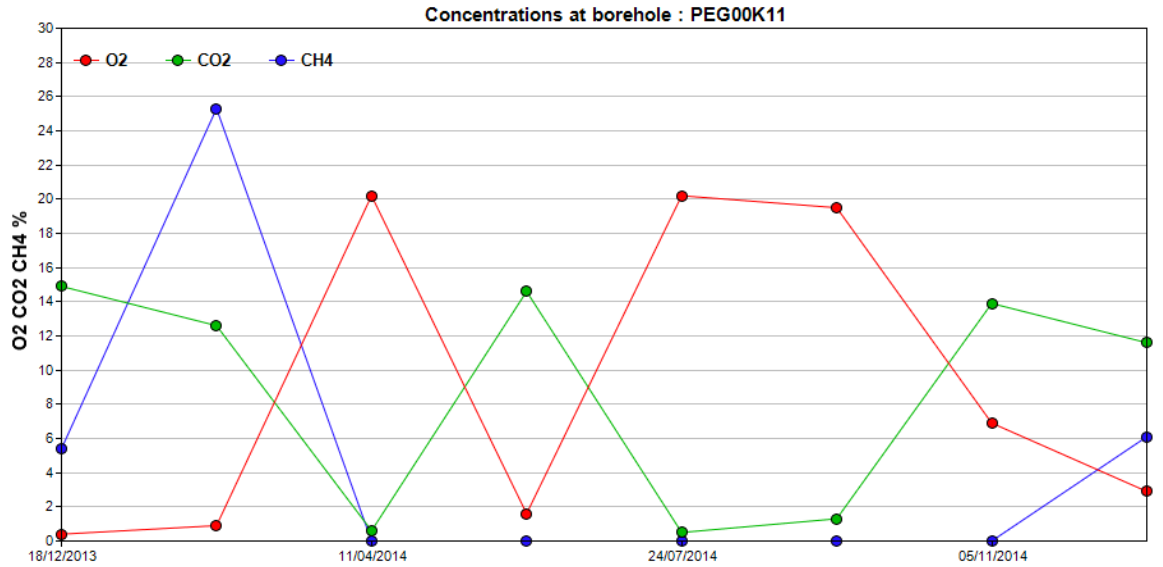
Figure 1: Ground Gas Levels within PB-K10



Ground gas within PB-K11 generally follows a similar trend to PB-K10, with methane peaks of 29% and 24% during the 2012/2013 and 2013/2014 winter periods respectively. During the spring/summer months methane is generally depressed below the equipment's limit of detection (0.1%). This is in contrast to the previous EMS period, where methane was recorded between 4% and 18% during the spring/summer period.

Carbon dioxide within PB-K11 has remained consistently recorded around 13%, and oxygen around 3% during the current EMS period.

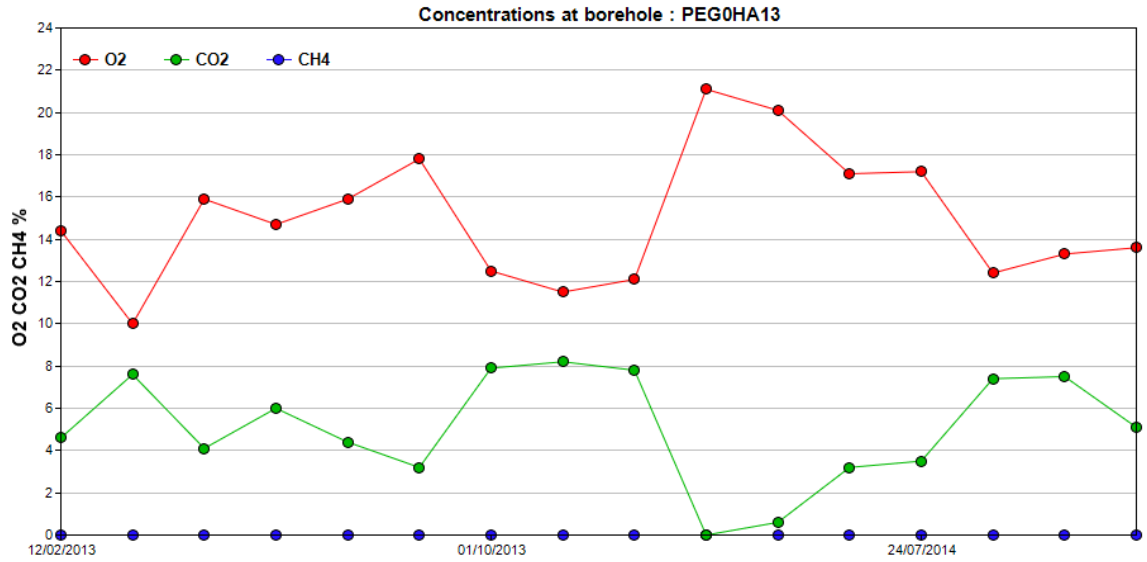
Figure 2: Ground Gas Levels within PB-K11



Atmospheric ground gas levels have been recorded within PB-HA8, with methane generally below the equipment's limit of detection, and oxygen around 20%. Short lived carbon dioxide peaks (13-14%) coincide with depressions in oxygen.

Ground gas concentrations within PB-HA13 are markedly less variable than PB-HA8, PB-K10, and PB-K10. Oxygen is slightly depressed below atmospheric levels at around 15%, carbon dioxide is elevated at 5%, and methane above the equipment's limit of detection has not been recorded.

Figure 3: Ground Gas Levels within PB-HA13



Ground gas tubes enabling the sampling of ground gas at depth are present within PB-K10 and PB-K11. Ground gas tubes are not present within PB-HA8 and PB-HA-13, with ground gas accumulating at the shallow depths monitored. The differing well installation and subsequent monitoring depths are the possible cause of the different landfill gas concentrations, rather than the landfill gas potential of the waste.

3.3 Western Border

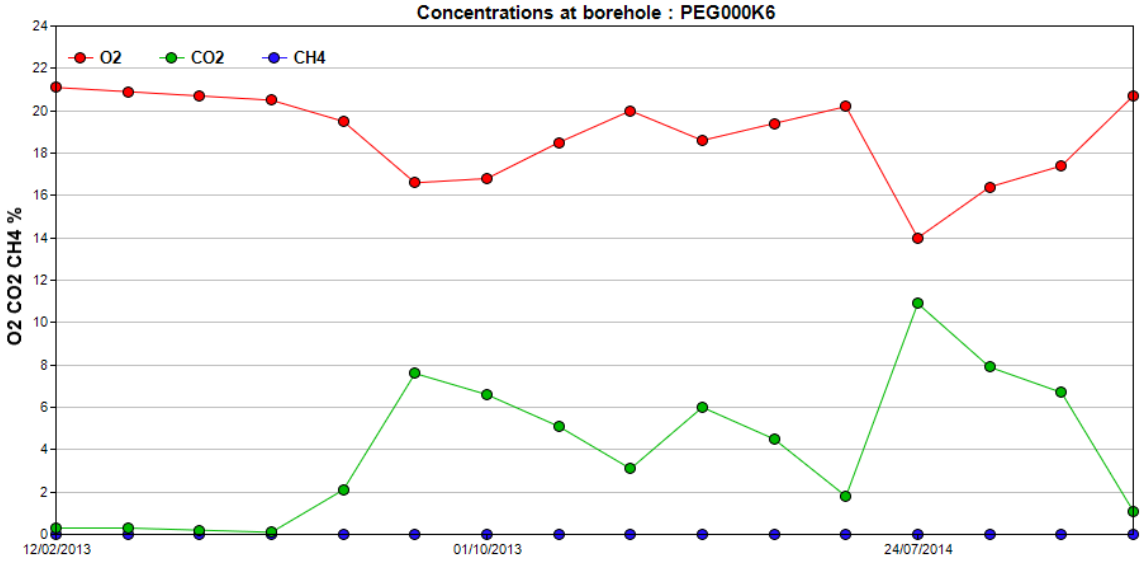
Three boreholes are located on the western border (PB-K6, PB-K7, and PB-K8), one borehole is located in the south west corner (PB-K5), and one borehole is located in the northern corner (PB-K9).

Of the five boreholes landfill refuse was recorded only in PB-K6. Shallow thicknesses of Made Ground were recorded within PB-K6, PB-K7, and PB-K9. Alluvium Deposits are present in all five boreholes. Shallow groundwater between 1.40 – 2.40mbgl was recorded within PB-K5, PB-K7, PB-K8, and PB-K9. Deeper groundwater was recorded within PB-K6 (4.90mbgl).

Ground gas concentrations within PB-K5, PB-K7, PB-K8, and PB-K9 have been recorded at atmospheric concentrations during the current EMS period. Given the shallow groundwater level within these boreholes, the response zone is reduced in size, potentially resulting in inhibited landfill gas migration. The ground gas within these boreholes may therefore be unrepresentative of actual ground gas migrating off-site.

PB-K6 has recorded slightly depressed oxygen concentrations around 17%, and slightly elevated carbon dioxide concentrations around 5%. Methane has been below the equipment's limit of detection (0.1%).

Figure 4: Ground Gas Levels within PB-K6

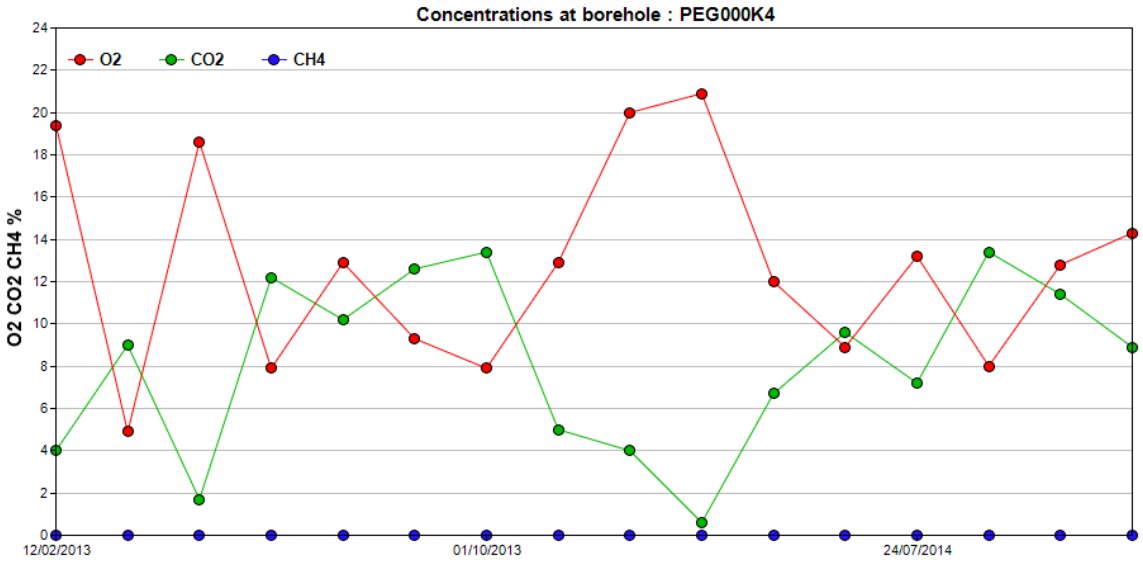


3.4 Southern Border

One borehole (PB-K4) is located on the southern border. Ground gases have been variable with depressions in oxygen coinciding with peaks in carbon dioxide. Oxygen and carbon dioxide were generally recorded around 10%. Carbon dioxide peaks of 13% and oxygen depressions of 5% were recorded. Methane has remained below the equipment's limit of detection throughout the EMS period.

At PB-K4 landfill refuse is present from ground level to 2.20mbgl, and may be the cause of the higher carbon dioxide concentrations compared to PB-K5 (200m south west). As detailed previously the lower groundwater level and greater response zone at PB-K4 relative to PB-K5, may mean the landfill gas levels at PB-K4 are more representative.

Figure 5: Ground Gas Levels within PB-K4



3.5 Surface Emissions Survey

Surface Emissions Monitoring (SEM) has been conducted across the Site on the 16/06/2016. A portable laser diode (TDL-500) and GPS were used to record the concentrations of methane and other volatile gases being emitted from the Site and the locations where the tests were undertaken. The survey was carried out in order to confirm the integrity of the Gas Capping Layer (GCL) and seals around the monitoring boreholes.

The SEM results show the capping layer is currently sufficient to limit unacceptable levels of landfill gases vertically migrating off-site, with levels recorded below 3.8ppm. The levels recorded are comparable to the previous EMS surface emissions (<2ppm).

4 Water Assessment

4.1 Leachate Quality

Leachate is the liquid that results from the percolation of water and liquid waste through solid waste. Leachate has the potential to cause harm through the depletion of oxygen and production of hydrogen sulphide, methane, and ammonia, all of which are toxic to higher level organisms. Consequently, aquatic life may be reduced or even totally eradicated by components in leachate. There is also the potential for trace determinands such as heavy metals to be present, which can pose a risk to groundwater as a resource.

Leachate is monitored at four locations PB-HA8, PB-K11, PB-K10, and PB-HA13. As recorded during the previous EMS period PB-K10 has been largely dry, with insufficient leachate present to undertake monitoring/sampling. Leachate depths within PB-HA8, PB-HA13, and PB-K11 remained relatively stable with a seasonal trend apparent (increasing during the winter, and decreasing during the summer).

The Site was constructed using the dilute and disperse principles. Therefore, no liner is present preventing leachate from migrating into the underlying groundwater.

Leachate is present within PB-HA8, PB-HA13, and PB-K11. Temperature (probe) has been relatively stable within all three boreholes, with a seasonal trend identified as anticipated (higher temperatures during the summer, and lower temperatures during the winter). Dissolved oxygen has been within historic concentrations throughout the EMS period.

In-situ electrical conductivity probe results mirror the trend identified during the previous EMS period with PB-HA13 generally the highest (4540-19422µS/cm), followed by PB-K11 (4422-9742µS/cm), and PB-HA8 (2880-4542µS/cm).

Since the previous EMS period, four sets of laboratory samples have been collected from PB-HA8, PB-HA13, and PB-K11 on the 17/12/2014, 24/07/2014, 26/05/2015, and 19/11/2015. Leachate samples have been recovered from PB-K10 on one occasion only.

Recovered leachate samples have been assessed against the guideline threshold values included within the Waste Management Paper No26A Landfill Completion (Table 3).

Table 3: Example Completion Criteria for Leachates, Waste Management Paper No26A

Determinant	Concentration
pH	6.5 – 8.5
COD	4000us/cm
Chloride	2000mg/l
Sulphate	2500mg/l
Ammoniacal Nitrogen	5mg/l
Nitrite	1mg/l
Nitrate	500mg/l
TOC	10mg/l
Cadmium	0.05mg/l
Chromium	0.5mg/l
Copper	1mg/l
Nickel	0.5mg/l
Zinc	1mg/l
Iron	2mg/l
Manganese	0.5mg/l
Sodium	1500mg/l
Potassium	120mg/l
Calcium	1000mg/l
Magnesium	500mg/l
Lead	0.5mg/l

Determinands found to have exceeded the relevant guideline threshold values are detailed within Table 4.

Table 4: Determinand Exceedances in Leachate

Borehole (Sample Date)	Ammoniacal Nitrogen	TOC	Iron	Manganese	Sodium	Potassium	Chloride
PB-HA13 (17/12/2013)	28.4	26.9	31.5	1.41	2750	174	5490
PB-HA13 (24/07/2014)	29.6	24	10.9	1.12	1810	155	3030
PB-HA13 (26/05/2015)	32.1	25.5	36	0.936	1670	127	3260
PB-HA13 (19/11/2015)	27.5	28	22.4		1580	180	3070
PB-HA8 (17/12/2013)		20	22				
PB-HA8 (24/07/2014)		17	16.4	0.685			
PB-HA8 (17/12/2014)		15.2	18.9				
PB-HA8 (19/11/2015)		17.7	20.7				
PB-K11 (17/12/2013)	38.9	51.3	35.3	0.593			2570
PB-K11 (24/07/2014)	47.1	31.6	22.1				
PB-K11 (17/12/2014)	22.4	24.6	27.8	0.692			
PB-K11 (19/11/2015)	23.1	31.8	31.5	0.581			2730
PB-K10 (19/11/2015)	94.8	28	22.4		1580	180	3070

Ammoniacal nitrogen concentrations have remained consistent within PB-HA13, and PB-K11 with values between 20mg/l and 30mg/l. Ammoniacal nitrogen concentrations have continued to decrease within PB-HA8 to levels below the threshold value of 5mg/l, suggesting an improvement in leachate quality to the south of the Site.

TOC, iron, manganese, and potassium have all remained within historic concentrations in all three boreholes, indicating leachate strength has not altered since the previous EMS period.

4.2 Groundwater Quality

Groundwater on-site is monitored by four boreholes, two on the eastern border (PB-K2, and PB-K3), and two on the western border (PB-K1, and PB-K9). Boreholes PB-K2, PB-K3, and PB-K9 are progressed to 7-8.9mbgl and are screened within the Alluvium Deposits. Borehole PB-K1 is progressed to 19mbgl, and is screened within the Thanet Sand Formation.

Groundwater flow on-site is generally towards Pegwell Bay and the south east.

Groundwater levels within boreholes (PB-K2, PB-K3, and PB-K9) screened in the Alluvium Deposits have been between 2.00mAOD and 3.00mAOD. Groundwater levels within PB-K1 screened within the Thanet Sand Formation have been between 1.00mAOD and 1.70mAOD. The depths recorded are in-line with those recorded during the previous EMS.

During the current EMS period samples have been recovered on four separate occasions, from all four boreholes, 17/12/2013, 24/07/2014, 26/05/2015, and 19/11/2015.

Pegwell Bay is the closest controlled water receptor. Given its saline nature, groundwater results have been compared to the saline Environmental Quality Standards (EQS). Where saline EQS are not available, UK Drinking Water Standards (DWS) have been used as a guide and a conservative assessment. The standards used are detailed within Table 5.

Table 5: Groundwater Assessment Criteria

Contaminant	Standard	Value (mg/l)
Cadmium	Protection of Surface Water Quality, (UK EQS (other surface waters))	0.02
Chromium	Protection of Surface Water Quality (UK EQS (transitional and coastal waters))	0.0006
Copper	Protection of Surface Water Quality (UK EQS (transitional and coastal waters))	0.005
Nickel	Protection of Surface Water Quality (UK EQS (other surface waters))	0.020
Zinc	Protection of Surface Water Quality (UK EQS (transitional and coastal waters))	0.04
Iron	Protection of Surface Water Quality (UK EQS (transitional and coastal waters))	1.0

Manganese	No EQS are present for saline environments	N/A
Sodium	Non-applicable*	N/A
Potassium	No standards available	N/A
Calcium	No standards available	N/A
Magnesium	No standards available	N/A
Chloride	Non-applicable*	N/A
Lead	Protection of Surface Water Quality (UK EQS (other surface waters))	0.0072
Ammoniacal Nitrogen	Protection of Surface Water Quality (UK EQS (Transitional and Coastal Waters))	0.021

*Standards for sodium and chloride have not been included within Table 5 given the saline nature of the underlying groundwater.

4.2.1 Western Boundary

PB-K1, and PB-K9 are up hydraulic gradient of the Site and representative of the groundwater contamination status coming onto the Site within the Alluvium Deposits and Thanet Sand Formation respectively.

In-situ probe results in PB-K1 indicate a general return to the levels recorded during 2008. Electrical conductivity has declined below 10,000µS/cm from 31,500 – 37,000µS/cm recorded during the previous EMS period, and dissolved oxygen has increased to 1.20 – 2.66mg/l. The decrease in electrical conductivity coincides with a corresponding decrease in a number of inorganic contaminants (sodium, chloride, iron, zinc, potassium, copper, magnesium, lead, cadmium, and chromium). This is suggestive of a decreasing leachate or off-site contaminant source influence on the groundwater at PB-K1.

Electrical conductivity, dissolved oxygen and pH have remained consistent with the levels recorded during the previous EMS period, within PB-K9.

Comparison of the laboratory results of groundwater samples against the groundwater assessment criteria (Table 5) recorded the following exceedances (Table 6).

Table 6: Groundwater exceedances Western Boundary

Determinand	Groundwater Assessment Criteria (mg/l)	PB-K1				PB-K9		
		17/12/2013	24/07/2014	26/05/2015	19/11/2015	17/12/2013	24/07/2014	19/11/2015
Ammoniacal Nitrogen	0.021	3.98	18.4	0.61	6.56	0.55	0.52	
Chromium	0.0006					0.008		
Copper	0.005	0.03			0.093	0.037		0.04
Nickel	0.02	0.071	0.035	0.026	0.081			0.026
Zinc	0.04	0.837	0.433	0.19	1.78	0.131	0.07	0.143
Iron	1.0	68.5	3.97	5.38	16.8	17.1	2.95	13.9
Lead	0.0072					0.059	0.01	0.093

Groundwater exceedances on the western boundary were similar to historic values, indicating the background groundwater quality in the surrounding area continues to be poor.

4.2.2 Eastern Boundary

Boreholes PB-K2, and PB-K3 are down hydraulic gradient of the Site and are representative of the Site's impact on the underlying groundwater quality.

In-situ probe results for PB-K2, and PB-K3 have recorded electrical conductivity, dissolved oxygen, and pH within historic values and relatively consistent. Electrical conductivity continues to remain highest in PB-K3 (34,000 – 37,000µS/cm) compared to PB-K2 (4,000 – 5,500µS/cm). The higher electrical conductivity recorded at PB-K3 is considered likely the result of a greater saline influence than at PB-K2.

Comparison of the laboratory results against the groundwater assessment criteria (Table 5) identified the following exceedances (Table 7).

Table 7: Groundwater Exceedances Eastern Boundary

Determinand	Groundwater Assessment Criteria (mg/l)	PB-K2				PB-K3		
		17/12/2013	24/07/2014	26/05/2015	19/11/2015	17/12/2013	24/07/2014	19/11/2015
Ammoniacal Nitrogen	0.021	134	89.5	85	83.8	0.52	2.52	2.86
Chromium	0.0034	0.0266		0.019	0.011	0.008		0.021
Copper	0.005			0.015	0.013	0.037		0.04
Nickel	0.02	0.081		0.052	0.031			0.026
Zinc	0.04	0.242	0.162	0.178	0.06	0.131	0.07	0.143
Iron	1.0	141	4.91	63.7	37.4	17.1	2.95	13.9
Lead	0.0072	0.069		0.044	0.012			0.093

The groundwater exceedances in the down hydraulic gradient boreholes (Table 7) are within historic values. The groundwater quality has therefore not deteriorated during the current EMS period.

A comparison of the average contaminant concentrations within the down hydraulic gradient boreholes to those in the up hydraulic gradient boreholes is summarised in Table 8.

Table 8: Comparison of the Contaminant Concentrations within Groundwater Monitoring Boreholes

Contaminant	Up Hydraulic Gradient		Down Hydraulic Gradient	
	RB-K1	RB-K9	RB-K2	RB-K3
Ammoniacal Nitrogen	7.39	0.535	98.08	1.96
Chromium	<0.001	0.008	0.011	0.015
Copper	0.062	0.039	0.013	0.039
Nickel	0.081	0.026	0.031	0.026
Zinc	1.78	0.11	0.06	0.11
Iron	23.66	11.31	61.75	11.31
Lead	0.0075	0.054	0.042	0.093

Ammoniacal nitrogen concentrations were higher in down hydraulic gradient boreholes when compared to up hydraulic gradient boreholes. However, metal determinands were at similar concentrations to up hydraulic gradient boreholes. Chromium, copper, nickel and zinc were at lower concentrations in leachate samples than in up hydraulic gradient groundwater samples.

An area of shallow waste is located up hydraulic gradient of PB-K3, compared to deeper waste up hydraulic gradient of PB-K2. The potential for waste to impact the groundwater quality at PB-K3 is therefore low. This is reflected in the contaminant concentrations recorded.

4.3 Surface Water Quality

The Site is bounded by Pegwell Bay to the east, the River Stour and its estuary to the south and south east and by a drainage ditch on the western boundary.

Surface water samples are taken at two locations to assess the Site's impact on surface water quality. Sample PB-S1 is collected from a small tributary of the River Stour on the south eastern Site corner. Surface water sample PB-S2 is collected from a stream that emerges centrally at the Site's eastern boundary after passing beneath the landfill. The EMR noted evidence of leachate impact (discolouration) at PB-S2.

The streams at PB-S1 and PB-S2 both outfall into Pegwell Bay. Therefore, surface water samples are indicative of the Site's impact on Pegwell Bay.

Samples recovered from PB-S1 are tested for a limited range of determinands (Suite 1), whilst samples from PB-S2 are tested for a wider range of determinands (Suite 2).

PB-S1 has been sampled on three occasions, and PB-S2 on two occasions. Insufficient water was

present at PB-S2 for the recovery of samples on 17/12/2013 and 24/07/2014.

A clear influence by the estuarine environment, and a limited influence by the landfill continues to be recorded at PB-S1. Electrical conductivity results remained high (19,000-46,000µS/cm), and inorganic contaminants were present at low concentrations. Ammoniacal nitrogen concentrations (1.13-5.00mg/l) have remained within historical levels, further indicating the low level of landfill influence.

Sample point PB-S2 has historically been predominately influenced by the landfill and the leachate produced, rather than the estuarine environment. Relatively high levels of ammoniacal nitrogen (89.5mg/l, 118mg/l), and inorganic contaminants, in addition to a low electrical conductivity (3660-5292µS/cm) confirm this conclusion.

PB-S2 outfalls directly into the saline Pegwell Bay. Samples were therefore assessed against the saline EQS (Table 5). Determinands in exceedance on both sampling occasions (26/05/2015, and 19/11/2015) included; Ammoniacal nitrogen (89.5mg/l, 118mg/l) and iron (5.05mg/l, 22.6mg/l). Chromium (0.005mg/l) was in exceedance on 19/11/2015 sampling event only. The exceedances were within historic levels. The surface water quality at PB-S2 has therefore not deteriorated during the current EMS period.

Samples up-stream of PB-S2 were not collected. The outfall was noted to be discoloured during the previous EMS indicating leachate may have entered into the culvert. It is therefore likely that the culvert beneath the landfill has been compromised.

4.4 Sediment Sampling

Sediments have historically been sampled at PB-S3. Located to the east of PB-S2. Sediments have not been sampled during the current EMS period. The sediment quality at this location, during the current EMS period, has therefore not been commented on.

5 Conceptual Site Model and Preliminary Risk Assessment

Based on the information gathered during the EMS period a conceptual site model has been produced, and is presented in Table 10.

In the absence of appropriate guidance or data for a quantitative assessment, a qualitative risk assessment methodology has been used to assess the risk. The risk assessment matrix produced by Jacobs and used in the last EMS has been utilised in this report to allow continuity. A copy of the risk assessment matrix is detailed within Table 9.

Table 9: Risk Assessment Matrix

		Consequence			
		Severe	**Medium**	**Mild**	**Minor**
Probability	**High likelihood**	Very high risk	High risk	Moderate risk	Moderate/low risk
	Likely	High risk	Moderate risk	Moderate/low risk	Low risk
	Low Likelihood	Moderate risk	Moderate/low risk	Low risk	Very low risk
	Unlikely	Moderate/low risk	Low risk	Very low risk	Very low risk

Table 10: Qualitative Risk Assessment Summary for Pegwell Bay Closed Landfill Site

Source	Receptor	Potential Transport Pathways	Associated Hazard	Probability	Potential Consequence	Risk Classification	Comments
Landfill Gas	Human health	Vertical migration	Headaches, increased respiration and dizziness	Unlikely	Medium	Low	The Site is open, with no confined spaces present on-site. Landfill gas venting through the cap will disperse quickly directly to atmosphere
	Grazing Cattle		Asphyxiation	Unlikely	Severe	Moderate/Low	
	Vegetation on-site		Toxicity	Unlikely	Medium	Low	Areas of distressed vegetation as a consequence of landfill gas have not been identified. The SEM did not detect any areas of emissions at unacceptable levels.
	Global environment	Lateral and vertical migration with release to atmosphere	Greenhouse gas (contribution to global warming)	Unlikely	Mild	Very low	The SEM survey did not identify any areas of emissions at unacceptable levels
Leachate	Groundwater	Leachate seepage into groundwater	Pollution of controlled waters	Likely	Mild	Moderate/low	Landfill identified to be having an impact on underlying groundwater, principally on the levels of ammoniacal nitrogen.
	Pegwell Bay estuary	Lateral migration through sides of landfill and surface water run-off		Likely	Medium	Moderate	Elevated levels of contaminants identified at PB-S2.

6 Conclusions and Recommendations

6.1 Landfill Gas

Ground gas monitored within PB-K10, and PB-K11, continues to be influenced seasonally, with methane and carbon dioxide peaks of 29% (PB-K10), and 14% (PB-K11) respectively during the winter periods. Depressions in oxygen follow a reverse pattern, generally being displaced in winter and peaking during the summer months. Ground gas levels within PB-K10, and PB-K11 have continued the trend recorded during the previous EMS period and remained within historic levels.

Ground gas concentrations within PB-HA8, and PB-HA13 are near atmospheric concentrations. Methane is generally below the equipment's limit of detection, oxygen between 15% and 20%, and carbon dioxide peaking at 15% but generally being around 5%. The difference in ground gas concentrations within PB-HA8 and HA13 to those in PB-K10 and PB-K11 is possibly related to the borehole design rather than the ground gas present at each location.

Ground gas within boreholes on the western border are generally recorded at near atmospheric concentrations, with slightly elevated carbon dioxide (5%) within PB-K6 solely. Similarly, ground gas concentrations within PB-K6 on the southern border have generally been near atmospheric levels, however peak levels of carbon dioxide, and severe depressions in oxygen (5%) have been recorded. Methane has not been above the equipment's limit of detection during the current EMS period. However, the shallow response zone present in PB-K5, PB-K7, PB-K8, and PB-K9 may be responsible for the near atmospheric levels recorded. Groundwater depth within these boreholes should be monitored to determine current groundwater levels. Following which a qualitative assessment determining their suitability to monitor landfill gas migration should be made.

St Augustine's golf course and Stonelees Golf Centre are located to the north and west separated from the Site by Sandwich Road. To the west beyond the golf centre is a solar energy farm, and a waste water treatment works. Pegwell Bay is to the east of the Site, and the River Stour together with Port Richborough is located south of the Site. The nearest residential properties are 500m north east. Given the presence of open space between buildings/structures in the immediate surrounding area, ground gases are considered likely to have dispersed into the atmosphere prior to reaching them. Further confidence of this assessment should be gained through the recording of ground gas flow.

Currently the tidal impact on ground gas levels is not taken into account. Consideration should be given to an assessment of the tidal impact on groundwater levels on-site, and the subsequent impact on ground gas levels.

The results of the SEM survey carried out, shows a continuation of the trend recorded during the previous EMS period, with low levels of vapour recorded. Areas of distressed vegetation in which ground gas was considered to be the primary cause have not been encountered. During the following EMS period, it is recommended the SEM survey is continued at its current frequency, so as to confirm the continuation of the trend.

6.2 Groundwater

Comparison of the boreholes located up hydraulic gradient (PB-K1, and PB-K9) to those located down hydraulic gradient (PB-K2, and PB-K3) indicates the landfill has had an impact on ammoniacal nitrogen, with high levels recorded at PB-K2. Metal concentrations within down hydraulic gradient boreholes compared to those in up hydraulic gradient boreholes are at similar concentrations, indicating metals are not readily leaching from the landfill into the groundwater.

High sodium and chloride levels recorded within PB-K1–PB-K3, and PB-K9 have been attributed to

saline incursions, and are considered not to be originating from the landfill.

Leachate quality is monitored at four positions on-site PB-HA8, PB-HA13, PB-K10, and PB-K11. PB-K10 is generally dry, leachate samples have been recovered on 19/11/2015 only. Elevated levels of ammoniacal nitrogen, TOC, iron, potassium, and manganese have been recorded within PB-HA13, and to a lesser extent within PB-HA8, PB-K10, and PB-K11. The contaminants in exceedance at PB-HA8, PB-HA13, and PB-K10 are within historic values, with a notable decline in ammoniacal nitrogen below the threshold level recorded in PB-HA8. One leachate sample has been recovered at PB-K10 preventing a comparison of contaminant levels to previous recovered leachate samples.

It is recommended the current frequency and monitoring procedure for sampling groundwater and leachate is maintained. Where possible effort should be made to re-sample PB-K10 to allow interpretation of the contaminant levels, and assess the general trend in contaminant levels at this location.

6.3 Surface Water Quality

Samples taken at PB-S1 are predominately influenced by the estuarine environment, rather than the leachate produced by the landfill. Electrical conductivity is high, and inorganic determinands and ammoniacal nitrogen concentrations are low.

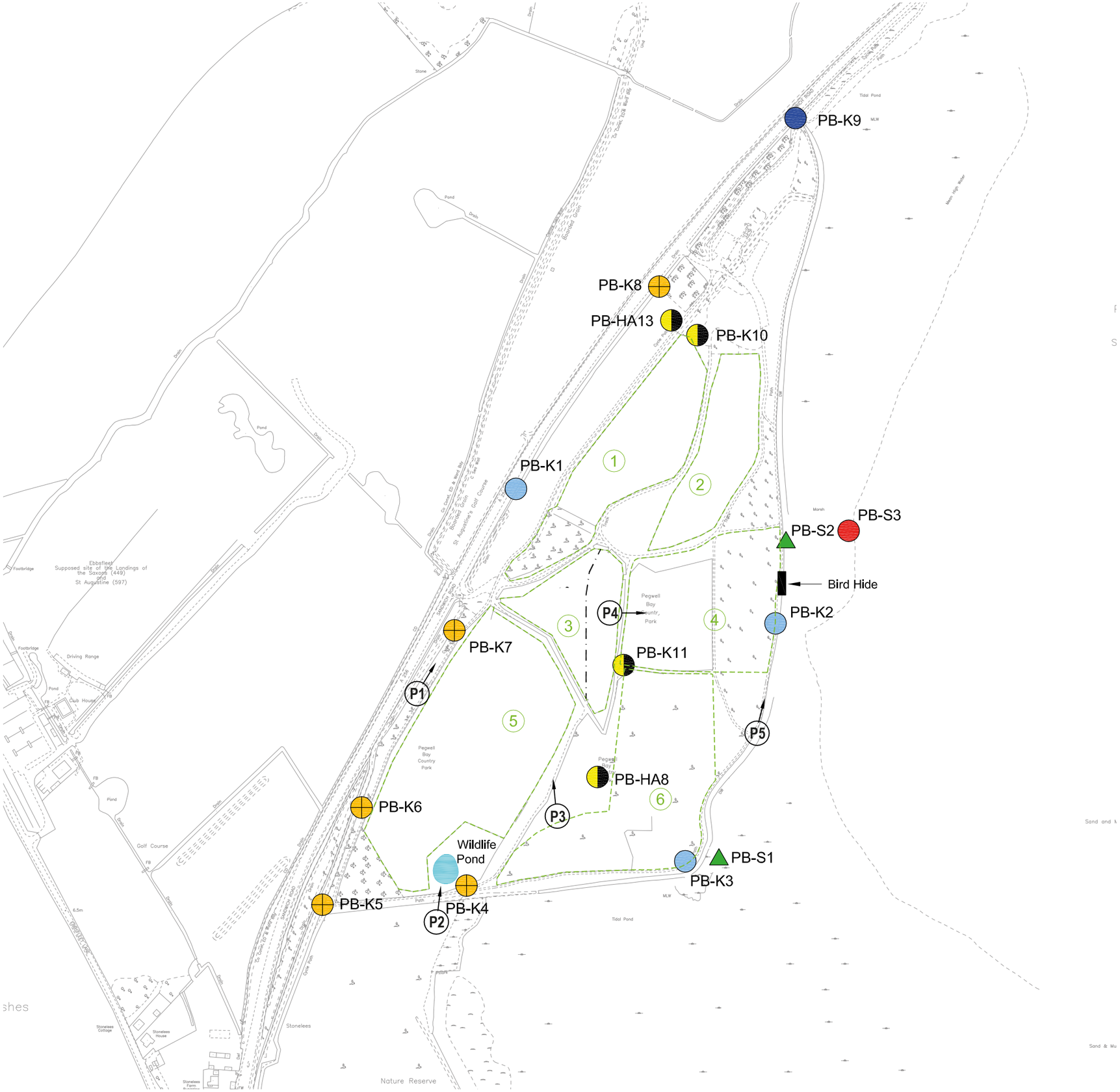
Elevated levels of ammoniacal nitrogen, iron, and chromium have been recorded within samples recovered at PB-S2. The concentrations are within historic values. Should the water quality deteriorate significantly at PB-S2, samples should be recovered from an upstream location to assess the water quality upstream of the landfill. In the event the upstream water quality is good, consideration should be given to the undertaking of a structural assessment of the culvert, and the appropriate repairs, to limit the infiltration of leachate into the culvert, and in extension Pegwell Bay.

Sediment samples have not been recovered from PB-S3 during the current EMS period. To allow an assessment of the Site's impact on the wider Pegwell Bay, consideration should be given to the recovery of sediment samples from PB-S3. However, it should be understood, that due to the tidal nature of Pegwell Bay contaminants present in the sediment may have originated from off-site sources.

Appendix A

Figure A1 Site Walkover Notes

Figure A2 Landfill Gas Surface Emissions Survey



Waterman

- Gas
- Gas & Groundwater
- Surface Water
- Gas & Leachate
- Groundwater
- Sediment Sample
- Path through Enclosure
- 1 Grazing Enclosures
- Photo location & direction

Project Details	WIE10136-100: Pegwell Bay
Figure Title	Figure A1: Site Plan
Figure Ref	WIE10136-100_GR_SI_A1A
Date	May 2016
File Location	\\s-lncs\wiel\projects\wie10136\100\graphics\si\issued figures

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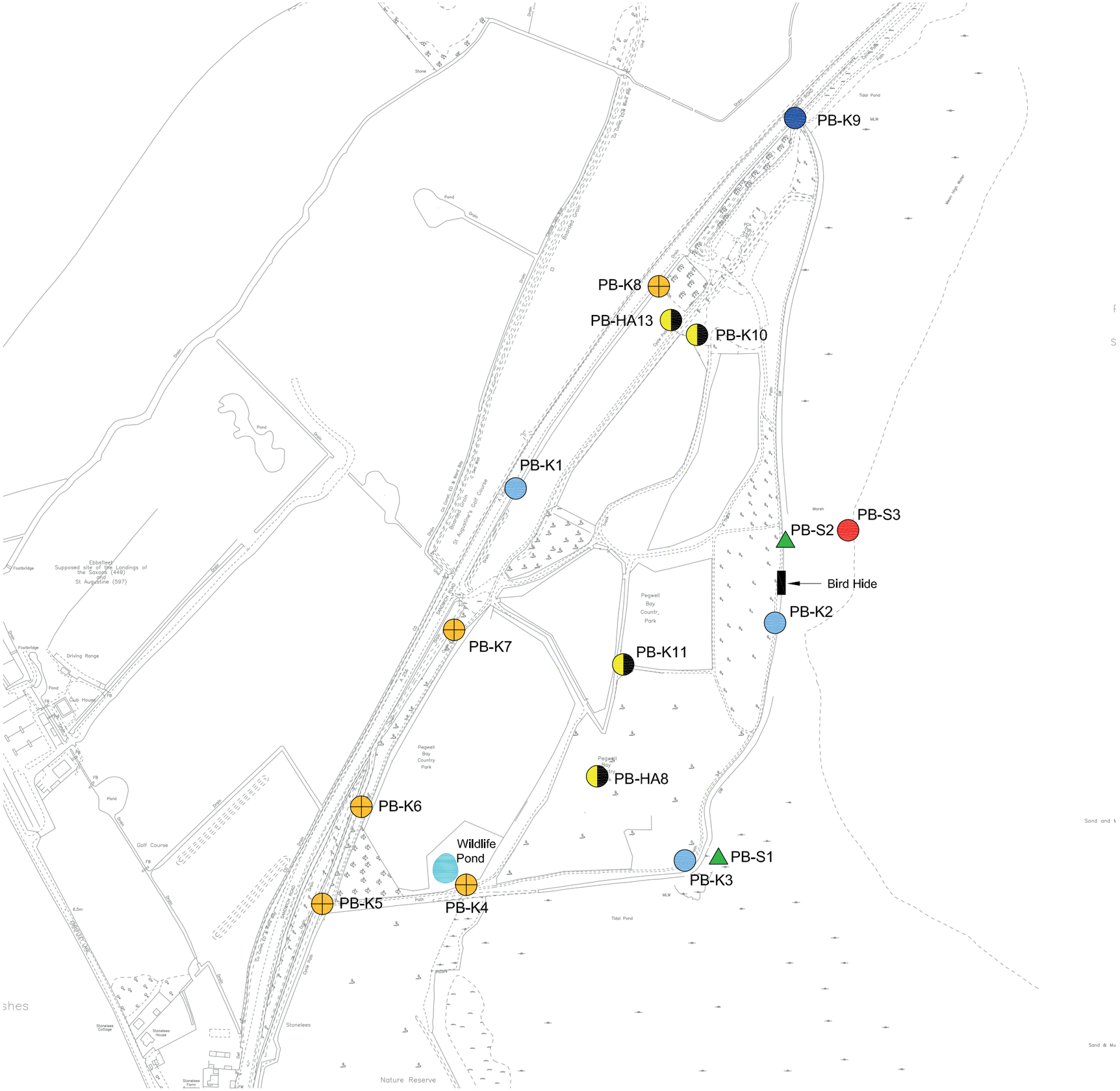

Gas
Gas & Groundwater
Surface Water
Gas & Leachate
Groundwater
Sediment Sample

1000 ppm
500 ppm
100 ppm
20 ppm
10 ppm
0 - 5 ppm

Project Details	WIE10136-100: Pegwell Bay
Figure Title	Figure A2: SEM Plan
Figure Ref	WIE10136-100_GR_SI_A2A
Date	July 2016
File Location	\\s-lncs\wiel\projects\wie10136\100\graphics\si\issued figures

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Appendix B

Figure B1 Site Photographs

Plate 1: High verges

Plate 2: Wildlife pond

Plate 3: Recently grazed land

Plate 4: Grazing cattle

Plate 5: Established verges

Project Details	WIE10136-100: Pegwell Bay
Figure Title	Figure B1: Site Photographs
Figure Ref	WIE10136-100_GR_SI_B1A
Date	May 2016
File Location	\\s-lncs\wiel\projects\wie10136\100\graphics\si\issued figures

Staph for (F) N.

KENT COUNTY COUNCIL
WASTE REGULATION
DOUBLEDAY HOUSE
ST MICHAELS CLOSE
AYLESFORD
KENT ME20 7BU

INVESTIGATION OF FORMER LANDFILL SITE AT PEGWELL BAY PICNIC SITE RAMSGATE, KENT

Clayton Environmental Consultants Ltd
10 - 17 Seven Ways Parade
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Ilford, Essex
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Report Ref: LC1087

April 1992

Our Ref: CEC/LMS/LC1087
Date: 14th April 1992
Page: 1 of 1

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Kent
ME20 7BU

For the attention of Mr J Atkinson

Dear Sirs,

Re: Pegwell Bay Picnic Site, Ramsgate, Kent

Please find enclosed the findings of our initial site investigation of the above site, in accordance with our proposal of February 6th 1992.

We trust that we have interpreted your requirements correctly and will be pleased to assist further with this project.

Yours faithfully,

Brian Henderson
For: CLAYTON ENVIRONMENTAL CONSULTANTS LTD

Clayton
ENVIRONMENTAL
CONSULTANTS

CONTENTS

1.0 INTRODUCTION

Clayton Environmental Consultants Ltd was instructed by Mr Jonathon Atkinson of the Waste Regulation Division of Kent County Council, to carry out a site investigation at the Pegwell Bay Picnic Site, Pegwell Bay, Ramsgate, Kent on the 21st February 1992.

The investigation was commissioned to determine the presence of contamination due to Polychlorinated Biphenyls (PCB's), which from local hearsay, were deposited at the site when it operated as a local landfill.

For a fifteen to twenty year period up until 1974, Ramsgate District Council used the site as a general domestic refuse disposal site. It is thought that during the late 1960's, a local transformer works deposited PCB residues and other industrial wastes at this site.

During the period 1980-82, some basic landscaping was carried out to the site, which included a light covering of topsoil over part of the site.

Since 1982, the site has been a public reserve and a popular picnic area, with the western area being utilised for animal grazing.

2.0 SUMMARY

This initial investigation at the Pegwell Bay Picnic Site has shown some sporadic contamination due to metals and polyaromatic hydrocarbons. No significant levels of PCB's were encountered.

Remedial measures are not considered to be onerous, if the site is to remain a public open space.

3.0 SITE INVESTIGATION

The site investigation was carried out on Monday 25th February 1992.

The approximate location of the ten sampling points were indicated to us by Mr Jonathon Atkinson of Kent County Council, on a sketch plan of the site.

Only one of the ten locations was changed by us with the agreement of Kent County Council, so that a more representative sampling of the site could be undertaken. These locations are indicated on the site plan.

It was proposed to collect two soil samples from each location (one surface sample between the surface and 0.15m and the other at 0.5m) by the use of a hand auger and other hand tools, and to collect up to five samples of surface water from the site.

All of the soil samples were successfully collected, however, no areas of surface water were evident and, therefore, no water samples were taken.

It was noted during the site investigation that the topsoil on the site was thin and in some places bricks and other rubble were on the surface.

Generally, the ground profile was found to be as follows:

0-0.1m	dark loamy topsoil - variable
0.1-0.3m	chalk, bricks (and rubble) very compact - variable
0.3-0.5m	rotted refuse, glass, metal, mixed fill - variable

The layer of chalk/brick rubble overlaying the general refuse was extremely compacted.

The twenty soil samples were stored in screw capped aluminium containers and submitted for laboratory analysis.

See Appendices 2 and 3 for analytical results.

4.0 SUMMARY OF ANALYTICAL RESULTS

	Sample	Depth(m)	
	HA1	0-0.1	This sample shows no significant contamination.
	HA1	0.5	This sample shows no significant contamination.
	HA2	0-0.1	This sample shows no significant contamination.
	HA2	0.5	This sample shows slight contamination due to nickel.
*	HA3	0-0.1	This sample shows slight contamination due to nickel.
	HA3	0.5	This sample shows no significant contamination.
	HA4	0-0.1	This sample shows no significant contamination.
	HA4	0.5	This sample shows contamination due to molybdenum and lead.
	HA5	0-0.1	This sample shows no significant contamination.
	HA5	0.5	This sample shows contamination due to lead and slight contamination due to zinc.
	HA6	0-0.1	This sample shows no significant contamination.
	HA6	0.5	This sample shows contamination due to PAH's.
	HA7	0-0.1	This sample shows no significant contamination.
	HA7	0.5	This sample shows no significant contamination.
*	HA8	0-0.1	This sample shows contamination due to PAH's and slight contamination due to lead.

Sample	Depth(m)	
HA8	0.5	This sample shows slight contamination due to lead.
HA9	0-0.1	This sample shows no significant contamination.
HA9	0.5	This sample shows slight contamination due to copper and water soluble boron.
HA10	0-0.1	This sample shows no significant contamination.
HA10	0.5	This sample shows contamination due to PAH's and slight contamination due to manganese.

The full GC/MS Scan on samples HA6 (0.5m), HA8 (0.0.1m), HA8 (0.5m) and HA10 (0.5m) showed traces of other PAH compounds, including methylanthracene, phenylnaphthalene and anthracenadione. No other compounds, other than PAH's, were evident.

5.0 DISCUSSION OF RESULTS

The analytical results show that there is some contamination of the surface material (0-0.1m) at location HA3 (nickel) and HA8 (lead and PAH's).

Seven of the deeper sample points indicated contamination at 0.5m, HA2, HA4, HA5, HA6, HA8, HA9(and HA10 due to metals and PAH's.

The contamination encountered is sporadic and generally the levels are low. PAH's were found at three sample locations, of which the values exceeded the ICRCL threshold concentration, but are well below the action levels.

The levels of PCB were less than 1 mg/kg at all sample locations and no other organic compounds were evident from the GC/MS Scan.

From the locations of the samples collected (see Appendix 1 - Site Plan), there is no definite evidence to suggest that PCB wastes have been deposited at this site, however, it may be the case whereby these materials are at a lower level, where upward movement of contaminants is not possible.

The covering of soil fill over the site is considered very light and it was noted in some locations that bricks and rubble can be seen on the surface. Further applications of clean soil to the site would increase the plant root depth and enhance the protection to the public.

- Surface water was not evident on the day of sampling, however some monitoring in the future is recommended, together with monitoring of groundwater at lower levels.

- The National Rivers Authority should be notified of these analytical results so that they may appraise any possible effects on groundwater and coastal water systems.

6.0 CONCLUSIONS

1. There is some sporadic contamination in the top half metre of the site, due to metals and PAH's, however the level of contamination is not significantly high.

2. There is no significant contamination due to PCB's.

3. Some remedial action is considered necessary to enhance protection of the general public from the site.

4. The general covering of soil over the whole site is very thin and in some places non-existent.

5. There are concerns that, should circumstances exist, contamination may enter the food chain via the grazing of animals.

7.0 RECOMMENDATIONS

1. With the view that the site is to remain a public open space, we consider that clean soil should be applied to increase the plant root depth available, in addition to enhancing protection to the public.

2. We do not recommend that the site is utilised for animal grazing purposes (especially for animals connected to the food chain).

3. Further investigation should be carried out with respect to analysis of surface water (when present) and also monitoring of the groundwater at lower levels.

4. Consideration should be given to further soil investigation at lower levels, should the site be developed for other purposes.

5. The National Rivers Authority should be approached, so that they may make their own assessments of the analytical results with respect to the ground and coastal water systems.

APPENDIX 2
Tabulated Analytical Results

SOIL ANALYSIS RESULTS

PEGWELL BAY, RAMSGATE;

SITE CODE: LC1087

Results are expressed in mg/kg on air dried basis.

Sample	Depth(m)	MoT	ZnT	CdT	PbT	NiT	CrT	VT	MnT	BeT	CuT	SrT	BWS	PCBs	PAHs
HA1 LX0522	0-0.1	<1	110	<0.5	150	15	15	27	350	<1	26	180	0.15	ND	10.4
HA1 LX0523	0.5	<1	280	<0.5	160	38	17	22	300	<1	22	200	0.55	ND	8.9
HA2 LX0524	0-0.1	<1	45	<0.5	44	9	8	16	270	<1	15	250	0.15	ND	10.0
HA2 LX0525	0.5	<1	200	0.5	170	90	19	20	250	<1	100	280	0.30	0.03	8.6
HA3 LX0526	0-0.1	<1	62	<0.5	98	98	13	28	460	<1	16	130	0.13	ND	2.5
HA3 LX0527	0.5	<1	93	<0.5	210	27	12	25	330	<1	120	120	0.88	0.07	46.2

< = Less than
ND = Not detected

Report prepared by B Henderson
Brian Henderson
for Clayton Environmental Consultants Ltd

Date: 23rd March 1992

Report commissioned by
Kent County Council
F.a.o. Mr J Atkinson

SOIL ANALYSIS RESULTS

PEGWELL BAY, RAMSGATE;

SITE CODE: LC1087

Results are expressed in mg/kg on air dried basis.

Sample	Depth(m)	MoT	ZnT	CdT	PbT	NiT	CrT	VT	MnT	BeT	CuT	SrT	BWS	PCBs	PAHs
HA4 LX0528	0-0.1	<1	230	<0.5	300	18	15	31	270	<1	50	120	0.25	ND	7.0
HA4 LX0529	0.5	18	200	<0.5	1300	40	70	24	240	<1	39	300	0.28	ND	41.3
HA5 LX0530	0-0.1	<1	140	<0.5	130	14	13	28	400	<1	28	170	0.05	ND	6.9
HA5 LX0531	0.5	<1	490	<0.5	1500	32	18	27	340	<1	68	160	0.20	ND	8.4
HA6 LX0532	0-0.1	<1	99	<0.5	120	16	15	29	360	<1	29	71	0.10	ND	14.6
HA6 LX0533	0.5	<1	160	<0.5	270	34	15	33	440	<1	30	160	0.33	ND	178

< = Less than
ND = Not detected

Report prepared by
Brian Henderson
for Clayton Environmental Consultants Ltd

Date: 23rd March 1992

Report commissioned by
Kent County Council
F.a.o. Mr J Atkinson

SOIL ANALYSIS RESULTS

PEGWELL BAY, RAMSGATE;

SITE CODE: LC1087

Results are expressed in mg/kg on air dried basis.

Sample	Depth(m)	MoT	ZnT	CdT	PbT	NiT	CrT	VT	MnT	BeT	CuT	SrT	BWS	PCBs	PAHs
HA7 LX0534	0-0.1	<1	58	<0.5	93	19	18	30	340	<1	32	48	0.15	ND	9.0
HA7 LX0535	0.5	<1	86	<0.5	290	28	15	32	300	<1	22	110	0.60	ND	7.5
HA8 LX0536	0-0.1	<1	180	<0.5	580	12	11	29	230	<1	22	170	0.30	0.06	63.2
HA8 LX0537	0.5	<1	160	<0.5	660	27	12	23	320	<1	65	180	0.18	0.16	32.6
HA9 LX0538	0-0.1	1	68	<0.5	89	37	36	34	370	<1	74	47	0.13	ND	7.1
HA9 LX0539	0.5	<1	260	<0.5	90	29	10	19	290	<1	130	240	2.13	ND	7.2

< = Less than
ND = Not detected

Report prepared by

Brian Henderson
for Clayton Environmental Consultants Ltd

Date: 23rd March 1992

Report commissioned by
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F.a.o. Mr J Atkinson

SOIL ANALYSIS RESULTS

PEGWELL BAY, RAMSGATE;

SITE CODE: LC1087

Results are expressed in mg/kg on air dried basis.

Sample	Depth(m)	MoT	ZnT	CdT	PbT	NiT	CrT	VT	MnT	BeT	CuT	SrT	BWS	PCBs	PAHs
HA10 LX0540	0-0.1	<1	51	<0.5	55	10	8	21	250	<1	17	200	0.08	0.21	16.5
HA10 LX0541	0.5	<1	270	<0.5	250	25	14	32	550	1	46	150	0.25	ND	154

< = Less than
ND = Not detected

Report prepared by

Brian Henderson
for Clayton Environmental Consultants Ltd

Date: 23rd March 1992

Report commissioned by
Kent County Council
F.a.o. Mr J Atkinson

APPENDIX 3
PAH and PCB Results in detail

Our Ref: BRH/LMS/LC1087
Date: 13th April 1992
Page: 1/5

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Soil Analysis Report
Pegwell Bay, Ramsgate

Polynuclear Aromatic Hydrocarbons

Our Sample Ref:	LX0522	LX1523	LX0524	LX0525
Your Sample Ref:	HA1	HA1	HA2	HA2
Sample Depth:	0.1-0.15m	0.5m	0.1-0.15m	0.5m
Naphthalene	0.02	< 0.02	< 0.02	< 0.02
Acenaphthylene	0.03	< 0.02	0.04	0.03
Acenaphthene	0.04	< 0.02	< 0.02	0.02
Fluorene	0.06	< 0.02	< 0.02	0.02
Phenanthrene	0.67	0.38	0.18	0.17
Anthracene	0.22	0.18	0.07	0.10
Fluoranthene	1.3	0.75	0.44	0.50
Pyrene	1.1	0.58	0.59	0.54
Benz(a) Anthracene	0.96	1.2	0.73	0.71
Chrysene	1.2	1.3	0.77	0.40
Benzo (b) Fluoranthene)) Benzo (k) Fluoranthene)	1.3	2.3	1.0	1.0
Benzo (a) Pyrene	1.3	2.2	1.3	0.95
Indeno (123,cd) Pyrene	0.8	< 0.1	1.7	1.5
Dibenz(a,h) Anthracene	0.6	< 0.1	1.5	1.2
Benzo(ghi) Perylene	0.8	< 0.1	1.7	1.5
Total	**10.4**	**8.9**	**10.0**	**8.6**

Polychlorinated Biphenyls Congeners

#28	< 0.02	< 0.02	< 0.02	0.03
#52	< 0.02	< 0.02	< 0.02	< 0.02
#101	< 0.02	< 0.02	< 0.02	< 0.02
#118	< 0.02	< 0.02	< 0.02	< 0.02
#138	< 0.02	< 0.02	< 0.02	< 0.02
#153	< 0.02	< 0.02	< 0.02	< 0.02
#180	< 0.02	< 0.02	< 0.02	< 0.02
Total	**ND**	**ND**	**ND**	**0.03**

< = Less than
ND = Not detected

All results expressed as mg/kg on sample as received.

Signed
Brian Henderson
For: CLAYTON ENVIRONMENTAL CONSULTANTS LTD

Our Ref: BRH/LMS/LC1087
Date: 13th April 1992
Page: 2/5

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Soil Analysis Report
Pegwell Bay, Ramsgate

Polynuclear Aromatic Hydrocarbons

Our Sample Ref:	LX0526	LX0527	LX1528	LX0529
Your Sample Ref:	HA3	HA3	HA4	HA4
Sample Depth:	0.1-0.15m	0.5m	0.1-0.15m	0.5m
Naphthalene	< 0.02	0.17	< 0.02	< 0.02
Acenaphthylene	< 0.02	0.16	0.03	0.06
Acenaphthene	< 0.02	0.20	< 0.02	0.14
Fluorene	< 0.02	0.28	0.04	0.21
Phenanthrene	0.17	4.6	0.48	4.4
Anthracene	0.07	1.4	0.18	2.3
Fluoranthene	0.42	11	1.5	9.3
Pyrene	0.36	7.1	1.2	6.9
Benz(a) Anthracene	0.23	2.4	0.59	4.3
Chrysene	0.13	3.9	0.87	3.0
Benzo (b) Fluoranthene)) Benzo (k) Fluoranthene)	0.37	4.4	0.97	3.3
Benzo (a) Pyrene	0.27	5.5	0.76	1.3
Indeno (123,cd) Pyrene	0.14	1.8	0.5	2.0
Dibenz(a,h) Anthracene	0.17	1.2	0.4	1.8
Benzo(ghi) Perylene	0.14	2.1	0.5	2.3
Total	**2.5**	**46.2**	**7.0**	**41.3**

Polychlorinated Biphenyls

#28	< 0.02	0.07	< 0.02	< 0.02
#52	< 0.02	< 0.02	< 0.02	< 0.02
#101	< 0.02	< 0.02	< 0.02	< 0.02
#118	< 0.02	< 0.02	< 0.02	< 0.02
#138	< 0.02	< 0.02	< 0.02	< 0.02
#153	< 0.02	< 0.02	< 0.02	< 0.02
#180	< 0.02	< 0.02	< 0.02	< 0.02
Total	**ND**	**0.07**	**ND**	**ND**

< = Less than
ND = Not detected

All results expressed as mg/kg on sample as received.

Signed
Brian Henderson
For: CLAYTON ENVIRONMENTAL CONSULTANTS LTD

Our Ref: BRH/LMS/LC1087
Date: 13th April 1992

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Soil Analysis Report
Pegwell Bay, Ramsgate

Polynuclear Aromatic Hydrocarbons

Our Sample Ref:	LX0530	LX1531	LX0532	LX0533
Your Sample Ref:	HA5	HA5	HA6	HA6
Sample Depth:	0.1-0.15m	0.5m	0.1-0.15m	0.5m
Naphthalene	< 0.02	0.04	< 0.02	0.10
Acenaphthylene	0.02	0.05	0.04	0.08
Acenaphthene	0.03	0.02	0.05	1.3
Fluorene	0.03	0.04	0.09	1.3
Phenanthrene	0.39	0.42	0.88	20
Anthracene	0.14	0.19	0.30	8.0
Fluoranthene	1.0	1.4	2.3	32
Pyrene	0.83	1.1	1.9	22
Benz(a) Anthracene	0.37	0.49	1.1	18
Chrysene	0.80	0.98	1.5	15
Benzo (b) Fluoranthene)) Benzo (k) Fluoranthene)	1.0	0.96	1.9	16
Benzo (a) Pyrene	0.92	0.88	1.9	2.0
Indeno (123,cd) Pyrene	0.5	0.5	1.0	9.6
Dibenz(a,h) Anthracene	0.4	0.6	0.8	5.8
Benzo(ghi) Perylene	0.5	0.7	0.8	9.6
Total	**6.9**	**8.4**	**14.6**	**178**

Polychlorinated Biphenyls

#28	< 0.02	< 0.02	< 0.02	< 0.02
#52	< 0.02	< 0.02	< 0.02	< 0.02
#101	< 0.02	< 0.02	< 0.02	< 0.02
#118	< 0.02	< 0.02	< 0.02	< 0.02
#138	< 0.02	< 0.02	< 0.02	< 0.02
#153	< 0.02	< 0.02	< 0.02	< 0.02
#180	< 0.02	< 0.02	< 0.02	< 0.02
Total	**ND**	**ND**	**ND**	**ND**

< = Less than
ND = Not detected

All results expressed as mg/kg on sample as received.

Signed
Brian Henderson
For: CLAYTON ENVIRONMENTAL CONSULTANTS LTD

Kent County Council
Waste Regulation
Doubleday House
St Michaels Close
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Kent ME20 7BU

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Soil Analysis Report
Pegwell Bay, Ramsgate

Polynuclear Aromatic Hydrocarbons

Our Sample Ref:	LX0534	LX1535	LX0536	LX0537
Your Sample Ref:	HA7	HA7	HA8	HA8
Sample Depth:	0.1-0.15m	0.5m	0.1-0.15m	0.5m
Naphthalene	< 0.02	< 0.02	0.18	< 0.02
Acenaphthylene	0.02	< 0.02	0.27	0.11
Acenaphthene	< 0.02	< 0.02	0.12	0.15
Fluorene	< 0.02	< 0.02	0.31	0.27
Phenanthrene	0.31	0.25	6.2	3.3
Anthracene	0.11	0.12	2.3	1.4
Fluoranthene	1.4	0.85	11	5.6
Pyrene	1.6	0.82	13	4.5
Benz(a) Anthracene	1.6	0.76	4.5	2.0
Chrysene	2.1	1.0	5.0	2.8
Benzo (b) Fluoranthene)) Benzo (k) Fluoranthene)	0.75	1.3	5.6	3.7
Benzo (a) Pyrene	0.53	1.2	6.0	2.9
Indeno (123,cd) Pyrene	0.2	0.5	2.6	1.8
Dibenz(a,h) Anthracene	0.2	0.2	2.8	1.7
Benzo(ghi) Perylene	0.2	0.5	3.3	2.4
Total	9.0	7.5	63.2	32.6

Polychlorinated Biphenyls

#28	< 0.02	< 0.02	0.02	< 0.02
#52	< 0.02	< 0.02	0.02	< 0.02
#101	< 0.02	< 0.02	< 0.02	< 0.02
#118	< 0.02	< 0.02	< 0.02	0.02
#138	< 0.02	< 0.02	< 0.02	0.05
#153	< 0.02	< 0.02	< 0.02	0.03
#180	< 0.02	< 0.02	0.02	0.06
Total	ND	ND	0.06	0.16

< = Less than
ND = Not detected

All results expressed as mg/kg on sample as received.

Signed
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For: CLAYTON ENVIRONMENTAL CONSULTANTS LTD

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Soil Analysis Report
Pegwell Bay, Ramsgate

Polynuclear Aromatic Hydrocarbons

Our Sample Ref:	LX0538	LX1539	LX0540	LX0541
Your Sample Ref:	HA9	HA9	HA10	HA10
Sample Depth:	0.1-0.15m	0.5m	0.1-0.15m	0.5m
Naphthalene	< 0.02	< 0.02	< 0.02	0.04
Acenaphthylene	< 0.02	0.02	< 0.02	0.38
Acenaphthene	0.02	< 0.02	0.02	0.42
Fluorene	0.03	0.04	0.05	0.56
Phenanthrene	0.47	0.54	0.72	7.6
Anthracene	0.15	0.23	0.27	3.6
Fluoranthene	1.1	1.3	2.6	27
Pyrene	0.90	0.94	3.1	21
Benz(a) Anthracene	0.47	0.38	0.71	10
Chrysene	0.68	0.73	0.72	17
Benzo (b) Fluoranthene)) Benzo (k) Fluoranthene)	0.85	0.93	1.4	20
Benzo (a) Pyrene	1.0	0.73	1.5	17
Indeno (123,cd) Pyrene	0.5	0.5	1.6	12
Dibenz(a,h) Anthracene	0.4	0.4	1.7	8.8
Benzo(ghi) Perylene	0.5	0.5	2.1	9.1
Total	**7.1**	**7.2**	**16.5**	**154**

Polychlorinated Biphenyls

#28	< 0.02	< 0.02	0.06	< 0.02
#52	< 0.02	< 0.02	< 0.02	< 0.02
#101	< 0.02	< 0.02	0.09	< 0.02
#118	< 0.02	< 0.02	< 0.02	< 0.02
#138	< 0.02	< 0.02	0.03	< 0.02
#153	< 0.02	< 0.02	< 0.02	< 0.02
#180	< 0.02	< 0.02	0.03	< 0.02
Total	**ND**	**ND**	**0.21**	**ND**

< = Less than
ND = Not detected

All results expressed as mg/kg on sample as received.

Signed
Brian Henderson
For: CLAYTON ENVIRONMENTAL CONSULTANTS LTD

APPENDIX 4
Ground Profiles of Hand Auger Holes

APPENDIX 4

GROUND PROFILES OF HAND AUGER HOLES

Hand AugerHole	Depth(m)	Comments
HA1	0-0.1	Dark topsoil with chalk
	0.1-0.25	Compacted chalk, brick rubble.
	0.25-0.55	Metal, rotted refuse, plastic.
HA2	0-0.1	Dark topsoil and chalk.
	0.1-0.35	Compacted chalk.
	0.35-0.5	Refuse, metal, chalk and soil fill.
HA3	0-0.15	Dark topsoil.
	0.15-0.30	Compacted brick, concrete rubble.
	0.3-0.5	Mixed chalk, topsoil and refuse material with glass.
HA4	0-0.1	Topsoil with bricks.
	0.1-0.25	Compacted bricks.
	0.25-0.5	Metal, wood, chalk and rotted refuse.
HA5	0-0.2	Dark loamy topsoil with bricks.
	0.2-0.25	Compacted flint stones and chalk.
	0.25-0.55	Chalk, brick fragments, rusty sand and refuse (metal and plastic).
HA6	0-0.2	Dark loamy topsoil.
	0.2-0.25	Compacted flint stone and chalk.
	0.25-0.50	Chalk, bricks, refuse.
HA7	0-0.25	Loamy topsoil.
	0.25-0.5	Chalk, flint and brick rubble.
	0.5-0.6	Brown clay/chalk, and rusty refuse debris.

Hand AugerHole	Depth(m)	Comments
HA8	0-0.3	Brick rubble, concrete and chalk.
	0.3-0.5	Brick rubble, wood, metal, chalk and some rotted refuse.
HA9	0-0.15	Dark loamy topsoil.
	0.15-0.2	Chalk and flint.
	0.2-0.5	Refuse, rusty chalk, metal and cable(plastics).
HA10	0-0.2	Dark topsoil and chalk.
	0.2-0.5	Refuse, glass, metal and rusty sand.

1.0 INTRODUCTION

Clayton Environmental Consultants Ltd was instructed by Mr Jonathon Atkinson of the Waste Regulation Division of Kent County Council, to carry out a site investigation at the Pegwell Bay Picnic Site, Pegwell Bay, Ramsgate, Kent on the 21st February 1992.

The investigation was commissioned to determine the presence of contamination due to Polychlorinated Biphenyls (PCB's), which from local hearsay, were deposited at the site when it operated as a local landfill.

For a fifteen to twenty year period up until 1974, Ramsgate District Council used the site as a general domestic refuse disposal site. It is thought that during the late 1960's, a local transformer works deposited PCB residues and other industrial wastes at this site.

During the period 1980-82, some basic landscaping was carried out to the site, which included a light covering of topsoil over part of the site.

Since 1982, the site has been a public reserve and a popular picnic area, with the western area being utilised for animal grazing.

2.0 SUMMARY

This initial investigation at the Pegwell Bay Picnic Site has shown some sporadic contamination due to metals and polyaromatic hydrocarbons. No significant levels of PCB's were encountered.

Remedial measures are not considered to be onerous, if the site is to remain a public open space.

Kent County Council

Babtie

Kent County Council, Waste Management Unit

Pegwell Bay Closed Landfill Site, Ramsgate.
Topsoil Assessment Report

Babtie Group
multi-disciplinary consultants

Report Copy No. 2
BGE200476 (19/97) December 2000

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Kent County Council, Waste Management Unit
Pegwell Bay Closed Landfill Site, Ramsgate
Topsoil Assessment Report

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placed to provide a protection layer of fill over the landfill capping material. However the filling operation was not completed and as a result the landform in this area is at several levels and with some stockpiles of uncompacted material. The vegetation cover varies from plush grass to patchy scrub and this would suggest the variation in quality of topsoil that exists across this part of the site.

2.4 A environmental monitoring programme operated at the site, the results from which are reported along with an environmental assessment in the Environmental Monitoring Report produced by Babtie on behalf of Kent County Council[ref.2].

Investigation

General

3.1 The site investigation in 1992[ref.1] consisted of ten sampling locations, chosen by the client, with two soil samples taken from each location, between the surface and 0.15m and the other at 0.5m. A similar sampling protocol was also adopted for this latest investigation with sampling locations chosen on site at positions representative of the site conditions.

3.2 Eleven locations were chosen, generally in the southern half of the site with the majority within the plot of land fenced off for livestock grazing purposes. One additional sample was retrieved from a stockpile of topsoil (ST1). The locations of the sampling points were determined on site using a differential global positioning system (dGPS) and are listed in Table 1 below as well as being shown on Figure 2

Table 1 Sampling point locations

	Eastings	Northings
pit 1	34021	62808
pit 2	34152	62888
pit 3	34115	63187
pit 4	33971	63056
pit 5	34066	62986
pit 6	34007	62918
pit 7	33966	62830
pit 8	33915	62782
pit 9	33879	62828
pit 10	33946	62932
pit 11	33984	63017
st1	33979	63075

3.3 Generally two soil samples were taken at each location, one from the topsoil or near surface soil and the other from the underlying soil stratum or within a depth of 0.2-0.3m bgl. Sampling was carried out by hand auger and other hand tools. The soil samples were stored in plastic air-tight containers and screw-capped glass jars for laboratory analysis.

3.4 The ground conditions encountered within the exploratory holes are described in Appendix A. Although the descriptions refer to the surface deposits where they are supporting vegetation as 'topsoil', it was generally found to be of poor quality comprising much rubble and general fill with almost a non-discernible amount of organic matter.

3.5 Excavation of the pits with hand tools was very difficult due to the soil's stoney and compact state. In pit No. 7 refuse was encountered at a depth of 0.2m and in pit No.8 excavation below 0.2m could not be achieved due to the presence of old road construction material.

Testing

Analytical Testing.

4.1 The samples were submitted for analytical testing at STL Coventry, a UKAS accredited laboratory, and tested for the same suite determinands as the 1992 investigation and detailed below.

molybdenum (total)	zinc (total)	cadmium (total)	
lead (total)	nickel (total)	chromium (total)	
chromium (hexavalent)	manganese (total)	beryllium (total)	
copper (total)	boron (water soluble)	PCBs	PAHs

4.2 A full breakdown of the PAH's and the seven congeners of the PCB's were also determined.

4.3 The results of the testing are included in Appendix B and summarised statistically in Table 2.

Table 2 – Statistical summary of Analytical Testing

	Mean* mg/kg	Mode* mg/kg	Standard Deviation*	Minimum mg/kg	Maximum mg/kg
Molybdenum	2	1	1.7	<1	4
Zinc	107	115	46.6	41	204
Cadmium	1.97		0.21	<1.7	2.2
Lead	131		139.9	27	662
Nickel	15.4	16	6.26	8	38
Chromium	21.6	21	5.92	14	35
Manganese	559.5		440.2	181	1980
Beryllium	3.5	3	1.18	2	7
Copper	39.3	25	27.45	12	131
Boron (ws)	1.1	1.3	0.28	0.4	1.5
PCB (sum of 7)	88.4	0	401.5	0	1886
PAH (total)	86.5		188.5	1.57	874

NOTES:*-Mean, Mode and Standard Deviation based on values above minimum detectable limits.

Assessment Criteria

5.1 The principal numerical criteria currently used in the UK to assess the significance of the results of contamination testing on soil samples taken from redevelopment sites are the Interdepartmental Committee on the Redevelopment of Contaminated Land (ICRCL) Trigger Values (ICRCL 59/83[ref.3]). The concept of trigger values is intended as an aid to professional judgement and a tool in the assessment of the suitability of land for the various uses. They are not intended to be regarded as standards that apply to all sites. The system is based on two trigger values, which in turn differentiate three "zones of contamination". The trigger values are defined as:

a) Threshold Trigger Values - if the concentration is less than the threshold value, the site may be treated as uncontaminated for the particular end use and no remedial action is required;

b) Action Trigger Value - if the concentration of the contaminant is greater than the action value for the intended use, the site is to be treated as contaminated and action, ranging from remedial treatment to changing the proposed end use is necessary.

5.2 Levels between threshold and action levels require degree of judgement on whether any action is required depending on the contamination levels, site end use and the associated risks.

5.3 For the purposes of this study, the ICRCL threshold values for domestic gardens and allotments have been used in view of the proposed use of the land for grazing livestock. The guidelines indicate that these values are similar to the limits for metal content of sewage sludge applied to agricultural land. Nickel, copper, water soluble boron and zinc are not considered as hazardous to humans but generally pose a risk to plant life (phytotoxic). The ICRCL guidelines for these contaminants are therefore linked to any uses where plants are to be grown.

5.4 The guidelines relate to the suitability for certain end-uses, however, their main drawback is that their coverage of contaminants is not exhaustive. For further guidance the Dutch and Canadian guidelines have also been used. The Dutch guidelines[ref.4] are based on risks to humans and the environment, irrespective of the end use. Levels above the Intervention levels indicate a significant risk which require remediation. Levels below target levels indicate soil background levels. Levels between target and intervention levels indicate that contaminants are present but not at levels that require remediation. The Canadian guidelines are from their environmental quality criteria for soil for agricultural use.[ref.5].

5.5 The 1992 investigation report does not state the criteria used to assess contamination, however the categorisation appears to match the GLC guidelines of the 1970's[ref.6]. These guidelines were developed from levels of contaminants present on known contaminated sites and do not relate directly to levels of risk. The GLC guidelines are therefore not generally used in assessing risks associated with contaminated land.

Discussion of Results

General

6.1 Topsoil of the most appropriate visible appearance was encountered in the southwestern corner of the fenced plot (pits Nos. 7-10). Elsewhere the topsoil contained a high stone content with very little organic matter.

6.2 There was no single contaminant that existed in significant quantities across the site.

Metals

6.3 The results of the testing for the metals indicate that pits 4, 5, 6, 7, 8 and 9 tend to have less concentration than the remainder. However, only the sample from Pit 11 at 0.25m had a concentration of any metal above the ICRCL threshold level, which were copper and lead at 131mg/kg and 662mg/kg respectively.

6.4 The sample from Pit 11 at 0.25m had the highest concentration of most of the metals tested for.

6.5 Comparing the results to the 1992 investigation most of the results for the metals were statistically similar and there appeared less concentrations of lead and nickel in this investigation than previous.

6.6 The results for manganese in samples from Pit 8 at 0.2m, Pit 9 at 0.1m and Pit 10 at 0.2m were significantly higher than the others, 1-2 standard deviations higher than the mean of the whole. However, these levels are not considered to pose a hazard to health.

6.7 Lead is toxic to humans principally by inhalation but also by ingestion. Copper is toxic to humans by inhalation of dust and fumes of copper salts, by ingestion and skin contact. It is phytotoxic, especially at low soil pH and low organic matter. Chronic toxicity from copper is rare. In a report by The Mersey Forest and Red Rose Forest Partnerships[ref.7] it is suggested that the plant-available copper tends to be between 25-30% of total concentrations, and it has been found that concentrations of copper exceeding the ICRCL(59/83) thresholds had levels of copper available to plants below the thresholds noted in ICRCL(70/90)

6.8 Whilst the contaminants found to exist remain buried with sufficient cover and are not disturbed, it is considered that the concentrations at which they exist will not pose a significant risk to livestock or the public using the site.

Poly Aromatic Hydrocarbons (PAH)

6.9 The levels of PAH were found to exceed the ICRCL threshold level in the following samples:

Pit 1 at 0.3m Pit 3 at 0.3m Pit 10 at 0.2m

Pit 11 at 0.25m

6.10 Sample from Pit 8 at 0.2m had a concentration of PAH higher than the ICRCL action level. This is likely to be due to the high proportion of bituminous-bound material that was present in this location.

6.11 All the samples with elevated levels of PAH were taken from the greatest depth in the pits. There was generally a greater amount of PAH encountered in this investigation than during the 1992 investigation.

6.12 PAHs are introduced into the environment as a product of natural and fossil fuel combustion. Some of the many forms of PAHs are considered to be probable or possible carcinogens. The main hazard from PAH is via skin contact and inhalation of some volatile fractions. Ingestion hazards are generally not significant and they are only slightly soluble.

Polychlorinated Biphenyls (PCBs)

6.13 The 1992 investigation reported that there was not evidence of the presence of significant amounts of PCBs in the near surface deposits to support the suggestion that PCBs had been deposited in the past. In this investigation 1.88mg/kg of PCB was found in Pit 11 at 0.25m which is slightly above the Dutch Intervention value of 1mg/kg.

6.14 PCBs are a family of organochlorine chemicals that are chemically stable, fire resistant and do not generate vapours easily. They are practically insoluble in water, but are soluble in oils and fatty acids. PCBs are not considered to be acutely toxic to humans, however, repeated exposure to PCBs can cause them to accumulate in the body. They can cause a skin condition and in animals they can cause damage to the liver and reduce the effectiveness of the immune system.

Conclusions and Recommendations

7.1 The purpose of the investigation was to determine whether the quality of the topsoil was adequate for the current and future uses of the site and to assess whether the landfill was having any affect on this quality. Soil samples were obtained across the site to obtain an overall assessment of the soil quality with particular emphasis in the area fenced off for grazing of livestock.

7.2 The site is in a state of part remediation as a consequence of a previous site investigation in 1992. The investigation concluded some sporadic contamination existed in the top half metre of the site. The level of contamination was not significantly high, however, some remedial action was considered necessary to enhance protection of the general public from the site. Concern was expressed in the report on the potential for contamination to enter the food chain via the grazing of animals on the site. Some filling with inert fill has occurred over part of the site since the issue of the report.

7.3 The topsoil was generally found to be of poor quality, being compact, stoney and containing much rubble and with very little organic matter.

7.4 Contamination was not found to be widespread across the site with only one sample, Pit 11 at 0.2m depth, having elevated levels of lead, copper, PAH and PCB. The levels of contamination did not appear to be worse than in the 1992 investigation however, the elevated levels of PAH are still present. These existed in Pits 1-3 which are outside the area of proposed grazing and in pits 8-11, which are along the northwestern half of the fenced off area.

7.5 It is suspected that some of these samples containing elevated levels of potential contaminants are within the fill material imported since the 1992 investigation.

7.6 The results from samples in Pits 1, 2 and 3 which are considered representative of the site outside of the fenced off area indicate that there is only very low risk from the soil to the public and wildlife using the site. However, it must be stressed that due to the apparent thin covering to the waste and contaminated soil any excavation for planting, fencing or other maintenance activity must be carried out with extreme caution.

7.7 Within the fenced off area the contamination encountered was in samples recovered from the greater of the two depths and was not apparent in the near surface deposits. The contaminants in their present form are considered to present a low to moderate risk whilst they remain undisturbed. However the following issues will need to be addressed:

- Refuse was encountered at a very shallow depth in Pit 7 and requires a greater depth of cover material. A minimum 1 metre depth of inert clay based capping layer should be placed in this vicinity.

- A further thickness of fill should be placed over the areas where elevated levels of PAH and PCB were encountered. Hence an additional 0.5m thickness of clean inert fill should be placed over the northwest half of the site.

- The sudden changes in levels of the final surface will need to be evened out and this should be carried out only by importing material. Any excavation work that is carried out on site creates a potential to expose refuse, spread contamination over a greater area and increase the potential risk to the public and wildlife using the site.

7.8 Figure 2 shows the areas and the depth where imported fill is recommended. The fill material must be clean inert material. It would be beneficial if the material had a high clay content in order to minimise infiltration of rainfall into the underlying waste. However it is important that the final surface profile is graded such that localised ponding of surface water does not occur.

7.9 The whole area designated for grazing should then be covered with good quality topsoil suitable for supporting the vegetation on which the livestock will graze.

References

1 **Clayton Environmental Consultants Ltd**, Investigation of former landfill site at Pegwell Bay picnic site Ramsgate Kent, Report Ref:LC1087 for Kent County Council Waste Regulation, April 1992

2 **Babtie Group,** "Pegwell Bay Closed Landfill Site, Ramsgate – Environmental Monitoring Report", BGE020314(19/97) March 2000.

3 **Interdepartmental Committee on the Redevelopment of Contaminated Land,** "Guidance on the Assessment and Development of Contaminated Land", ICRCL59/83, Second Edition, July 1987

4 **Dutch Ministry of Housing**. "Soil clean-up guidelines (Leidraad bodemsaniering)", Physical Planning and the Environment, The Hague (SDU), 1994.

5 **Canadian Council of Ministers of the Environment,** Canadian environmental quality criteria for soil, March 1997.

6 **Kelly, RT.**, Site investigation and material problems. In: Proceedings of a Conference on the Reclamation of Contaminated Land. Society of Chemical Industry (London), 1980, ppB2/1-B2/14.

7 **The Mersey Forest and Red Rose Forest Partnerships**, Creating Community Woodlands on Closed Landfill Sites – Assessing the potential for Community Woodland for Sites Disturbed by Landfilling.

Limitations and Exceptions of Assessment

Kent County Council, Waste Management Group (the Client) has requested that an assessment of the topsoil at the closed landfill site at Pegwell Bay, Ramsgate is carried out to assess the quality of the topsoil. This Topsoil Assessment Report summarises the findings of the study and provides recommendations on further monitoring and remedial works.

This report has been prepared for the sole internal use and reliance of Kent County Council. The copyright and ownership of this report is vested in the Client. Babtie Group has no liability for use by third parties.

The findings and opinions conveyed via this report are based on information obtained from a variety of sources as detailed within this report, and which Babtie Group believe are reliable unless otherwise stated in the text. Nevertheless, Babtie Group cannot and does not guarantee the authenticity or reliability of the information it has relied upon.

The report represents the findings and opinions of experienced engineering consultants. Babtie Group does not provide legal advice and the advice of solicitors may also be required.

The Client is advised that the conditions observed by Babtie Group at the time of the walk-over survey and during the investigation are subject to change. Certain indicators of the presence of hazardous substances may have been latent at the time of the most recent site reconnaissance and may subsequently have become observable.

The advice given in this report with respect to contaminated land/pollution is based on the guidelines available at the time of writing. It is advised that changes in legislation are due to be implemented with supporting guidelines sometime in 2001 that could affect the recommendations and findings of this report. Babtie offers to advise on the impact of this legislation at the appropriate time, and if requested.

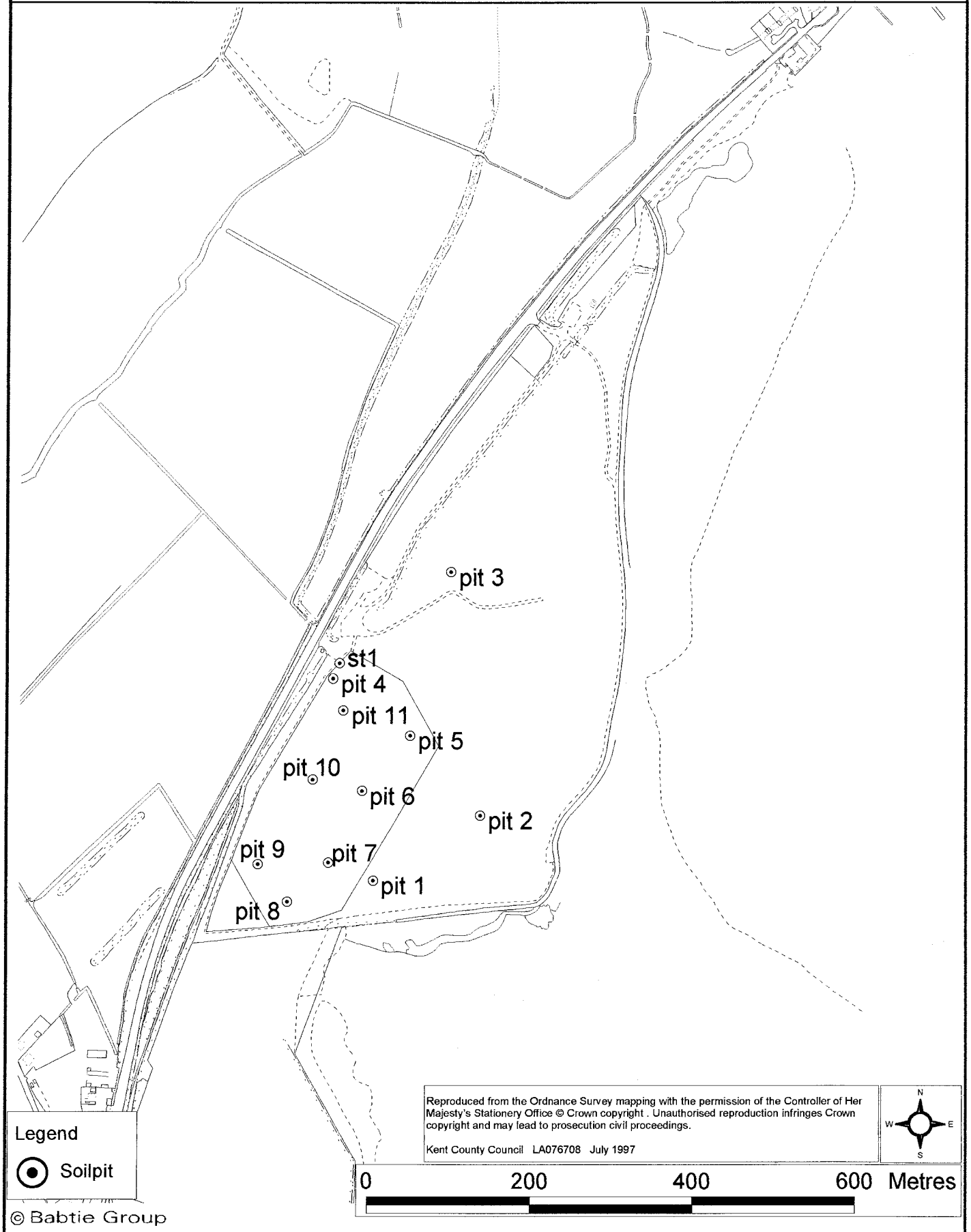
Babtie Group believes that providing information about limitations is essential to help the Client identify and thereby manage risks. These risks can be mitigated - but they cannot be eliminated, through additional research. Babtie Group will on request advise the Client of the additional research opportunities available, their impact on risk, and their cost.

Data Presentation

Figures.

Client **Kent County Council - Waste Management Unit**

Job **Pegwell Bay Closed Landfill Site, Ramsgate**



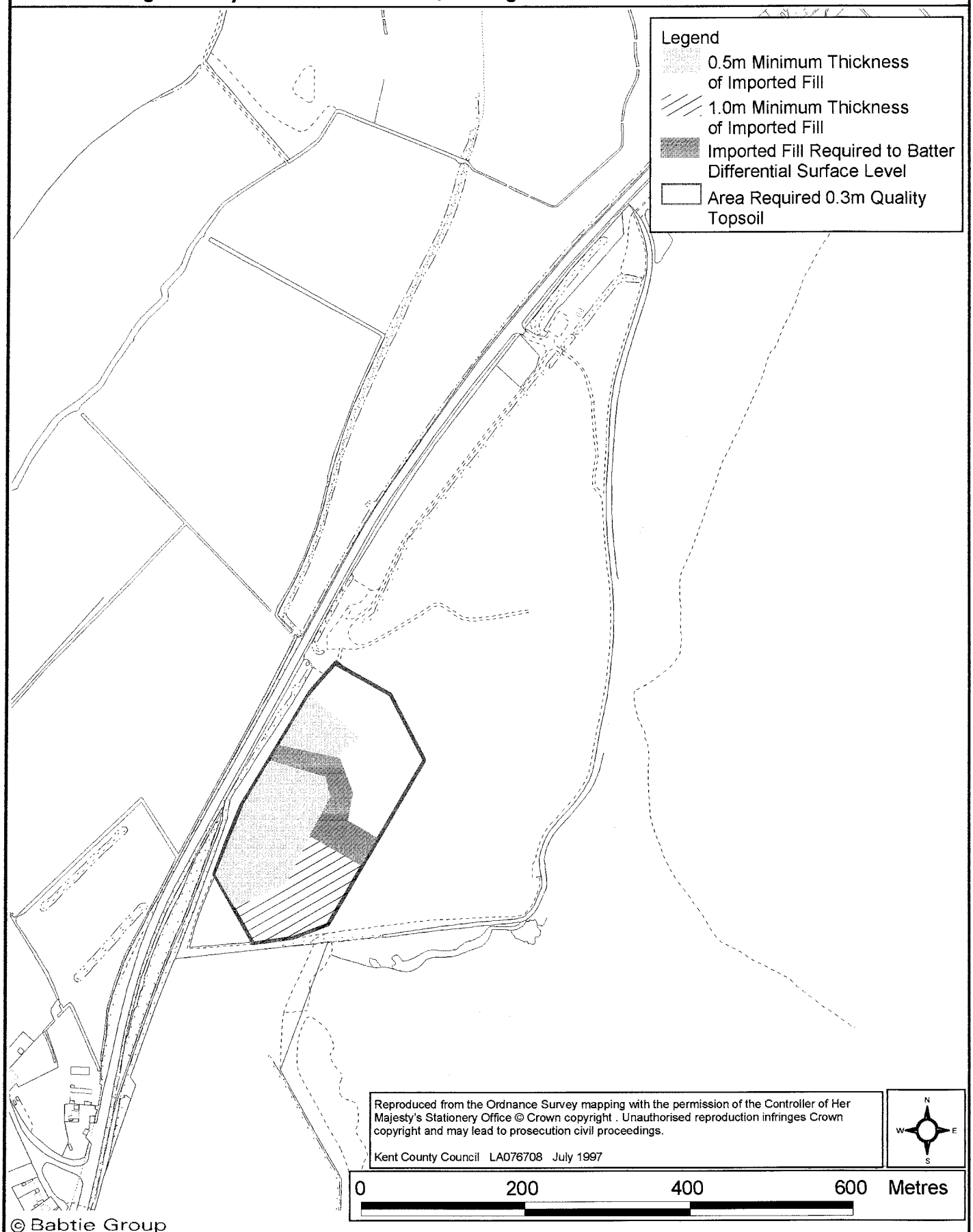
Babtie

Soil Pit Locations

PROJ. No.	**19/97**
FIG No.	**1**
DATE	**Nov 00**

Client **Kent County Council - Waste Management Unit**

Job **Pegwell Bay Closed Landfill Site, Ramsgate**



Babtie

Proposed Remedial Measures

PROJ. No.	**19/97**
FIG No.	**2**
DATE	**Nov 00**

Appendix A

Exploratory Pit Descriptions

Depth	Description
Pit 1 0 – 0.3m	Hard light grey-brown gravelly TOPSOIL with much chalk pellets and brick fragments.
Pit 2 0 – 0.3m	Hard light grey-brown gravelly TOPSOIL with much chalk pellets and brick fragments. Some concrete and flint cobbles.
Pit 3 0 - 0.1m 0.1 – 0.3m	Dark brown TOPSOIL Hard orange-brown gravelly sandy CLAY, with much brick and flint fragments.
Pit 4 0 – 0.2	Very dense brown clayey GRAVEL comprising much flint pebbles and concrete/brick rubble.
Pit 5 0 – 0.15m 0.15 – 0.3m	Medium dense reddish brown clayey SAND Very hard clayey brick and concrete rubble.
Pit 6 0 – 0.15m 0.15 - -0.25m	Medium dense reddish brown clayey SAND Dense light grey rubbly SAND with much gravel-sized brick rubble.
Pit 7 0 – 0.1m 0.1 – 0.3m 0.3 -	Medium dense brown sandy TOPSOIL Dense rubbly SAND with much brick fragments and flint gravel. Cloth and general refuse.
Pit 8 0 – 0.1m 0.1 – 0.2m	Dark brown clayey TOPSOIL Very dense bituminous based rubble with much flint gravel. Could not penetrate beyond 0.2m.
Pit 9 0 – 0.1m 0.1 – 0.25m	Dark brown clayey TOPSOIL Very dense gravelly CLAY with much flint gravel, general rubble and chalk pellets.
Pit 10 0 – 0.1m 0.1 – 0.2m	Dark brown clayey TOPSOIL Dense brown clayey gravelly SAND with much brick rubble.

Pit 11	
0 – 0.1m	Brown sandy TOPSOIL
0.1 – 0.25m	Dense light brown gravelly SAND with much flints, bricks and glass fragments.

Appendix B

Analytical testing

Report Summary

NAMAS
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STL COVENTRY

SEVERN TRENT SERVICES

Mr K D Pearce
Babtie Geotechnical
Doubleday House
St. Michael`s Close
Aylesford
Kent

ME20 7BU

Date of Issue : 17 October 2000

Report Number : TH/ 93652/2000 Issue 1

Number of Samples included in report **22**

Site Name : **19/97 PEGWELL BAY**

Job Received : **03 October 2000**

Signed : J Fell Name : **J. Fell** Date : 17 October 2000

Unless otherwise stated Severn Trent Laboratories was not responsible for sampling
Information on the methods of analysis and performance characteristics are available on request
Opinions and interpretationsexpressed herein are outside the scope of UKAS accreditation
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory

Certificate of Analysis

NAMAS
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No. 1314
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STL COVENTRY SEVERN TRENT SERVICES

Report Number : **TH/ 93652/2000** **Issue 1**

Site Name : **19/97 PEGWELL BAY**

STL ID	Client ID	BENZ GHI mg/kg	MO DRY WT mg/kg	CD DRY WT mg/kg	CR DRY WT mg/kg	CU DRY WT mg/kg	PB DRY WT mg/kg	NI DRY WT mg/kg	ZN DRY WT mg/kg	MN DRY WT mg/kg	BE DRY WT mg/kg *	ANTHRACEN mg/kg	BENZ(A)PY mg/kg
739500	PG/PIT1/0.15	2.11	<1	<1.7	35	60	86	22	134	334	2	0.73	2.79
739501	PG/PIT1/0.3	13.3	<1	1.8	34	82	170	17	204	611	4	9.51	17.8
739502	PG/PIT2/0.15	2.64	<1	<1.7	24	35	214	15	111	318	3	1.41	4.44
739503	PG/PIT2/0.3	1.60	<1	<1.7	16	17	294	11	83	346	2	<0.5	2.22
739504	PG/PIT3/0.15	0.95	<1	<1.7	21	25	100	15	103	494	4	<0.5	1.24
739505	PG/PIT3/0.3	13.4	<1	<1.7	20	42	242	16	189	591	3	4.28	19.6
739506	PG/PIT4/0.1	0.77	<1	<1.7	14	30	54	8	115	181	2	<0.5	1.06
739507	PG/PIT4/0.2	<0.5	<1	<1.7	15	43	59	12	118	222	3	<0.5	0.60
739508	PG/PIT5/0.15	<0.5	<1	<1.7	17	14	37	15	44	423	3	<0.5	<0.5
739509	PG/PIT5/0.3	0.90	<1	<1.7	21	19	51	12	56	362	3	<0.5	0.92
739510	PG/PIT6/0.1	<0.5	<1	<1.7	17	12	32	14	41	433	3	<0.5	0.61
739511	PG/PIT6/0.25	<0.5	<1	<1.7	28	25	61	16	72	400	3	<0.5	0.56
739512	PG/PIT7/0.15	1.88	<1	<1.7	22	29	130	16	120	349	3	0.59	2.43
739513	PG/PIT7/0.25	0.75	<1	<1.7	21	56	43	18	89	452	4	<0.5	1.04
739514	PG/PIT8/0.2	56.5	<1	<1.7	18	20	47	8	74	1980	5	17.0	82.6
739515	PG/PIT9/0.1	3.60	<1	<1.7	16	26	63	13	76	575	3	1.25	4.49
739516	PG/PIT9/0.25	1.90	<1	<1.7	15	12	27	9	48	1010	4	0.64	2.01
739517	PG/PIT10/0.1	2.33	<1	<1.7	19	54	91	16	115	391	3	0.89	3.12
739518	PG/PIT10/0.2	5.00	<1	<1.7	24	31	103	10	86	1630	5	3.75	7.10
739519	PG/PIT11/0.1	3.02	1	1.9	23	43	110	20	131	532	5	0.78	4.21
739520	PG/PIT11/0.25	3.28	4	2.2	26	131	662	38	174	329	7	2.50	5.01
739521	PG/ST1	0.66	1	<1.7	29	58	198	18	172	347	4	<0.5	0.81

* = Not UKAS accredited S = Sub-contracted analysis

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STL COVENTRY

SEVERN TRENT SERVICES

Report Number : **TH/ 93652/2000** **Issue 1**

Site Name : **19/97 PEGWELL BAY**

STL ID	Client ID	BENZ-B-FL mg/kg	BENZ-K-FL mg/kg	ACENAPHTE mg/kg	ACENAPTHY mg/kg	BENZ-A-AN mg/kg	CHRYSENE mg/kg	DIBENZ-AH mg/kg	FLUORANTH mg/kg	FLUORENE mg/kg	INDEN 123 mg/kg	NAPTHALEN mg/kg	PAH TOT mg/kg
739500	PG/PIT1/0.15	2.73	2.41	<0.5	<0.5	2.98	2.78	<0.5	6.29	<0.5	3.18	<0.5	34.0
739501	PG/PIT1/0.3	15.9	13.7	3.27	0.75	19.0	16.7	3.25	39.3	3.67	18.6	<0.5	245
739502	PG/PIT2/0.15	4.16	3.88	<0.5	0.63	5.44	4.75	0.83	8.46	<0.5	4.58	<0.5	52.8
739503	PG/PIT2/0.3	2.04	1.97	<0.5	<0.5	2.47	2.34	<0.5	4.42	<0.5	2.51	<0.5	25.1
739504	PG/PIT3/0.15	1.10	1.17	<0.5	<0.5	1.23	1.21	<0.5	2.36	<0.5	1.40	<0.5	13.6
739505	PG/PIT3/0.3	19.2	14.7	0.52	2.87	20.8	18.7	3.64	40.9	1.19	20.5	0.66	234
739506	PG/PIT4/0.1	0.95	0.91	<0.5	<0.5	1.12	1.04	<0.5	2.01	<0.5	1.18	<0.5	11.6
739507	PG/PIT4/0.2	0.58	0.50	<0.5	<0.5	0.52	0.57	<0.5	1.03	<0.5	0.65	<0.5	4.86
739508	PG/PIT5/0.15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.87	<0.5	<0.5	<0.5	1.57
739509	PG/PIT5/0.3	0.86	0.70	<0.5	<0.5	0.70	0.76	<0.5	1.40	<0.5	1.20	<0.5	9.20
739510	PG/PIT6/0.1	0.60	0.51	<0.5	<0.5	0.56	0.61	<0.5	1.15	<0.5	0.63	<0.5	5.63
739511	PG/PIT6/0.25	0.53	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.90	<0.5	0.64	<0.5	3.41
739512	PG/PIT7/0.15	2.42	1.89	<0.5	<0.5	2.11	2.20	<0.5	3.94	<0.5	2.69	<0.5	25.9
739513	PG/PIT7/0.25	1.04	0.85	<0.5	<0.5	1.15	1.19	<0.5	2.87	<0.5	1.06	<0.5	14.4
739514	PG/PIT8/0.2	66.2	65.9	<5.0	5.96	72.2	67.2	12.3	148	<5.0	81.3	<5.0	874
739515	PG/PIT9/0.1	4.07	3.39	<0.5	0.51	3.79	3.78	0.80	7.86	<0.5	5.31	<0.5	50.5
739516	PG/PIT9/0.25	1.96	1.60	<0.5	<0.5	1.83	1.94	<0.5	3.99	<0.5	2.68	<0.5	24.3
739517	PG/PIT10/0.1	3.09	2.55	<0.5	<0.5	3.14	3.11	0.57	6.95	<0.5	3.55	<0.5	38.8
739518	PG/PIT10/0.2	6.73	5.81	0.58	1.31	7.95	7.12	1.16	19.6	1.13	7.78	<0.5	106
739519	PG/PIT11/0.1	3.94	3.25	<0.5	<0.5	3.53	3.54	0.75	7.17	<0.5	4.61	<0.5	43.9
739520	PG/PIT11/0.25	4.76	4.42	0.84	<0.5	5.49	5.27	0.76	13.8	0.56	5.13	<0.5	75.1
739521	PG/ST1	0.83	0.66	<0.5	<0.5	0.72	0.82	<0.5	1.50	<0.5	0.96	<0.5	8.81

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STL COVENTRY

SEVERN TRENT SERVICES

Report Number : **TH/ 93652/2000** **Issue 1**

Site Name : **19/97 PEGWELL BAY**

STL ID	Client ID	PHENANTHR mg/kg	PYRENE mg/kg	PCB 101 ug/kg	PCB 118 ug/kg	PCB 138 ug/kg	PCB 153 ug/kg	PCB 180 ug/kg	PCB 28 ug/kg	PCB 52 ug/kg	B WS/DW mg/kg	CR(6)DW mg/kg *
739500	PG/PIT1/0.15	2.77	5.25	<2	<2	<2	<2	<2	<2	<2	1.5	<10
739501	PG/PIT1/0.3	33.8	36.1	<2	<2	<2	<2	<2	<2	5	1.2	<10
739502	PG/PIT2/0.15	4.22	7.41	<2	<2	4	4	<2	<2	<2	1.4	<10
739503	PG/PIT2/0.3	1.72	3.79	<2	<2	<2	<2	<2	<2	<2	1.3	<10
739504	PG/PIT3/0.15	0.87	2.03	<2	<2	<2	<2	<2	<2	<2	1.3	<10
739505	PG/PIT3/0.3	16.7	36.1	<50	<50	<50	<50	<50	<50	<50	1.3	<10
739506	PG/PIT4/0.1	0.82	1.78	<20	<20	<20	<20	<20	<20	<20	1.0	<10
739507	PG/PIT4/0.2	<0.5	0.91	5	<2	6	7	5	<2	4	0.8	<10
739508	PG/PIT5/0.15	<0.5	0.70	<2	<2	<2	<2	<2	<2	<2	1.1	<10
739509	PG/PIT5/0.3	0.54	1.23	<20	<20	<20	<20	<20	<20	<20	1.0	<10
739510	PG/PIT6/0.1	<0.5	0.96	<20	<20	<20	<20	<20	<20	<20	0.8	<10
739511	PG/PIT6/0.25	<0.5	0.80	<2	<2	<2	<2	<2	<2	<2	0.7	<10
739512	PG/PIT7/0.15	2.32	3.46	<2	<2	<2	<2	<2	<2	<2	1.2	<10
739513	PG/PIT7/0.25	2.05	2.37	2	2	<2	<2	<2	2	6	1.1	<10
739514	PG/PIT8/0.2	43.5	155	<20	<20	<20	<20	<20	<20	<20	0.7	<10
739515	PG/PIT9/0.1	4.85	6.78	<20	<20	<20	<20	<20	<20	<20	1.3	<10
739516	PG/PIT9/0.25	2.34	3.38	<20	<20	<20	<20	<20	<20	<20	1.1	<10
739517	PG/PIT10/0.1	3.62	5.92	<2	<2	<2	<2	<2	<2	<2	1.0	<10
739518	PG/PIT10/0.2	15.5	15.9	<50	<50	<50	<50	<50	<50	<50	0.4	<10
739519	PG/PIT11/0.1	2.49	6.64	<2	<2	3	3	<2	<2	<2	1.4	<10
739520	PG/PIT11/0.25	11.8	11.4	455	361	389	430	84	11	156	1.2	<10
739521	PG/ST1	0.56	1.30	<2	<2	<2	<2	<2	<2	<2	1.4	<10

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STL COVENTRY SEVERN TRENT SERVICES

Report Number : **TH/ 93652/2000** **Issue 1**

Site Name : **19/97 PEGWELL BAY**

STL ID	Client ID	PHENANTHR mg/kg	PYRENE mg/kg	PCB 101 ug/kg	PCB 118 ug/kg	PCB 138 ug/kg	PCB 153 ug/kg	PCB 180 ug/kg	PCB 28 ug/kg	PCB 52 ug/kg	B WS/DW mg/kg	CR(6)DW mg/kg *

Signed : J Fell Name : **J. Fell** Date : 17 October 2000

Severn Trent Laboratories Ltd
STL Business Centre, Torrington Avenue, Coventry CV4 9GU Tel : 02476 421213 Fax : 02476 856575

STL COVENTRY SEVERN TRENT SERVICES

ANALYST COMMENTS FOR REPORT TH/ 93652/2000

Sample No	Analyst Comments
739500	
739501	
739502	
739503	
739504	
739505	
739506	
739507	
739508	
739509	
739510	
739511	
739512	
739513	
739514	Due to the nature of the sample,a dilution was required for PAHs and the reporting limit raised.
739515	
739516	
739517	
739518	

Signed : JFell Name : **J. Fell** Date : 17 October 2000

STL COVENTRY

SEVERN TRENT SERVICES

ANALYST COMMENTS FOR REPORT TH/ 93652/2000

Sample No	Analyst Comments
739519	
739520	
739521	

Signed : JFell Name : **J. Fell** Date : 17 October 2000

Notice of variation with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Augean Treatment Limited

East Kent Waste Recovery Facility
Ramsgate Road
Sandwich
Kent
CT13 9NJ

Variation application number

EPR/UP3034CN/V005

Permit number

EPR/UP3034CN

East Kent Waste Recovery Facility
Permit number EPR/UP3034CN

Introductory note

This introductory note does not form a part of the notice.

The following notice gives notice of the variation of an environmental permit.

At the request of the operator, this variation is to add two waste codes; 16 02 13* discarded equipment containing hazardous components other than those mentioned in 16 02 09 to 16 02 12 and 16 02 16 components removed from discarded equipment other than those mentioned in 16 02 15 to table S2.2.

The status log of a permit sets out the permitting history, including any changes to the permit reference number.

Status log of the permit		
Description	**Date**	**Comments**
Application EPR/HP3539LX received	Duly made 19/04/06	
Additional information requested	19/05/06	Direct Toxicity Assessment & Air Quality Impact Assessment.
Additional information requested	19/06/06	Application site report.
Additional information requested	13/07/06	Direct toxicity assessment, Multi Product Protocol.
Additional information requested	04/09/06	Thermal oxidiser operation, reduction of emission points and operation of Hydrogenator.
Additional information requested	06/09/06	Scrubber operations.
Permit determined	07/11/06	
Application FP3332UR	Duly made 17/08/07	Request to modify ½ hour CO emission limit value on incinerator.
Request for further information	17/08/07	
Additional information submitted by operator	28/08/07	
Variation FP3332UR determined	25/10/07	
Application EP3839GM	Duly made 27/11/08	Request to correct errors and affect minor alterations to original permit conditions and vary limits of waste types and permit import of wastes delivered to incinerator etc.
Variation EP3839GM determined	27/04/09	
Application EPR/HP3539LX/V004	Duly made 18/09/09	
Additional information requested	17/12/09	UV treatment operating procedures and sampling changes - response 19/01/10.
Additional information requested	20/01/10	Effluent monitoring standards – response 20/01/10 & 21/01/10.
Final clarification of sampling and reporting details received	05/02/10	
Variation EPR/HP3539LX/V004 determined	11/02/10	
Application EPR/HP3539LX/V006		
Additional information received	26/04/10	
Variation issued	23/06/10	
Variation application EPR/HP3539LX/V007	19/10/10	
Variation determined EPR/HP3539LX	30/03/11	

Status log of the permit		
Description	**Date**	**Comments**
Application for partial surrender EPR/HP3539LX/S008	20/01/11	
Application (variation and consolidation) EPR/HP3539LX/V009		
Additional information received	14/04/11	
Variation and consolidation determined EPR/HP3539LX/V009	16/06/11	Varied and consolidated permit issued in modern condition format.
Application EPR/UP3034CN/T001 (part transfer of permit EPR/HP3539LX)	Duly made 17/04/12	Application to transfer high temperature incinerator and solvent handling facility to Augean Treatment Limited.
Transfer determined EPR/UP3034CN	01/06/12	Transfer of high temperature incinerator and solvent handling facility complete.
Agency variation determined EPR/UP3034CN/V002	13/01/14	Agency variation to implement the changes introduced by IED.
Application for variation EPR/UP3034CN/V003	12/11/2014	Further information required.
Additional information received	12/01/2015	Application duly made.
Variation determined	09/04/2015	Variation notice issued
Application EPR/UP3034CN/V004 (variation)	Duly made 11/08/16	Application to add 2 EWC wastes codes.
Variation determined EPR/UP3034CN	24/08/16	Varied permit issued.
Application EPR/UP3034CN/V005 (variation)	Duly made 31/01/17	Application to add 2 EWC wastes codes.
Variation determined EPR/UP3034CN (Billing Ref: UP3035YN)	15/02/17	Varied permit issued.

End of introductory note

Notice of variation

The Environmental Permitting (England and Wales) Regulations 2010

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2010 varies

Permit number

EPR/UP3034CN

Issued to

Augean Treatment Limited ("the operator")

whose registered office is

4 Rudgate Court
Walton
Nr Weatherby
West Yorkshire
LS23 7BF

company registration number 04062656

to operate a regulated facility at

East Kent Waste Recovery Facility
Ramsgate Road
Sandwich
Kent
CT13 9NJ

to the extent set out in the schedules.

This notice shall take effect from 15/02/2017

Name	Date
J Linton	**16/02/2017**

Authorised on behalf of the Environment Agency

Schedule 1 – conditions to be deleted

None

Schedule 2 – conditions to be amended

The following conditions are amended as a result of the application made by the operator

Table S2.2 referenced in the condition 2.3.2 is amended as follows:

Table S2.2 Permitted waste types and quantities for incineration	
Maximum quantity	Throughput 1,500 kg/hr
Waste code	**Description**
02	**Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing**
02 01	**wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing**
02 01 01	sludges from washing and cleaning
02 01 02	animal-tissue waste
02 01 03	plant-tissue waste
02 01 04	Waste plastics (except packaging)
02 01 06	animal faeces, urine and manure (including spoiled straw), effluent, collected separately and treated off-site
02 01 07	wastes from forestry
02 01 08*	agrochemical waste containing dangerous substances
02 01 09	agrochemical waste other than those mentioned in 02 01 08
02 01 10	waste metal
02 02	**wastes from the preparation and processing of meat, fish and other foods of animal origin**
02 02 01	sludges from washing and cleaning
02 02 02	animal-tissue waste
02 02 03	materials unsuitable for consumption or processing
02 02 04	sludges from on-site effluent treatment
02 03	**wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation**
02 03 01	sludges from washing, cleaning, peeling, centrifuging and separation
02 03 02	wastes from preserving agents
02 03 03	wastes from solvent extraction
02 03 04	materials unsuitable for consumption or processing
02 03 05	sludges from on-site effluent treatment
02 04	**wastes from sugar processing**
02 04 01	soil from cleaning and washing beet
02 04 02	off-specification calcium carbonate
02 04 03	sludges from on-site effluent treatment
02 05	**wastes from the dairy products industry**
02 05 01	materials unsuitable for consumption or processing
02 05 02	sludges from on-site effluent treatment
02 06	**wastes from the bakingand confectionery industry**
02 06 01	materials unsuitable for consumption or processing

Table S2.2 Permitted waste types and quantities for incineration	
Maximum quantity	Throughput 1,500 kg/hr
Waste code	**Description**
02 06 02	wastes from preserving agents
02 06 03	sludges from on-site effluent treatment
02 07	**wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)**
02 07 01	wastes from washing, cleaning and mechanical reduction of raw materials
02 07 02	wastes from spirits distillation
02 07 03	wastes from chemical treatment
02 07 04	materials unsuitable for consumption or processing
02 07 05	sludges from on-site effluent treatment
03	**Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard**
03 01	**wastes from wood processing and the production of panels and furniture**
03 01 01	waste bark and cork
03 01 04*	sawdust, shavings, cuttings, wood, particle board and veneer containing dangerous substances
03 01 05	sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04
03 02	**wastes from wood preservation**
03 02 01*	non-halogenated organic wood preservatives
03 02 02*	organochlorinated wood preservatives
03 02 03*	organometallic wood preservatives
03 02 04*	inorganic wood preservatives
03 02 05*	other wood preservatives containing dangerous substances
03 03	**wastes from pulp, paper and cardboard production and processing**
03 03 01	waste bark and wood
03 03 02	green liquor sludge (from recovery of cooking liquor)
03 03 05	de-inking sludges from paper recycling
03 03 07	mechanically separated rejects from pulping of waste paper and cardboard
03 03 08	wastes from sorting of paper and cardboard destined for recycling
03 03 09	lime mud waste
03 03 10	fibre rejects, fibre-, filler- and coating-sludges from mechanical separation
03 03 11	sludges from on-site effluent treatment other than those mentioned in 03 03 10
04	**Wastes from the leather, fur and textile industries**
04 01	**wastes from the leather and fur industry**
04 01 01	fleshings and lime split wastes
04 01 02	liming waste
04 01 03*	degreasing wastes containing solvents without a liquid phase
04 01 04	tanning liquor containing chromium
04 01 05	tanning liquor free of chromium
04 01 06	sludges, in particular from on-site effluent treatment containing chromium
04 01 07	sludges, in particular from on-site effluent treatment free of chromium

Table S2.2 Permitted waste types and quantities for incineration	
Maximum quantity	Throughput 1,500 kg/hr
Waste code	**Description**
04 01 08	waste tanned leather (blue sheetings, shavings, cuttings, buffing dust) containing chromium
04 01 09	wastes from dressing and finishing
04 02	**wastes from the textile industry**
04 02 09	wastes from composite materials (impregnated textile, elastomer, plastomer)
04 02 10	organic matter from natural products (for example grease, wax)
04 02 14*	wastes from finishing containing organic solvents
04 02 15	wastes from finishing other than those mentioned in 04 02 14
04 02 16*	dyestuffs and pigments containing dangerous substances
04 02 17	dyestuffs and pigments other than those mentioned in 04 02 16
04 02 19*	sludges from on-site effluent treatment containing dangerous substances
04 02 20	sludges from on-site effluent treatment other than those mentioned in 04 02 19
04 02 21	wastes from unprocessed textile fibres
04 02 22	wastes from processed textile fibres
05	**Wastes from petroleum refining, natural gas purification and pyrolytic treatment of coal**
05 01	**wastes from petroleum refining**
05 01 02*	desalter sludges
05 01 03*	tank bottom sludges
05 01 04*	acid alkyl sludges
05 01 05*	oil spills
05 01 06*	oily sludges from maintenance operations of the plant or equipment
05 01 07*	acid tars
05 01 08*	other tars
05 01 09*	sludges from on-site effluent treatment containing dangerous substances
05 01 10	sludges from on-site effluent treatment other than those mentioned in 05 01 09
05 01 11*	wastes from cleaning of fuels with bases
05 01 12*	oil containing acids
05 01 13	boiler feedwater sludges
05 01 14	wastes from cooling columns
05 01 15*	spent filter clays
05 01 16	sulphur-containing wastes from petroleum desulphurisation
05 01 17	bitumen
05 06	**wastes from the pyrolytic treatment of coal**
05 06 01*	acid tars
05 06 03*	other tars
05 06 04	waste from cooling columns
05 07	**wastes from natural gas purification and transportation**
05 07 01*	wastes containing mercury
05 07 02	wastes containing sulphur
06	**Wastes from inorganic chemical processes**

Table S2.2 Permitted waste types and quantities for incineration	
Maximum quantity	Throughput 1,500 kg/hr
Waste code	**Description**
06 01	**wastes from the manufacture, formulation, supply and use (MFSU) of acids**
06 01 01*	sulphuric acid and sulphurous acid
06 01 02*	hydrochloric acid
06 01 03*	hydrofluoric acid
06 01 04*	phosphoric and phosphorous acid
06 01 05*	nitric acid and nitrous acid
06 01 06*	other acids
06 02	**wastes from the MFSU of bases**
06 02 01*	calcium hydroxide
06 02 03*	ammonium hydroxide
06 02 04*	sodium and potassium hydroxide
06 02 05*	other bases
06 03	**wastes from the MFSU of salts and their solutions and metallic oxides**
06 03 11*	solid salts and solutions containing cyanides
06 03 13*	solid salts and solutions containing heavy metals
06 03 14	solid salts and solutions other than those mentioned in 06 03 11 and 06 03 13
06 03 15*	metallic oxides containing heavy metals
06 03 16	metallic oxides other than those mentioned in 06 03 15
06 04	**metal-containing wastes other than those mentioned in 06 03**
06 04 03*	wastes containing arsenic
06 04 04*	wastes containing mercury
06 04 05*	wastes containing other heavy metals
06 05	**sludges from on-site effluent treatment**
06 05 02*	sludges from on-site effluent treatment containing dangerous substances
06 05 03	sludges from on-site effluent treatment other than those mentioned in 06 05 02
06 06	**wastes from the MFSU of sulphur chemicals, sulphur chemical processes and desulphurisation processes**
06 06 02*	wastes containing dangerous sulphides
06 06 03	wastes containing sulphides other than those mentioned in 06 06 02
06 07	**wastes from the MFSU of halogens and halogen chemical processes**
06 07 01*	wastes containing asbestos from electrolysis
06 07 02*	activated carbon from chlorine production
06 07 03*	barium sulphate sludge containing mercury
06 07 04*	solutions and acids, for example contact acid
06 08	**wastes from the MFSU of silicon and silicon derivatives**
06 08 02*	waste containing dangerous silicones
06 09	**wastes from the MSFU of phosphorous chemicals and phosphorous chemical processes**
06 09 02	phosphorous slag
06 09 03*	calcium-based reaction wastes containing or contaminated with dangerous substances

Table S2.2 Permitted waste types and quantities for incineration	
Maximum quantity	Throughput 1,500 kg/hr
Waste code	**Description**
06 09 04	calcium-based reaction wastes other than those mentioned in 06 09 03
06 10	**wastes from the MFSU of nitrogen chemicals, nitrogen chemical processes and fertiliser manufacture**
06 10 02*	wastes containing dangerous substances
06 11	**wastes from the manufacture of inorganic pigments and opacificiers**
06 11 01	calcium-based reaction wastes from titanium dioxide production
06 13	**wastes from inorganic chemical processes not otherwise specified**
06 13 01*	inorganic plant protection products, wood-preserving agents and other biocides
06 13 02*	spent activated carbon (except 06 07 02)
06 13 03	carbon black
06 13 04	Wastes from asbestos processing*
06 13 05*	soot
07	**Wastes from organic chemical processes**
07 01	**wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals**
07 01 01*	aqueous washing liquids and mother liquors
07 01 03*	organic halogenated solvents, washing liquids and mother liquors
07 01 04*	other organicsolvents, washing liquids and mother liquors
07 01 07*	halogenated still bottoms and reaction residues
07 01 08*	other still bottoms and reaction residues
07 01 09*	halogenated filter cakes and spent absorbents
07 01 10*	other filter cakes and spent absorbents
07 01 11*	sludges from on-site effluent treatment containing dangerous substances
07 01 12	sludges from on-site effluent treatment other than those mentioned in 07 01 11
07 02	**wastes from the MFSU of plastics, synthetic rubber and man-made fibres**
07 02 01*	aqueous washing liquids and mother liquors
07 02 03*	organic halogenated solvents, washing liquids and mother liquors
07 02 04*	other organic solvents, washing liquids and mother liquors
07 02 07*	halogenated still bottoms and reaction residues
07 02 08*	other still bottoms and reaction residues
07 02 09*	halogenated filter cakes and spent absorbents
07 02 10*	other filter cakes and spent absorbents
07 02 11*	sludges from on-site effluent treatment containing dangerous substances
07 02 12	sludges from on-site effluent treatment other than those mentioned in 07 02 11
07 02 13	waste plastic
07 02 14*	wastes from additives containing dangerous substances
07 02 15	wastes from additives other than those mentioned in 07 02 14
07 02 16*	waste containing dangerous silicones
07 02 17	waste containing silicones other than those mentionned in 07 02 16
07 03	**wastes from the MFSU of organic dyes and pigments (except 06 11)**

Table S2.2 Permitted waste types and quantities for incineration	
Maximum quantity	Throughput 1,500 kg/hr
Waste code	**Description**
07 03 01*	aqueous washing liquids and mother liquors
07 03 03*	organic halogenated solvents, washing liquids and mother liquors
07 03 04*	other organic solvents, washing liquids and mother liquors
07 03 07*	halogenated still bottoms and reaction residues
07 03 08*	other still bottoms and reaction residues
07 03 09*	halogenated filter cakes and spent absorbents
07 03 10*	other filter cakes and spent absorbents
07 03 11*	sludges from on-site effluent treatment containing dangerous substances
07 03 12	sludges from on-site effluent treatment other than those mentioned in 07 03 11
07 04	**wastes from the MFSU of organic plant protection products (except 02 01 08 and 02 01 09), wood preserving agents (except 03 02) and other biocides**
07 04 01*	aqueous washing liquids and mother liquors
07 04 03*	organic halogenated solvents, washing liquids and mother liquors
07 04 04*	other organic solvents, washing liquids and mother liquors
07 04 07*	halogenated still bottoms and reaction residues
07 04 08*	other still bottoms and reaction residues
07 04 09*	halogenated filter cakes and spent absorbents
07 04 10*	other filter cakes and spent absorbents
07 04 11*	sludges from on-site effluent treatment containing dangerous substances
07 04 12	sludges from on-site effluent treatment other than those mentioned in 07 04 11
07 04 13*	solid wastes containing dangerous substances
07 05	**wastes from the MFSU of pharmaceuticals**
07 05 01*	aqueous washing liquids and mother liquors
07 05 03*	organic halogenated solvents, washing liquids and mother liquors
07 05 04*	other organic solvents, washing liquids and mother liquors
07 05 07*	halogenated still bottoms and reaction residues
07 05 08*	other still bottoms and reaction residues
07 05 09*	halogenated filter cakes and spent absorbents
07 05 10*	other filter cakes and spent absorbents
07 05 11*	sludges from on-site effluent treatment containing dangerous substances
07 05 12	sludges from on-site effluent treatment other than those mentioned in 07 05 11
07 05 13*	solid wastes containing dangerous substances
07 05 14	solid wastes other than those mentioned in 07 05 13
07 06	**wastes from the MFSU of fats, grease, soaps, detergents, disinfectants and cosmetics**
07 06 01*	aqueous washing liquids and mother liquors
07 06 03*	organic halogenated solvents, washing liquids and mother liquors
07 06 04*	other organic solvents, washing liquids and mother liquors
07 06 07*	halogenated still bottoms and reaction residues
07 06 08*	other still bottoms and reaction residues
07 06 09*	halogenated filter cakes and spent absorbents

Table S2.2 Permitted waste types and quantities for incineration	
Maximum quantity	Throughput 1,500 kg/hr
Waste code	**Description**
07 06 10*	other filter cakes and spent absorbents
07 06 11*	sludges from on-site effluent treatment containing dangerous substances
07 06 12	sludges from on-site effluent treatment other than those mentioned in 07 06 11
07 07	**wastes from the MFSU of fine chemicals and chemical products not otherwise specified**
07 07 01*	aqueous washing liquids and mother liquors
07 07 03*	organic halogenated solvents, washing liquids and mother liquors
07 07 04*	other organic solvents, washing liquids and mother liquors
07 07 07*	halogenated still bottoms and reaction residues
07 07 08*	other still bottoms and reaction residues
07 07 09*	halogenated filter cakes and spent absorbents
07 07 10*	other filter cakes and spent absorbents
07 07 11*	sludges from on-site effluent treatment containing dangerous substances
07 07 12	sludges from on-site effluent treatment other than those mentioned in 07 07 11
08	**Wastes from the manufacture, formulation, supply and use (MFSU) of coatings (paints, varnishes and vitreous enamels), adhesives, sealants and printing inks**
08 01	**wastes from MFSU and removal of paint and varnish**
08 01 11*	waste paint and varnish containing organic solvents or other dangerous substances
08 01 12	waste paint and varnish other than those mentioned in 08 01 11
08 01 13*	sludges from paint or varnish containing organic solvents or other dangerous substances
08 01 14	sludges from paint or varnish other than those mentioned in 08 01 13
08 01 15*	aqueous sludges containing paint or varnish containing organic solvents or other dangerous substances
08 01 16	aqueous sludges containing paint or varnish other than those mentioned in 08 01 15
08 01 17*	wastes from paint or varnish removal containing organic solvents or other dangerous substances
08 01 18	wastes from paint or varnish removal other than those mentioned in 08 01 17
08 01 19*	aqueous suspensions containing paint or varnish containing organic solvents or other dangerous substances
08 01 20	aqueous suspensions containing paint or varnish other than those mentioned in 08 01 19
08 01 21*	waste paint or varnish remover
08 02	**wastes from MFSU of other coatings (including ceramic materials)**
08 02 01	waste coating powders
08 02 02	aqueous sludges containing ceramic materials
08 02 03	aqueous suspensions containing ceramic materials
08 03	**wastes from MFSU of printing inks**
08 03 07	aqueous sludges containing ink
08 03 08	aqueous liquid waste containing ink
08 03 12*	waste ink containing dangerous substances
08 03 13	waste ink other than those mentioned in 08 03 12
08 03 14*	ink sludges containing dangerous substances
08 03 15	ink sludges other than those mentioned in 08 03 14

Table S2.2 Permitted waste types and quantities for incineration	
Maximum quantity	Throughput 1,500 kg/hr
Waste code	**Description**
08 03 16*	waste etching solutions
08 03 17*	waste printing toner containing dangerous substances
08 03 18	waste printing toner other than those mentioned in 08 03 17
08 03 19*	disperse oil
08 04	**wastes from MFSU of adhesives and sealants (including water proofing products)**
08 04 09*	waste adhesives and sealants containing organic solvents or other dangerous substances
08 04 10	waste adhesives and sealants other than those mentioned in 08 04 09
08 04 11*	adhesive and sealant sludges containing organic solvents or other dangerous substances
08 04 12	adhesive and sealant sludges other than those mentioned in 08 04 11
08 04 13*	aqueous sludges containing adhesives or sealants containing organic solvents or other dangerous substances
08 04 14	aqueous sludges containing adhesives or sealants other than those mentioned in 08 04 13
08 04 15*	aqueous liquid waste containing adhesives or sealants containing organic solvents or other dangerous substances
08 04 16	aqueous liquid waste containing adhesives or sealants other than those mentioned in 08 04 15
08 04 17*	rosin oil
08 05	**wastes not otherwise specified in 08**
08 05 01*	waste isocyanates
09	**Wastes from the photographic industry**
09 01	**wastes from the photographic industry**
09 01 01*	water-based developer and activator solutions
09 01 02*	water-based offset plate developer solutions
09 01 03*	solvent-based developer solutions
09 01 04*	fixer solutions
09 01 05*	bleach solutions and bleach fixer solutions
09 01 06*	wastes containing silver from on-site treatment of photographic wastes
09 01 07	photographic film and paper containing silver or silver compounds
09 01 08	photographic film and paper free of silver or silver compounds
09 01 10	single-use cameras without batteries
09 01 11*	single-use cameras containing batteries included in 16 06 01, 16 06 02 or 16 06 03
09 01 12	single-use cameras containing batteries other than those mentioned in 09 01 11
09 01 13*	aqueous liquid waste from on-site reclamation of silver other than those mentioned in 09 01 06
10	**Wastes from thermal processes**
10 02	**wastes from the iron and steel industry**
10 02 10	Mill scales
10 02 11*	wastes from cooling-water treatment containing oil
10 03	**wastes from aluminium thermal metallurgy**
10 03 15*	skimmings that are flammable or emit, upon contact with water, flammable gases in dangerous quantities
10 03 27*	wastes from cooling-water treatment containing oil

Table S2.2 Permitted waste types and quantities for incineration	
Maximum quantity	Throughput 1,500 kg/hr
Waste code	**Description**
10 04	**wastes from lead thermal metallurgy**
10 04 09*	wastes from cooling-water treatment containing oil
10 05	**wastes from zinc thermal metallurgy**
10 05 08*	wastes from cooling-water treatment containing oil
10 06	**wastes from copper thermal metallurgy**
10 06 09*	wastes from cooling-water treatment containing oil
10 07	**wastes from silver, gold and platinum thermal metallurgy**
10 07 07*	wastes from cooling-water treatment containing oil
10 08	**wastes from other non-ferrous thermal metallurgy**
10 08 10*	dross and skimmings that are flammable or emit, upon contact with water, flammable gases in dangerous quantities
10 08 19*	wastes from cooling-water treatment containing oil
10 10	**wastes from casting of non-ferrous pieces**
10 10 03	Furnace slag
11	**Wastes from chemical surface treatment and coating of metals and other materials; non-ferrous hydro-metallurgy**
11 01	**wastes from chemical surface treatment and coating of metals and other materials (for example galvanic processes, zinc coating processes, pickling processes, etching, phosphating, alkaline degreasing, anodising)**
11 01 11*	Aqueous rinsing liquids containing dangerous substances
11 01 13*	degreasing wastes containing dangerous substances
11 01 14	degreasing wastes other than those mentioned in 11 01 13
11 01 15*	eluate and sludges from membrane systems or ion exchange systems containing dangerous substances
11 01 16*	saturated or spent ion exchange resins
11 01 98*	other wastes containing dangerous substances
11 02	**wastes from non-ferrous hydrometallurgical processes**
11 02 07*	other wastes containing dangerous substances
11 03	**sludges and solids from tempering processes**
11 03 01*	wastes containing cyanide
12	**Wastes from shaping and physical and mechanical surface treatment of metals and plastics**
12 01	**wastes from shaping and physical and mechanical surface treatment of metals and plastics**
12 01 01	ferrous metal filings and turnings
12 01 02	ferrous metal dust and particles
12 01 03	non-ferrous metal filings and turnings
12 01 04	non-ferrous metal dust and particles
12 01 05	plastics shavings and turnings
12 01 06*	mineral-based machining oils containing halogens (except emulsions and solutions)
12 01 07*	mineral-based machining oils free of halogens (except emulsions and solutions)
12 01 08*	machining emulsions and solutions containing halogens

Table S2.2 Permitted waste types and quantities for incineration	
Maximum quantity	Throughput 1,500 kg/hr
Waste code	**Description**
12 01 09*	machining emulsions and solutions free of halogens
12 01 10*	synthetic machining oils
12 01 12*	spent waxes and fats
12 01 13	welding wastes
12 01 14*	machining sludges containing dangerous substances
12 01 15	machining sludges other than those mentioned in 12 01 14
12 01 16*	waste blasting material containing dangerous substances
12 01 17	waste blasting material other than those mentioned in 12 01 16
12 01 18*	metal sludge (grinding, honing and lapping sludge) containing oil
12 01 19*	readily biodegradable machining oil
12 01 20*	spent grinding bodies and grinding materials containing dangerous substances
12 01 21	spent grinding bodies and grinding materials other than those mentioned in 12 01 20
12 03	**wastes from water and steam degreasing processes (except 11)**
12 03 01*	aqueous washing liquids
12 03 02*	steam degreasing wastes
13	**Oil wastes and wastes of liquid fuels (except edible oils, and those in chapters 05, 12 and 19)**
13 01	**waste hydraulic oils**
13 01 01*	hydraulic oils, containing PCBs[1]
13 01 04*	chlorinated emulsions
13 01 05*	non-chlorinated emulsions
13 01 09*	mineral-based chlorinated hydraulic oils
13 01 10*	mineral based non-chlorinated hydraulic oils
13 01 11*	synthetic hydraulic oils
13 01 12*	readily biodegradable hydraulic oils
13 01 13*	other hydraulic oils
13 02	**waste engine, gear and lubricating oils**
13 02 04*	mineral-based chlorinated engine, gear and lubricating oils
13 02 05*	mineral-based non-chlorinated engine, gear and lubricating oils
13 02 06*	synthetic engine, gear and lubricating oils
13 02 07*	readily biodegradable engine, gear and lubricating oils
13 02 08*	other engine, gear and lubricating oils
13 03	**waste insulating and heat transmission oils**
13 03 01*	insulating or heat transmission oils containing PCBs
13 03 06*	mineral-based chlorinated insulating and heat transmission oils other than those mentioned in 13 03 01
13 03 07*	mineral-based non-chlorinated insulating and heat transmission oils
13 03 08*	synthetic insulating and heat transmission oils
13 03 09*	readily biodegradable insulating and heat transmission oils

[1] For the purpose of this list of wastes, PCBs will be defined as in Directive 96/59/EC.

Table S2.2 Permitted waste types and quantities for incineration	
Maximum quantity	Throughput 1,500 kg/hr
Waste code	**Description**
13 03 10*	other insulating and heat transmission oils
13 04	**bilge oils**
13 04 01*	bilge oils from inland navigation
13 04 02*	bilge oils from jetty sewers
13 04 03*	bilge oils from other navigation
13 05	**oil/water separator contents**
13 05 01*	solids from grit chambers and oil/water separators
13 05 02*	sludges from oil/water separators
13 05 03*	interceptor sludges
13 05 06*	oil from oil/water separators
13 05 07*	oily water from oil/water separators
13 05 08*	mixtures of wastes from grit chambers and oil/water separators
13 07	**wastes of liquid fuels**
13 07 01*	fuel oil and diesel
13 07 02*	petrol
13 07 03*	other fuels (including mixtures)
13 08	**oil wastes not otherwise specified**
13 08 01*	desalter sludges or emulsions
13 08 02*	other emulsions
14	**Waste organic solvents, refrigerants and propellants (except 07 and 08)**
14 06	**waste organic solvents, refrigerants and foam/aerosol propellants**
14 06 01*	chlorofluorocarbons, HCFC, HFC
14 06 02*	other halogenated solvents and solvent mixtures
14 06 03*	other solvents and solvent mixtures
14 06 04*	sludges or solid wastes containing halogenated solvents
14 06 05*	sludges or solid wastes containing other solvents
15	**Waste packaging, absorbents, wiping cloths, filter materials and protective clothing not otherwise specified**
15 01	**packaging (including separately collected municipal packaging waste)**
15 01 01	paper and cardboard packaging
15 01 02	plastic packaging
15 01 03	wooden packaging
15 01 04	metallic packaging
15 01 05	composite packaging
15 01 06	mixed packaging
15 01 07	glass packaging
15 01 09	textile packaging
15 01 10*	packaging containing residues of or contaminated by dangerous substances
15 01 11*	metallic packaging containing a dangerous solid porous matrix (for example asbestos), including empty pressure containers

Table S2.2 Permitted waste types and quantities for incineration	
Maximum quantity	Throughput 1,500 kg/hr
Waste code	**Description**
15 02	**absorbents, filter materials, wiping cloths and protective clothing**
15 02 02*	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances
15 02 03	absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02
16	**Wastes not otherwise specified in the list**
16 01	**end-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance (except 13, 14, 16 06 and 16 08)**
16 01 03	end-of-life tyres
16 01 04*	end-of-life vehicles
16 01 06	end-of-life vehicles, containing neither liquids nor other hazardous components
16 01 07*	oil filters
16 01 08*	components containing mercury
16 01 09*	components containing PCBs
16 01 10*	explosive components (for example air bags)
16 01 11*	brake pads containing asbestos
16 01 12	brake pads other than those mentioned in 16 01 11
16 01 13*	brake fluids
16 01 14*	antifreeze fluids containing dangerous substances
16 01 15	antifreeze fluids other than those mentioned in 16 01 14
16 01 16	tanks for liquefied gas
16 01 17	ferrous metal
16 01 18	non-ferrous metal
16 01 19	plastic
16 01 20	glass
16 01 21*	hazardous components other than those mentioned in 16 01 07 to 16 01 11 and 16 01 13 and 16 01 14
16 01 22	components not otherwise specified
16 02	**wastes from electrical and electronic equipment**
16 02 13*	discarded equipment containing hazardous components other than those mentioned in 16 02 09 to 16 02 12
16 02 16	components removed from discarded equipment other than those mentioned in 16 02 15
16 03	**off-specification batches and unused products**
16 03 03*	inorganic wastes containing dangerous substances
16 03 04	inorganic wastes other than those mentioned in 16 03 03
16 03 05*	organic wastes containing dangerous substances
16 03 06	organic wastes other than those mentioned in 16 03 05
16 04	**waste explosives**
16 04 01*	waste ammunition
16 04 02*	fireworks wastes
16 04 03*	other waste explosives

Table S2.2 Permitted waste types and quantities for incineration	
Maximum quantity	Throughput 1,500 kg/hr
Waste code	**Description**
16 05	**gases in pressure containers and discarded chemicals**
16 05 04*	gases in pressure containers (including halons) containing dangerous substances
16 05 05	gases in pressure containers other than those mentioned in 16 05 04
16 05 06*	laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals
16 05 07*	discarded inorganic chemicals consisting of or containing dangerous substances
16 05 08*	discarded organic chemicals consisting of or containing dangerous substances
16 05 09	discarded chemicals other than those mentioned in 16 05 06, 16 05 07 or 16 05 08
16 07	**wastes from transport tank, storage tank and barrel cleaning (except 05 and 13)**
16 07 08*	wastes containing oil
16 07 09*	wastes containing other dangerous substances
16 08	**spent catalysts**
16 08 07*	spent catalysts contaminated with dangerous substances
16 09	**oxidising substances**
16 09 03*	peroxides, for example hydrogen peroxide
16 09 04*	oxidising substances, not otherwise specified
16 10	**aqueous liquid wastes destined for off-site treatment**
16 10 01*	aqueous liquid wastes containing dangerous substances
16 10 02	aqueous liquid wastes other than those mentioned in 16 10 01
16 10 03*	aqueous concentrates containing dangerous substances
16 10 04	aqueous concentrates other than those mentioned in 16 10 03
17	**Construction and demolition wastes (including excavated soil from contaminated sites)**
17 05	**soil (including excavated soil from contaminated sites), stones and dredging spoil**
17 05 03*	soil and stones containing dangerous substances
17 06	**insulation materials and asbestos-containing construction materials**
17 06 03*	other insulation materials consisting of or containing dangerous substances
17 09	**other construction and demolition wastes**
17 09 02*	construction and demolition wastes containing PCB (for example PCB- containing sealants, PCB-containing resin-based floorings, PCB-containing sealed glazing units, PCB-containing capacitors)
17 09 03*	other construction and demolition wastes (including mixed wastes) containing dangerous substances
18	**Wastes from human or animal health care and/or related research (except kitchen and restaurant wastes not arising from immediate health care)**
18 01	**wastes from natal care, diagnosis, treatment or prevention of disease in humans**
18 01 01	sharps (except 18 01 03)
18 01 02	body parts and organs including blood bags and blood preserves (except 18 01 03)
18 01 03*	wastes whose collection and disposal is subject to special requirements in order to prevent infection
18 01 04	wastes whose collection and disposal is not subject to special requirements in order to prevent infection (for example dressings, plaster casts, linen, disposable clothing, diapers)
18 01 06*	chemicals consisting of or containing dangerous substances

Table S2.2 Permitted waste types and quantities for incineration	
Maximum quantity	Throughput 1,500 kg/hr
Waste code	**Description**
18 01 07	chemicals other than those mentioned in 18 01 06
18 01 08*	cytotoxic and cytostatic medicines
18 01 09	medicines other than those mentioned in 18 01 08
18 02	**wastes from research, diagnosis, treatment or prevention of disease involving animals**
18 02 01	sharps (except 18 02 02)
18 02 02*	wastes whose collection and disposal is subject to special requirements in order to prevent infection
18 02 03	wastes whose collection and disposal is not subject to special requirements in order to prevent infection
18 02 05*	chemicals consisting of or containing dangerous substances
18 02 06	chemicals other than those mentioned in 18 02 05
18 02 07*	cytotoxic and cytostatic medicines
18 02 08	medicines other than those mentioned in 18 02 07
19	**Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use**
19 01	**wastes from incineration or pyrolysis of waste**
19 01 07*	solid wastes from gas treatment
19 02	**wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)**
19 02 03	premixed wastes composed only of non-hazardous wastes
19 02 04*	premixed wastes composed of at least one hazardous waste
19 02 05*	sludges from physico/chemical treatment containing dangerous substances
19 02 06	sludges from physico/chemical treatment other than those mentioned in 19 02 05
19 02 07*	oil and concentrates from separation
19 02 08*	liquid combustible wastes containing dangerous substances
19 02 09*	solid combustible wastes containing dangerous substances
19 02 10	combustible wastes other than those mentioned in 19 02 08 and 19 02 09
19 02 11*	other wastes containing dangerous substances
19 03	**stabilised/solidified wastes**
19 03 06*	wastes marked as hazardous, solidified
19 04	**vitrified waste and wastes from vitrification**
19 04 02*	fly ash and other flue-gas treatment wastes
19 06	**wastes from anaerobic treatment of waste**
19 06 03	liquor from anaerobic treatment of municipal waste
19 06 04	digestate from anaerobic treatment of municipal waste
19 06 05	liquor from anaerobic treatment of animal and vegetable waste
19 06 06	digestate from anaerobic treatment of animal and vegetable waste
19 08	**wastes from waste water treatment plants not otherwise specified**
19 08 01	screenings
19 08 02	waste from desanding
19 08 05	sludges from treatment of urban waste water

Table S2.2 Permitted waste types and quantities for incineration	
Maximum quantity	Throughput 1,500 kg/hr
Waste code	**Description**
19 08 06*	saturated or spent ion exchange resins
19 08 07*	solutions and sludges from regeneration of ion exchangers
19 08 08*	membrane system waste containing heavy metals
19 08 09	grease and oil mixture from oil/water separation containing only edible oil and fats
19 08 10*	grease and oil mixture from oil/water separation other than those mentioned in 19 08 09
19 08 11*	sludges containing dangerous substances from biological treatment of industrial waste water
19 08 12	sludges from biological treatment of industrial waste water other than those mentioned in 19 08 11
19 08 13*	sludges containing dangerous substances from other treatment of industrial waste water
19 08 14	sludges from other treatment of industrial waste water other than those mentioned in 19 08 13
19 09	**wastes from the preparation of water intended for human consumption or water for industrial use**
19 09 01	solid waste from primary filtration and screenings
19 09 02	sludges from water clarification
19 09 03	sludges from decarbonation
19 09 04	spent activated carbon
19 09 05	saturated or spent ion exchange resins
19 09 06	solutions and sludges from regeneration of ion exchangers
19 10	**wastes from shredding of metal-containing wastes**
19 10 01	iron and steel waste
19 10 02	non-ferrous waste
19 10 03*	fluff-light fraction and dust containing dangerous substances
19 10 04	fluff-light fraction and dust other than those mentioned in 19 10 03
19 10 05*	other fractions containing dangerous substances
19 10 06	other fractions other than those mentioned in 19 10 05
19 11	**wastes from oil regeneration**
19 11 03*	aqueous liquid wastes
19 11 05*	sludges from on-site effluent treatment containing dangerous substances
19 11 06	sludges from on-site effluent treatment other than those mentioned in 19 11 05
19 12	**wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 10	combustible waste (refuse derived fuel)
19 12 11*	other wastes (including mixtures of materials) from mechanical treatment of waste containing dangerous substances
19 12 12	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11
19 13	**wastes from soil and groundwater remediation**
19 13 03*	sludges from soil remediation containing dangerous substances
19 13 05*	sludges from groundwater remediation containing dangerous substances
19 13 07*	aqueous liquid wastes and aqueous concentrates from groundwater remediation containing dangerous substances

Table S2.2 Permitted waste types and quantities for incineration	
Maximum quantity	Throughput 1,500 kg/hr
Waste code	**Description**
19 13 08	aqueous liquid wastes and aqueous concentrates from groundwater remediation other than those mentioned in 19 13 07
20	**Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions**
20 01	**separately collected fractions (except 15 01)**
20 01 01	paper and cardboard
20 01 02	glass
20 01 08	biodegradable kitchen and canteen waste
20 01 10	clothes
20 01 11	textiles
20 01 13*	solvents
20 01 14*	acids
20 01 15*	alkalines
20 01 17*	photochemicals
20 01 19*	pesticides
20 01 21*	fluorescent tubes and other mercury-containing waste
20 01 23*	discarded equipment containing chlorofluorocarbons
20 01 25	edible oil and fat
20 01 26*	oil and fat other than those mentioned in 20 01 25
20 01 27*	paint, inks, adhesives and resins containing dangerous substances
20 01 28	paint, inks, adhesives and resins other than those mentioned in 20 01 27
20 01 29*	detergents containing dangerous substances
20 01 30	detergents other than those mentioned in 20 01 29
20 01 31*	cytotoxic and cytostatic medicines
20 01 32	medicines other than those mentioned in 20 01 31
20 01 33*	batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries
20 01 34	batteries and accumulators other than those mentioned in 20 01 33
20 01 35*	discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components
20 01 36	discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35
20 01 37*	wood containing dangerous substances
20 01 38	wood other than that mentioned in 20 01 37
20 01 39	plastics
20 01 40	metals
20 01 41	wastes from chimney sweeping
20 01 99	other fractions not otherwise specified (healthcare and hygiene wastes from municipal only)
20 02	**garden and park wastes (including cemetery waste)**
20 02 01	biodegradable waste
20 02 02	soil and stones
20 02 03	other non-biodegradable wastes

Table S2.2 Permitted waste types and quantities for incineration	
Maximum quantity	Throughput 1,500 kg/hr
Waste code	**Description**
20 03	**other municipal wastes**
20 03 01	mixed municipal waste
20 03 02	waste from markets
20 03 03	street-cleaning residues
20 03 04	septic tank sludge
20 03 06	waste from sewage cleaning
20 03 07	bulky waste

Schedule 3 – conditions to be added

None

Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Augean Treatment Limited

Discovery Park
Ramsgate Road
Sandwich
Kent
CT13 9NJ

Permit number

EPR/XB3235DD

Permit number EPR/XB3235DD

Introductory note

This introductory note does not form a part of this permit

The permit allows the Operator to receive, accumulate and dispose of radioactive waste, in carrying on specified radioactive substances activities on the specified premises.

The permit is issued under the provisions of regulation 13 of the Environmental Permitting (England and Wales) Regulations 2010. Those Regulations are concerned with the control of radioactive material and the receipt, transfer, accumulation and disposal of radioactive waste.

The operator must also comply with other legislation to which the keeping or use of radioactive material and the transfer, accumulation and disposal of radioactive waste is subject. This includes legislation enforced by the Health and Safety Executive and by the Office for Nuclear Regulation.

This document is a varied and consolidated permit reflecting the changes made to the permit since issue.

The status log of the permit sets out the permitting history, including any changes to the permit reference number.

Status Log of the permit		
Detail	Date	Response Date
Transfer application EPR/XB3235DD/T001 (full transfer of permit EPR/ JP3593ST)	Duly made 22/01/13	
Transfer determined	21/03/13	

End of Introductory Note

The Environmental Permitting (England and Wales) Regulations 2010

Permit

Permit number
EPR/XB3235DD

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2010

Augean Treatment Limited ("the operator"),

whose registered office is

4 Rudgate Court
Walton
Nr Wetherby
West Yorkshire
LS23 7BF

company registration number **04062656**

to carry on radioactive substances activities at

Discovery Park
Ramsgate Road
Sandwich
Kent
CT13 9NJ
("the premises")

to the extent authorised by and subject to the conditions of this permit.

Name	Date
David Nicholson	21/03/13

Authorised on behalf of the Environment Agency

Conditions

1 – Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

(a) in accordance with a written management system that is sufficient to ensure compliance with the conditions of this permit; and

(b) using sufficient competent persons and resources.

1.1.2 The operator shall maintain records demonstrating compliance with condition 1.1.1.

1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.1.4 The operator shall manage and operate the activities in consultation with such suitable radioactive waste advisors as are necessary for the purpose of advising the operator as to compliance with this permit.

2 – Operations

2.1 Permitted activities

2.1.1 The operator is only authorised to carry on the activities specified in Schedule 1, Table S1.1 (the "activities").

2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan at Schedule 5 to this permit.

2.3 Operating techniques

2.3.1 The operator shall use the best available techniques:

(a) to minimise the activity of radioactive waste kept on the premises;

(b) to minimise the period over which radioactive waste is accumulated;

(c) to minimise the activity of radioactive waste produced on the premises that will require to be disposed of on or from the premises;

(d) to ensure that all relevant parts of the premises are constructed, maintained and used in such a manner that:

(i) they do not readily become contaminated; and

(ii) any contamination which does occur can be easily removed;

(e) to prevent:

(i) the loss of any radioactive material or radioactive waste; and

(ii) access to any radioactive material or radioactive waste by any person not authorised by the operator.

2.3.2 The operator shall use the best available techniques in respect of the disposal of radioactive waste pursuant to this permit to:

(a) minimise the activity of gaseous and aqueous radioactive waste disposed of by discharge to the environment;

(b) minimise the volume of radioactive waste disposed of by transfer to other premises; and

(c) dispose of radioactive waste at times, in a form, and in a manner so as to minimise the radiological effects on the environment and members of the public.

2.3.3 The operator shall use the best available techniques to:

(a) exclude all entrained solids, gases and non-aqueous liquids from radioactive aqueous waste prior to discharge to the environment;

(b) ensure that any discharge of radioactive gas to the atmosphere is made in a manner which prevents its entry into any building.

(c) ensure that any residual ash is disposed of as very low level waste in accordance with this permit.

2.3.4 The operator shall maintain in good repair the systems and equipment provided:

(a) to meet the requirements of conditions 2.3.1, 2.3.2 and 2.3.3; and

(b) to carry out any monitoring and measurements necessary to determine compliance with the conditions of this permit.

2.3.5 The operator shall check, at an appropriate frequency, the effectiveness of systems, equipment and procedures provided to meet the requirements of conditions 2.3.1, 2.3.2 and 2.3.3.

2.3.6 Any container in which radioactive material or radioactive waste are stored shall be clearly and legibly marked with the word 'Radioactive', with the ionising radiation symbol conforming with BS 3510: 1968 or ISO 361 and any other information necessary for the identification of the radioactive material or radioactive waste present.

2.3.7 The operator shall have and comply with appropriate criteria for the acceptance into service of systems, equipment and procedures for carrying out any monitoring and measurements necessary to determine compliance with the conditions of this permit.

2.3.8 The operator shall post copies of this permit on the premises, in such characters and in such positions to be conveniently read by persons who have duties on the premises which are or could be affected by the matters set out in this permit.

2.3.9 The operator shall maintain records of radioactive waste showing:

(a) the radionuclide present, the date on which it was received and the activity on that date;

(b) so far as is reasonably practicable its location on the premises;

(c) the date on which it was incinerated;

(d) if it has been removed from the premises, the date of removal, the activity on that date and the name and address of the person to whom it was transferred; and

(e) the activity present on the premises at the end of each calendar month.

2.4 Pre-operational conditions

2.4.1 The activities shall not be brought into operation until the measures specified in Schedule 1, Table S1.3 have been completed.

2.4.2 Written notification of the date of completion of each measure shall be sent to the Environment Agency within 14 days of the completion of each such requirement.

2.5 Improvement programme

2.5.1 The operator shall complete the improvements specified in Schedule 1, Table S1.4 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.

2.5.2 Except in the case of an improvement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each improvement.

2.6 Receipt of radioactive waste

2.6.1 The operator shall:

(a) only accept radioactive waste which this permit allows the operator to accumulate or dispose of;

(b) for each type of radioactive waste that the operator is prepared to receive, produce a written specification of the information required to enable the disposal of that type of radioactive waste in compliance with this permit;

(c) provide that written specification to any person from whom the operator is prepared to receive radioactive waste of that type;

(d) only accept a consignment of radioactive waste that is accompanied by a legible note providing the specified information; and

(e) keep a copy of any such note received.

2.6.2 Before the operator first receives radioactive waste from a consignor for the purpose of final disposal of that waste from or on the premises, the operator shall, at the earliest opportunity, inform the local authority, in whose area of responsibility the premises is situated, of the origin and nature of the radioactive waste.

2.6.3 The provisions of condition 2.6.2 do not apply:

(a) where the waste consignor is exempt from the requirement to hold an environmental permit for the disposal of radioactive waste;

(b) to the extent that it would require the disclosure of information relating to sealed radioactive sources;

(b) to VLLW.

2.7 Accumulation of radioactive waste

2.7.1 There shall be no accumulation of radioactive waste except of the types of radioactive waste specified in Schedule 2, Table S2.1.

2.7.2 The limits on accumulation given in Schedule 2 shall not be exceeded.

3 – Disposals of radioactive waste and monitoring

3.1 Disposals of radioactive waste

3.1.1 There shall be no disposals of radioactive waste except of the types of radioactive waste and by the disposal routes specified in Schedule 3.

3.1.2 The limits on disposals given in Schedule 3 shall not be exceeded.

3.1.3 The operator shall ensure that the transfer of radioactive waste:

(a) is in accordance with the directions of the person to whom the radioactive waste is transferred that are necessary to enable that person to comply with all relevant regulatory requirements;

(b) is done using a suitable container constructed and maintained so as to prevent the loss of waste; and

(c) so far as is reasonably practicable, is not subject to delays in transit and is accepted at the premises of the person to whom the operator transfers waste.

3.1.4 The operator shall:

(a) ensure that the person to whom radioactive waste is transferred receives at the time of transfer of each consignment a clear and legible note signed on the operator's behalf:

(i) stating the total activity in the consignment of each relevant radionuclide or group of radionuclides listed in the relevant table in Schedule 3; or

(ii) stating, when no relevant radionuclide or group of radionuclides is specified in Schedule 3, the total activity in the consignment of each radionuclide or group of radionuclides as listed in the written specification of the person to whom the radioactive waste is transferred.

(b) obtain a note signed on behalf of the person to whom radioactive waste is transferred, at the time of transfer, stating:

(i) that the transfer has taken place; and

(ii) the date of receipt of the radioactive waste.

(c) keep a copy of any note issued under condition 3.1.4(a) and any note received under condition 3.1.4(b).

3.1.5 If required by the Environment Agency, the operator shall ensure that any consignment or part of any consignment of radioactive waste found, following transfer, not to be in accordance with the conditions of this permit:

(a) is packaged in accordance with the relevant legislation; and

(b) is returned as soon as is reasonably practicable to the operator's site.

3.1.6 The operator shall, not later than 14 days after the end of each month or within such longer period as the Environment Agency may approve in writing, record all disposals of radioactive waste made during that month.

3.2 Monitoring

3.2.1 If required by the Environment Agency, the operator shall

(a) take such samples and conduct such measurements, tests, surveys, analyses and calculations, including environmental measurements and assessments, at such times and using such methods and equipment as the Environment Agency specifies; and

(b) keep samples, provide samples, or dispatch samples for tests at a laboratory, as the Environment Agency specifies, and ensure that the samples or residues thereof are collected from the laboratory within three months of receiving written notification that testing and repackaging in accordance with the relevant legislation are complete.

3.2.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.2.3 The operator shall carry out:

(a) regular calibration, at an appropriate frequency, of systems and equipment provided for carrying out any monitoring and measurements necessary to determine compliance with the conditions of this permit; and

(b) regular checking, at an appropriate frequency, that such systems and equipment are serviceable and correctly used.

4 – Information

4.1 Records

4.1.1 All records required to be made by this permit shall:

(a) be legible;

(b) be made as soon as reasonably practicable;

(c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and

(d) be retained until notified in writing by the Environment Agency that records no longer need to be retained.

4.1.2 The operator shall:

(a) retain records made in accordance with any previous relevant permit issued to the operator and related to the premises covered by this permit; and

(b) retain records transferred to the operator, which were made in accordance with any previous relevant permit related to the premises covered by this permit.

4.1.3 The operator shall keep on site all records, plans and the management system required by this permit, unless otherwise agreed in writing by the Environment Agency.

4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by this permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.

4.2.2 The operator shall supply such information in relation to:

(a) the disposals of radioactive waste; and

(b) the samples, tests, surveys, analysis and calculations, environmental monitoring and assessments undertaken under condition 3.2.1;

in such format and within such timescales as the Environment Agency may specify in writing.

4.3 Notifications

4.3.1 The Environment Agency shall be notified without delay following the detection of:

(a) any malfunction, breakdown or failure of equipment or techniques or accident, which has caused, is causing or may cause significant pollution or may generate significant amounts of radioactive waste;

(b) the breach of a limit specified in this permit; or

(c) any significant adverse environmental effects; or

(d) any escape of accumulated radioactive waste.

4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in Schedule 4 within the time period specified in that Schedule.

4.3.3 The Environment Agency shall be notified in writing, at least 21 days in advance or, where this is not possible, without delay, of the operator's intention to cease to keep or use radioactive material, or to cease to accumulate or dispose of radioactive waste.

4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

(a) Where the operator is a registered company:

- any change in the operator's trading name, registered name or registered office address; and
- any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

(b) Where the operator is a corporate body other than a registered company:

- any change in the operator's name or address; and
- any steps taken with a view to the dissolution of the operator.

(c) In any other case:

- the death of any of the named operators (where the operator consists of more than one named individual); and
- any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case them being in a partnership, dissolving the partnership.

4.3.5 If the operator believes or has reasonable grounds for believing that radioactive material or radioactive waste have been lost or stolen he shall:

(a) without delay inform the Police and the Environment Agency;

(b) make all reasonable efforts to recover that radioactive material or radioactive waste; and

(c) as soon as is practicable report the circumstances in writing to the Environment Agency.

4.4 Interpretation

4.4.1 In this permit the expressions listed below shall have the meaning given.

4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "without delay", in which case it may be provided by telephone.

"activity", expressed in becquerels, means the number of spontaneous nuclear transformations occurring in a period of one second.

"annual limit" means the limit over a calendar year.

"aqueous waste" means radioactive waste in the form of a continuous aqueous phase together with any entrained solids, gases and non-aqueous liquids.

"best available techniques" means the latest stage of development (state of the art) of processes, of facilities or of methods of operation which indicate the practical suitability of a particular measure for limiting discharges, emissions and waste. In determining whether a set of processes, facilities and methods of operation constitute the best available techniques in general or individual cases, special consideration shall be given to:

(a) comparable processes, facilities or methods of operation which have recently been successfully tried out;

(b) technological advances and changes in scientific knowledge and understanding;

(c) the economic feasibility of such techniques;

(d) time limits for installation in both new and existing plants; and

(e) the nature and volume of the discharges and emissions concerned.

"Bq, kBq, MBq, GBq, TBq and PBq" are used as abbreviations meaning becquerels, kilobecquerels, megabecquerels, gigabecquerels, terabecquerels and petabecquerels respectively.

"calendar year" means a period of 12 consecutive months beginning on 1 January.

"environment" means all, or any, of the media of air, water (to include sewers and drains) and land.

"environmental permit" means a permit under the Environmental Permitting Regulations for the accumulation or disposal of radioactive waste.

"Environmental Permitting Regulations" means The Environmental Permitting (England and Wales) Regulations 2010.

"final disposal" includes: a. incineration of the radioactive waste on the premises; b. burial of the radioactive waste on the premises; or c. discharge to the environment of the bulk of the radioactivity in the waste (directly or following treatment of the waste).

"gaseous waste" means radioactive waste in the form of gases and associated mists and particulate matter.

"LLW" means solid radioactive waste, including any immediate packaging, with a maximum concentration of 4 gigabecquerels per tonne of alpha emitting radionuclides and 12 gigabecquerels per tonne of all other radionuclides.

"LLWR" means Low Level Waste Repository near Drigg, Cumbria.

"LLWR Site Operator" means the holder of the licence issued under the Nuclear Installations Act 1965 for the LLWR.

"Month" means calendar month.

"National Arrangements for Incidents Involving Radioactivity" means the arrangements co-ordinated by the Health Protection Agency to protect the public from hazards arising from the use and transport of radioactive materials and in situations where no formal contingency plans exist.

"nuclear site" means a site licensed under the Nuclear Installations Act 1965.

"quarter" means any period of three consecutive months.

"open source" means radioactive material not in the form of a sealed source.

"organic liquid waste" means radioactive waste in the form of liquid, not being aqueous waste, containing one or more organic chemical compounds.

"packaging" includes any sack, drum, container or wrapping.

"Radsafe" means the consortium of organisations which offer mutual assistance in the event of a transport accident involving radioactive materials belonging to a RADSAFE member.

"Relevant Waste" means any radioactive waste received for disposal by incineration including "aqueous waste", "organic liquid waste", "sealed sources" and "solid waste".

"radioactive waste adviser" means, subject to the transitional arrangements in the Agencies' Scheme for Radioactive Waste Advisors ("the Scheme"), either an individual certified under the Scheme and appointed in writing by the operator, or those individuals advising the operator under the operators arrangements for "corporate radioactive waste advisor" as approved under the Scheme. The Scheme is published at:

http://www.sepa.org.uk/radioactive_substances/radioactive_waste_advisers.aspx

"samples" includes samples that have been prepared or treated to enable measurements of activity to be made.

"sealed source" means a source whose structure is such as to prevent, under normal conditions of use, any dispersion of radioactive material into the environment.

"techniques" include both the technology used and the way in which the installation is designed, built, maintained, operated and dismantled.

"Total", where used in relation to a group of radionuclides:

(a) in Schedule 1, Table S1.2, excludes any radionuclide that would fall within the group in question, but which is specifically identified and limited elsewhere in that table;

(b) for a waste type identified in Schedule 2, Table S2.1, excludes any radionuclide that would fall within the group in question, but which is specifically identified and limited against that waste type;

(c) for a waste type and disposal outlet or route identified in a table in Schedule 3, excludes any radionuclide that would fall within the group in question, but which is specifically identified and limited against that waste type and disposal outlet or route.

"VLLW" means very low level solid radioactive waste, which is disposed of with non-radioactive refuse, and in which:

(a) except in the case of carbon-14 and tritium, each $0.1m^3$ of waste contains less than 400 kBq of total activity;

(b) except in the case of carbon-14 and tritium, any single item contains less than 40 kBq of total activity;

(c) each $0.1m^3$ of waste contains less than 4000 kBq of carbon-14 and tritium, taken together; and

(d) any single item contains less than 400 kBq of carbon-14 and tritium, taken together.

Schedule 1 - Operations

Table S1.1: Activities			
Activity reference	Activity listed in Schedule 23 of the Environmental Permitting Regulations	Description of specified activity	Limit of specified activity
A1	Sch 23 Part 2 para 11(2)(b)	Disposal of radioactive waste on or from the premises	Handling radioactive substances Storing radioactive substances Disposing of waste
A2	Sch 23 Part 2 para 11(4)(a)	Receipt of radioactive waste for the purpose of disposal	
A4	Sch 23 Part 2 para 11(2)(c)	Accumulation of radioactive waste on the premises	

Table S1.2: Radioactive material – open sources	
Radionuclide	Maximum Activity
No open source use	

Table S1.3: Pre-operational measures	
Reference	Pre-operational measures
	No measures specified

Table S1.4: Improvement programme requirements		
Reference	Requirement	Date
	No requirements specified	

Schedule 2 – Accumulation of radioactive waste

Table S2.1: Accumulation of radioactive waste				
Specified waste type	Radionuclide or group of radionuclides	Activity limit	Volume limit	Period limit
Aqueous Waste	Technetium 99m	12 GBq	4 litres	170 days
	Indium 111	100 MBq		170 days
	Iodine 123	100 MBq		170 days
	Iodine 131	100 MBq		170 days
	Samarium 152	100 MBq		170 days
Solid waste	Tritium	15 GBq	40 m^3	700 days
	Carbon 14	1.2 GBq		700 days
	Phosphorus 33	7 GBq		700 days
	Iodine 125	5 GBq		700 days
	Total beta/gamma-emitting radionuclides	350 MBq		700 days
Organic liquid waste	Carbon 14, Tritium	1.2 GBq	1 m^3	90 days
	Total beta/gamma-emitting radionuclides	12 MBq		90 days
VLLW	Any radionuclide	VLLW	46 m^3	42 days

Schedule 3 – Disposals of radioactive waste

Table S3.1: Specified disposals to air				
Specified waste type	Disposal outlet ref	Radionuclide or group of radionuclides	Annual limits	Daily limits
No disposals to air authorised				

Table S3.2: Specified disposals to sewer or water			
Specified waste type	Disposal outlet ref	Radionuclide or group of radionuclides	Monthly limits
Aqueous waste	the drainage system of the premises authorised for disposal	Carbon 14, Tritium	1 GBq
		Phosphorus 32	1 GBq
		Phosphorus 33	3 GBq
		Rubidium 86	100 MBq
		Iodine 125	1 GBq
		Total beta/gamma-emitting radionuclides	2 GBq

Table S3.3: Specified transfers to other premises				
Specified waste type	Person to whom waste may be transferred	Purpose of transfer	Radionuclide or group of radionuclides	Annual limits
VLLW	Any person who holds an environmental permit for the recovery or disposal of non-radioactive waste of the same type (excluding its radioactive properties) as the VLLW .	For treatment or disposal	VLLW	No limit
Combustible solid waste	The holder of a permit under the Environmental Permitting Regulations to receive and dispose of radioactive waste by incineration	incineration	Tritium Carbon 14 Total beta/gamma-emitting radionuclides	45 GBq 5 GBq 1.4 GBq
Organic liquid waste			Carbon 14, Tritium Total beta/gamma-emitting radionuclides	5 GBq 50 MBq

Table S3.4: Specified disposal by on–site incineration			
Specified waste type	Incinerator unit	Radionuclide or group of radionuclides Monthly limits	Daily limits
Combustible solid waste	Evans Universal Model H50 / ABB Rotary Kiln	Tritium Carbon 14 Total beta/gamma-emitting radionuclides	5 GBq (no more than 5 GBq per month) 400 MBq (no more than 400 MBq per month) 20 MBq (in total – no more than 112 MBq per month)
Organic liquid waste	Evans Universal Model H50 / ABB Rotary Kiln	Carbon 14, Tritium Total beta/gamma-emitting radionuclides	400 MBq (in total – no more than 400 MBq per month) 4 MBq (in total – no more than 4 MBq per month)

Schedule 4 - Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the disposal. Where appropriate, a comparison should be made of actual disposals and permitted disposal limits.

Part A

Permit Number	
Name of operator	
Location of Facility	
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or disposal which has caused, is causing or may cause significant pollution or may generate significant amounts of radioactive waste	
To be notified within 24 hours of detection	
Date and time of the event	
Reference or description of the location of the event	
Description of where any disposal into the environment took place	
Radionuclides potentially released	
Best estimate of the quantity or rate of release of radionuclides or amount of radioactive waste generated	
Measures taken, or intended to be taken, to stop any disposal	
Description of the failure or accident	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Disposal outlet reference/source	
Radionuclides	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the disposal	
Time periods for notification following detection of a breach of a limit	
Parameter	Notification period

(c) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
Description of where the effect on the environment was detected	
Radionuclides detected	
Activity of radionuclides detected	
Date of monitoring/sampling	

Part B - to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any contamination of the environment which has been or may be caused by the disposal	
The dates of any unauthorised disposals from the facility in the preceding 24 months	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of AUGEAN TREATMENT LTD

Schedule 5 - Site plan

END of PERMIT

Notice of transfer with introductory note

Environmental Permitting (England & Wales) Regulations 2010

Augean Treatment Limited

Discovery Park
Ramsgate Road
Sandwich
Kent
CT13 9NJ

Transfer notice number

EPR/XB3235DD/T001

Permit number

EPR/XB3235DD

Augean Treatment Limited
Permit Number EPR/XB3235DD

Introductory note

This introductory note does not form a part of the notice

The following notice gives notice of the transfer of an environmental permit to a new operator (the transferee).

The Schedules specify the changes made to the original environmental permit as a result of the transfer. A varied and consolidated permit, reflecting the changes made to the transferee's permit has been issued.

The status log of a permit sets out the permitting history, including any changes to the permit reference number.

Status Log of the permit		
Detail	Date	Response Date
Transfer application EPR/XB3235DD/T001 (full transfer of permit EPR/ JP3593ST)	Duly made 22/01/13	
Transfer determined	21/03/13	

End of Introductory Note

Transfer of permit

The Environmental Permitting (England and Wales) Regulations 2010

Transfer notice

Permit number
EPR/XB3235DD

The Environment Agency in exercise of its powers under regulation 21 of the Environmental Permitting (England and Wales) Regulations 2010 transfers permit number **EPR/JP3593ST** from Pfizer Limited to:

Augean Treatment Limited ("the operator"),

whose registered office is

4 Rudgate Court
Walton
Nr Wetherby
West Yorkshire
LS23 7BF

company registration number **04062656**

to carry on radioactive substances activities at

Discovery Park
Ramsgate Road
Sandwich
Kent
CT13 9NJ
("the premises")

to the extent set out in the schedules.

This notice shall take effect from 21/03/2013

Name	Date
David Nicholson	**21/03/2013**

Authorised on behalf of the Environment Agency

Schedule 1: variations to the permit

The following conditions were varied on the application of the operator:

No changes have been made to the permit

Schedule 2: varied and consolidated permit

A varied and consolidated permit has been separately issued

K/450

Application No.P2638/K/Ca

NATIONAL RIVERS AUTHORITY
SOUTHERN REGION

THE WATER ACT 1989

TO: Pentacon Fast Track Limited,
A9 Chaucer Park,
Watery Lane,
Kemsing,
Sevenoaks,
Kent.
TN15 6PJ

Guildbourne House
Chatsworth Road
WORTHING
West Sussex
BN11 1LD

In pursuance of their powers under Section 113 and Schedule 12 of the Water Act 1989 the National Rivers Authority HEREBY GRANT CONSENT to a new discharge of surface water located at Plot 1-2, Sandwich Industria Estate, Ramsgate Road, Sandwich, Kent.

in accordance with Application No. P2638/K/Ca/89 dated 12th October, 1989 and the plans and particulars referred to therein subject to the conditions set out in the Schedule overleaf.

The terms of this Consent will not without the consent in writing of the person to whom this Consent is given (or his successor) be altered before the expiration of the period ending with the 22nd day of November 1991

Dated this 22nd day of November 1989

Signed .....
REGIONAL GENERAL MANAGER

NOTES

1. Any conditions imposed by the Authority shall continue in force until varied or revoked by the Authority or the Secretary of State for the Environment and shall be binding on any person discharging effluent from the land or premises.

2. Any question whether the consent of the Authority has or has not been unreasonably withheld or as to the reasonableness of the terms of any consent or notice shall be determined by the Secretary of State for the Environment.

3. Any consent granted by the Authority under the provisions of Section 113 and Schedule 12 of the Water Act 1989 whether subject to conditions or otherwise, does not release the applicant from compliance with any other statutory or other requirements.

THE SCHEDULE

1. Construction

The outlet at Grid Reference TR 3370 5860 shall be construct
and maintained in accordance with the plan numbered S1E/89/AO3/04 a
submitted with the application. S1E/89/AO3/19

2. Nature and Composition

The effluent discharged shall consist only of surface water from the land and premises to which the application relates.

The effluent discharged to the relevant waters shall not contain any visible traces of oil or grease.

3. Sampling Point

Facilities for the taking of samples by the Authority's Officers shall be provided and maintained at the outlet from the interceptor.

K/1213

CONSENT NO:	P.6120/K/CA/96

P06120

THE WATER RESOURCES ACT 1991

SECTION 88 - SCHEDULE 10

CONSENT TO DISCHARGE

To: Mr N Vivian
Sandwich Management Company Ltd
Sheraton House
Lower Road
Chorleywood
Herts WD3 5LH

The **ENVIRONMENT AGENCY** ("the Agency") in pursuance of its powers under the Water Resources Act 1991 **HEREBY CONSENTS** to the making of a discharge **OF (SEWAGE) EFFLUENT**, as follows:-

Treated Sewage Effluent

FROM: Crystal Business Park

AT: Sandwich Industrial Estate, Sandwich, Kent

TO: A Drainage ditch discharging to the River Stour

SUBJECT TO the conditions set out in the following Schedules:

Treated Sewage Effluent — Schedule No **P.6120/K/CA/96.01**

Subject to the provisions of paragraphs 6 and 7 of Schedule 10 of the Water Resources Act 1991, no notice shall be served by the Agency, altering this consent without the agreement in writing of the discharger, during a period of 2 years from the date this consent takes effect or such later date as may be specified in an endorsement to this document.

This consent is issued and takes effect on the 26th day of June 1996

Signed C.M. Bunker

AREA WATER QUALITY MANAGER

CONSENT NO:	P.6120/K/CA/96
SCHEDULE NO:	P.6120/K/CA/96.01
DATE ISSUED:	

CONDITIONS OF CONSENT TO DISCHARGE

TREATED SEWAGE EFFLUENT ("the discharge").

FROM: The Crystal Business Park, Sandwich Industrial Estate, Sandwich

1. (i) The discharge shall not contain any poisonous, noxious, or polluting matter or solid waste matter.

   (ii) Provided that the discharge hereby consented is made in accordance with the following conditions of this consent, such discharge shall not be taken to be in breach of condition (i) above by reason of containing substances or having properties identified in and controlled by those conditions.

2. The outlet shall be constructed and maintained in accordance with the plan numbered **4235/E/1A** submitted by the Applicant.

3. The outlet at National Grid Reference **TR 3375 5850** shall be used only for the discharge of treated sewage effluent.

4. The effluent discharged to controlled waters shall at the specified sampling point comply with the following standard:

   (a) Biochemical Oxygen Demand (Allylthiourea) 5 days at 20 °C not to exceed **40**mg/l.

   (b) Suspended Solids dried at 105 °C not to exceed **60**mg/l.

5. As far as is reasonably practicable the works shall be operated so as to prevent:

   (a) any matter being present in the discharge, other than matter specifically covered by numerical conditions in this consent, to such an extent as to cause the receiving waters, or any waters of which the receiving waters are a tributary, to be poisonous or injurious to fish in those waters, or as to the spawning grounds, spawn or food of fish in those waters, or otherwise cause damage to ecology of those waters; and

   (b) the treated effluent from having any other adverse environmental impact.

6. The volume of effluent discharged shall not exceed 5 cubic metre in any period of 24 hours.

7. Facilities for the taking of samples by the Agency's Officers shall be provided and maintained at the **chamber** indicated on the plan numbered **4235/E/1/A** submitted with the application.

IMPORTANT NOTICES

1. Requirement to Notify Certain Changes in Particulars

Notice is hereby given under Section 202(2) of The Water Resources Act 1991 that the Agency requires to be notified in writing of any change in the particulars of the name or address of the person to whom this consent is given, or who makes or proposes to make any discharge to which is applies, within one month of the change taking effect. Failure to comply without reasonable cause is an offence punishable on summary conviction by a fine of up to £5000.00.

2. Entry of Premises

In exercise of the powers conferred by Section 169(1) Notice is hereby given under Schedule 20 Water Resources Act 1991 that a person designated in writing by the Agency may enter premises to which it applies in order to carry out such inspections and take away samples of water or effluent as the Agency consider appropriate. It is an offence to intentionally obstruct a person acting in the exercise of this power punishable on summary conviction by a fine of up to £1000.00.

Notice of variation and consolidation with introductory note

Environmental Permitting (England & Wales) Regulations 2010

Geoff Fisher

Land Adjoining Haffenden's Factry
Sandwich Industrial Estate
Sandwich
Kent
CT13 9QT

Variation application number

P07534/V001

Permit number

P07534

Land Adjoining Haffenden's Factry
Permit number P07534

Introductory note

This introductory note does not form a part of the notice.

The following notice gives notice of the variation of an environmental permit.

Following a review of the existing permit this variation notice changes the conditions to ensure compliance with the Environmental Permitting (England and Wales) Regulations 2010 ('the Regulations'). There are no changes to the groundwater activity.

Site plans attached to the permits when they were originally granted are to be deleted in this review exercise. Regulation 14(4) of the Regulations requires environmental permits to include a map, plan or other description of the site of the regulated facility showing its geographical extent. However, regulation 70(a) disapplies this requirement to discharge consents and authorisations (such as this) which became environmental permits on 6 April 2010, upon the introduction of the Regulations. The original site plans do not show the boundary of the site.

The schedules specify the changes made to the original permit.

The status log of a permit sets out the permitting history, including any changes to the permit reference number. It is not backdated before 6 April 2010

Status log of the permit		
Description	**Date**	**Comments**
Regulator initiated variation determined P07534/V001	21/12/2012	EPR and GWDD update

End of introductory note

Notice of variation and consolidation

Environmental Permitting (England and Wales) Regulations 2010

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2010 varies and consolidates

Permit number
P07534

issued to:
Geoff Fisher ("the operator")

of

Geoff Fisher Transport
Unit 8 Richborough Business Park
Ramsgate Road
Sandwich Kent
CT13 9QT

to operate a regulated facility at

Land Adjoining Haffenden's Factry
Sandwich Industrial Estate
Sandwich
Kent
CT13 9QT

to the extent set out in the schedules.

The notice shall take effect from 21/12/2012

Name	Date
Lynn Jones	**21/12/2012**

Authorised on behalf of the Environment Agency

Schedule 1 – conditions to be deleted

All conditions and site plans are deleted and replaced with new template conditions.

Schedule 2 – conditions to be amended

None.

Schedule 3 – conditions to be added

Please see attached new conditions.

Permit

The Environmental Permitting (England and Wales) Regulations 2010

Permit number
P07534

This is the consolidated permit referred to in the variation and consolidation notice for application P07534/V001 authorising,

Geoff Fisher ("the operator")

of

Geoff Fisher Transport
Unit 8 Richborough Business Park
Ramsgate Road
Sandwich Kent
CT13 9QT

to operate a groundwater activity at

Land Adjoining Haffenden's Factry
Sandwich Industrial Estate
Sandwich
Kent
CT13 9QT

to the extent authorised by and subject to the conditions of this permit.

Name	Date
Lynn Jones	**21/12/2012**

Authorised on behalf of the Environment Agency

Conditions

1 Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

(a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances and those drawn to the attention of the operator as a result of complaints; and

(b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

2 Operations

2.1 Permitted activities

2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the "activities").

2.2 The discharge

2.2.1 The discharge shall be made at the point listed in table S3.2 of this permit (discharge points).

3 Emissions and monitoring

3.1 Emissions to water, air or land

3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1, S3.2 and S3.3.

3.1.2 The limits given in schedule 3 shall not be exceeded.

3.2 Emissions of substances not controlled by emission limits

3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.

3.2.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan;

(b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.2.3 Appropriate measures shall be taken to prevent the input of hazardous substances to groundwater by avoiding the entry of those substances into groundwater and by avoiding any significant increase in their concentration in groundwater.

3.3 Monitoring

3.3.1 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1, S3.2 and S3.3 unless otherwise agreed in writing by the Environment Agency.

4 Information

4.1 Records

4.1.1 All records required to be made by this permit shall:

(a) be legible;

(b) be made as soon as reasonably practicable;

(c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and

(d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made.

4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Environment Agency.

4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by the permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.

4.3 Notifications

4.3.1 The Environment Agency shall be notified without delay following the detection of:

(a) any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution;

(b) the breach of a limit specified in the permit; or

(c) any significant adverse environmental effects.

(d) any emergency discharge that has occurred.

4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.

4.3.3 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.

4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

Where the operator is a registered company:

(a) any change in the operator's trading name, registered name or registered office address; and

(b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

Where the operator is a corporate body other than a registered company:

(a) any change in the operator's name or address; and

(b) any steps taken with a view to the dissolution of the operator.

4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

(a) the Environment Agency shall be notified at least 14 days before making the change; and

(b) the notification shall contain a description of the proposed change in operation.

4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.

4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "without delay", in which case it may be provided by telephone.

Schedule 1 – Operations

Table S1.1 Activities	
Description of activity	**Limits of specified activity**
Groundwater activity: discharge into land of trade effluent from trade effluent treatment	Via a soakaway system at NGR TR3380058770

Schedule 2 - Waste types, raw materials and fuels

Wastes are not accepted as part of the permitted activities and there are no restrictions on raw materials or fuels under this schedule.

Schedule 3 – Emissions and monitoring

Table S3.1 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements					
Emission point ref. & location	**Parameter**	**Limit (incl. unit)**	**Reference Period**	**Monitoring frequency**	**Compliance statistic**
Outflow from trade effluent treatment prior to discharge into land	Visible oil or grease	No significant trace present	Instantaneous (spot sample)	N/A	No significant trace

Table S3.2 Discharge points			
Effluent Name	**Discharge Point**	**Discharge point NGR**	**Receiving Environment**
trade effluent	Outlet 1	TR3380058770	Groundwater

Table S3.3 Monitoring points			
Effluent and discharge point	**Monitoring type**	**Monitoring point NGR**	**Monitoring point reference**
trade effluent via Outlet 1	Effluent sample point	TR3380058770	N/A

Schedule 4 - Reporting

There is no reporting under this schedule.

Schedule 5 - Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

Part A

Permit Number	
Name of operator	
Location of Facility	
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	**Notification period**

(c) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B - to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	
The dates of any unauthorised emissions from the facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 - Interpretation

"accident" means an accident that may result in pollution.

"annually" means once every year.

"application" means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 5 to the EP Regulations.

"emissions to land" includes emissions to groundwater.

"EP Regulations" means The Environmental Permitting (England and Wales) Regulations SI 2010 No.675 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

"emissions of substances not controlled by emission limits" means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission limit.

"groundwater" means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

"quarter" means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

"year" means calendar year ending 31 December.

END OF PERMIT

KSL Enquiry 41161 - Environmental Information Request

Land & Water Response

Active Disharge Consents within 1000m buffer zone as per document provided

Consent number (C&E can view on EDRM if more detail requested)|Date issued|Date effective|Long name|Location NGR|Discharge type|
A014727|29/08/2008|29/08/2008|GUILDFORD ROAD SANDWICH WWPS|TR3562957175|Pumping Station on Sewerage Network (water company)|
EPREB3491NZ|08/06/2016 00:00|08/06/2016 00:00|DOWNSBRIDGE COTTAGE|TR3465257576|Domestic property (single) (incl farm house)|
P021581|14/03/1989|14/03/1989|CLIFFSEND GARAGE|TR3450063800|Warehousing + Support Activities for Transportation|
A001021|18/07/1997|18/07/1997|CLIFFS END OUTFALL|TR3466063860|Storm Tank/CSO on Sewerage Network (water company)|
K015220|09/06/1961 00:00|09/06/1961 00:00|CLIFFSEND & MANSTON SEWERAGE|TR3516064270|Storm Tank/CSO on Sewerage Network (water company)|
A004301|18/07/1997|18/07/1997|ROADS LANE OUTFALL|TR3517064090|WwTW/Sewage Treatment Works (water company)|
A006222|27/02/2008|27/02/2008|BULWARKS SEWAGE PUMPING STATION|TR3353058080|Pumping Station on Sewerage Network (water company)|
P061207|26/06/1996|26/06/1996|CRYSTAL BUSINESS PARK|TR3375058500|Real Estate Activities/Buying/Selling/Renting|
P026382|22/11/1989|22/11/1989|PLOT 1-2 SANDWICH INDUSTRIAL EST|TR3370058600|Construction of Buildings|
P075342|21/12/2012|21/12/2012|LAND ADJOINING HAFFENDEN'S FACTRY|TR3380058770|Wholesale Trade (not Motor Vehicles)|
AU808319|05/05/2000|19/05/2000|RELEASE POINT W4|TR3364059690|Making of Basic Pharmaceutical Products + Preps|
P104990|08/11/2002 00:00|08/11/2002 00:00|UNIVERSAL SALVAGE|TR3306060390|Waste Collection/Treatment/Disposal/Materials Recovery|
P116122|26/09/2003|26/09/2003|UNIVERSAL SALVAGE LTD|TR3318060480|Waste Collection/Treatment/Disposal/Materials Recovery|
P210388|31/05/2006|01/07/2007 00:00|THANET WASTE SERVICES LTD|TR3333960827|Waste Collection/Treatment/Disposal/Materials Recovery|
P210375|31/05/2006|01/07/2007 00:00|THANET WASTE SERVICES LTD|TR3333960827|Waste Collection/Treatment/Disposal/Materials Recovery|
P091053|31/10/2000|31/10/2000|RICHBOROUGH HOUSEHOLDERS WASTE...|TR3335060870|Waste Collection/Treatment/Disposal/Materials Recovery|
EPRFB3290RC|02/03/2017 00:00|02/03/2017 00:00|RICHBOROUGH SUBSTATION|TR3330762042|Construction of Buildings|
EPRDB3597NS|14/01/2016|14/01/2016|FORMER RICHBOROUGH POWER STATION|TR3328562087|Construction of Buildings|
P000732|29/07/1985|29/07/1985|RICHBOROUGH SERVICE STATION|TR3358062131|Shop incl Garden Centre/Retail Trade(not Motor Vehicle)|
P037801|14/08/1991|14/08/1991|HERON SERVICE STATION|TR3348062170|Shop incl Garden Centre/Retail Trade(not Motor Vehicle)|
P036830|06/03/1995 00:00|06/03/1995 00:00|LITTLE CHEF (1288)|TR3358062170|Undefined or Other|
A006233|31/03/2010|31/03/2010|WEATHERLEES HILL STW|TR3318962888|WwTW/Sewage Treatment Works (water company)|

Discharge exemptions within 1000m buffer zone as per document provided

Permit reference|Date effective|Paragraph description|Applicant name|Location NGR|Applicant Postcode|Site name|Site Address element 1|Site Address element 2|Site Address element 3|Site Address element 4|Site Postcode|National Grid Reference
NPSWQD0068422|21/04/2009|"Existing Sewage Discharge to Surface"|"|TR3461557460|CT13 9PA|"DOWNS VIEW|SANDOWN ROAD|SANDWICH|KENT|CT13 9PA|TR3461557460
P200961|10/05/2004 00:00|"Existing Sewage Discharge to Surface"|"ENTERCROP LTD|TR3439258806|CT14 0LT|"ENTERCROP LTD|NEW DOWNS FARM|SANDWICH BAY|KENT|CT13 9PE|TR3439258806
P210363|31/|RAMSGATE|"RAMSGATE ROAD"|"RICHBOROUGH|KENT|CT13 8NW|TR3328061020
EPR/GH0965XB/A001|06/09/2010 00:00|Sewage to ground =<2m3/d effective before 6/4/2010|"Edf Energy Networks Ltd.|TR3333961933|SE1 6NP|"Richborough Grid 132KV|"Ramsgate Road|Sandwich|Kent|CT13 9NL|TR3333961933
EPR/GH0965XB/A001|06/09/2010 00:00|Sewage to ground =<2m3/d effective before 6/4/2010|"Edf Energy Networks Ltd.|TR3333961933|RH10 1EX|"Richborough Grid 132KV|"Ramsgate Road|Sandwich|Kent|CT13 9NL|TR3333961933
P118070|31/|EBBSFLEET|THANET"|"KENT|CT12 5JB|TR3370262605

KSL Enquiry 41161 - Environmental Information Request

Land & Water Response
Pollution incidents within 1000m buffer zone as per document provided

EA Incident Ref	Date & Time	Location: NGR	Premises Type	Category of Pollutant	Pollutant Detail
953206	10/01/2012 13:39	TR 34636 63900	Pumping Station	Sewage Materials	Crude Sewage
541775	29/10/2007 13:26	TR 34824 64421		Pollutant Not Identified	Not Identified
1093022	09/03/2013 09:05	TR 33199 62913	Sewage Treatment Works	Sewage Materials	Storm Sewage
1254631	10/07/2014 13:34	TR 33230 62960		General Biodegradable Materials and Wastes	Algae
1195997	20/01/2014	TR 33868 62995		Pollutant Not Identified	Not Identified
624413	26/09/2008 09:49	TR 33953 63093		Specific Waste Materials	Household Waste
624413	26/09/2008 09:49	TR 33953 63093		Specific Waste Materials	Tyres
754124	17/02/2010 16:08	TR 33797 63340	Exempt Spreading/Recovery Facility	Specific Waste Materials	Contaminated Soil
595970	12/06/2008 14:23	TR 34172 63422		Specific Waste Materials	Household Waste
595970	12/06/2008 14:23	TR 34172 63422		Specific Waste Materials	Tyres
631312	28/10/2008 05:39	TR 33500 63500	Road	Oils and Fuel	Diesel
1107341	28/04/2013 22:16	TR 34532 63808	Other Service Sector Premises	Organic Chemicals/Products	Surfactants and Detergents
634701	12/11/2008 14:07	TR 34570 63960	Combined Sewer Overflow	Sewage Materials	Crude Sewage
744184	06/01/2010 11:59	TR 34568 63961	Combined Sewer Overflow	Sewage Materials	Crude Sewage
737880	03/12/2009 15:44	TR 34573 63961	Combined Sewer Overflow	Sewage Materials	Crude Sewage
766441	31/03/2010 15:21	TR 34566 63963	Pumping Station	Sewage Materials	Storm Sewage
776383	03/05/2010 13:21	TR 34570 63964	Pumping Station	Sewage Materials	Storm Sewage
698786	16/07/2009 17:18	TR 33050 62680	Sewage Treatment Works	Sewage Materials	Final Effluent
690087	22/06/2009 16:41	TR 33050 62680	Sewage Treatment Works	Specific Waste Materials	Tarry Wastes
716704	16/09/2009 18:02	TR 33050 62680	Sewage Treatment Works	Sewage Materials	Final Effluent
632775	04/11/2008 14:18	TR 33050 62680	Sewage Treatment Works	Sewage Materials	Final Effluent
832622	21/10/2010 18:25	TR 33053 62680	Water Treatment Works	Sewage Materials	Final Effluent
682044	27/05/2009 12:49	TR 33050 62680		Sewage Materials	Final Effluent
632130	31/10/2008 18:59	TR 33048 62683	Water Treatment Works	Sewage Materials	Final Effluent
738590	07/12/2009 11:36	TR 33057 62777	Sewage Treatment Works	Sewage Materials	Final Effluent
757850	01/03/2010 21:54	TR 33089 62800	Water Treatment Works	Sewage Materials	Final Effluent
644677	07/01/2009 17:19	TR 33079 62876	Water Treatment Works	Sewage Materials	Final Effluent
738194	04/12/2009 16:49	TR 33130 62908	Sewage Treatment Works	Sewage Materials	Final Effluent
505414	20/06/2007 07:56	TR 33130 62908	Sewage Treatment Works	Sewage Materials	Storm Sewage
573757	27/03/2008 09:40	TR 33130 62908	Sewage Treatment Works	Sewage Materials	Crude Sewage
765273	26/03/2010 22:13	TR 33130 62908	Water Treatment Works	Sewage Materials	Final Effluent
729404	02/11/2009 14:29	TR 33130 62908	Water Treatment Works	Sewage Materials	Final Effluent
713448	04/09/2009 22:03	TR 33130 62908	Sewage Treatment Works	Sewage Materials	Final Effluent
729345	02/11/2009 12:27	TR 33136 62912	Water Treatment Works	Sewage Materials	Final Effluent
432593	04/09/2006 17:47	TR 33197 62913	Water Treatment Works	Sewage Materials	Crude Sewage
620838	12/09/2008 11:23	TR 33583 59928	Chemical Manufacturing	Pollutant Not Identified	Not Identified
898160	30/06/2011 02:30	TR 33551 60001	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
104735	02/09/2002 15:45	TR 3541 6048	Other Natural Source	Other Pollutant	Other
616626	28/08/2008 18:16	TR 33538 60663	Chemical Manufacturing	Oils and Fuel	Mixed/Waste Oils
880334	28/04/2011 08:51	TR 33253 60820	Transfer Station	Atmospheric Pollutants and Effects	Dust
797808	04/07/2010 12:38	TR 33338 60827	Household Waste Recycling Centre	Specific Waste Materials	Other Specific Waste Material
903933	18/07/2011 09:43	TR 33338 60827	Transfer Station	Atmospheric Pollutants and Effects	Dust

KSL Enquiry 4

Land & Water
Pollution incic

			Incident (Impact) Category		
EA Incident Ref	**Cause Type**	**Cause Detail**	**AIR**	**LAND**	**WATER**
953206	Containment and Control Failure	Control System Failure	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
541775	Natural Causes	Algal Activity	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1093022	Containment and Control Failure	Sewer Failure or Overflow	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1254631	Natural Causes	Algal Activity	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1195997	Containment and Control Failure	Road Traffic Accident (RTA)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
624413	Unauthorised Activity	Fly-Tipping	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
624413	Unauthorised Activity	Fly-Tipping	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
754124	Unauthorised Activity	Unauthorised Discharge or Disposal	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
595970	Unauthorised Activity	Fly-Tipping	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
595970	Unauthorised Activity	Fly-Tipping	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
631312	Other Cause	Other	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
1107341	Other Cause	Other	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
634701	Containment and Control Failure	Combined Sewer Overflow (CSO)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
744184	Authorised Activity	Other Authorised Activity	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
737880	Containment and Control Failure	Sewer Failure or Overflow	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
766441	Authorised Activity	Other Authorised Activity	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
776383	Authorised Activity	Other Authorised Activity	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
698786	Other Cause	Other	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
690087	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
716704	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
632775	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
832622	Other Cause	Other	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
682044	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
632130	Other Cause	Other	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
738590	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
757850	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
644677	Other Cause	Other	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
738194	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
505414	Containment and Control Failure	Sewer Failure or Overflow	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
573757	Containment and Control Failure	Septic Tank or Sewage Treatment Plant Failure	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
765273	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
729404	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
713448	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
729345	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
432593	Containment and Control Failure	Accidental Spillage	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
620838	Other Cause	Other	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
898160	Containment and Control Failure	Abnormal Process Operation	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
104735	Natural Causes	Algal Activity	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
616626	Cause Not Identified	Not Identified	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
880334	Containment and Control Failure	Control Measure Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
797808	Unauthorised Activity	Unauthorised Discharge or Disposal	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
903933	Containment and Control Failure	Other Inadequate Control or Containment	Category 3 (Minor)	Category 3 (Minor)	Category 4 (No Impact)

EA Incident Ref	Date & Time	Location: NGR	Premises Type	Category of Pollutant	Pollutant Detail
606404	21/07/2008 20:14	TR 33338 60827	Household Waste Recycling Centre	Inorganic Chemicals/Products	Cyanides
1104193	18/04/2013 13:57	TR 33378 61052	Transfer Station	Specific Waste Materials	Household Waste
1162018	25/09/2013 03:51	TR 33347 61101	Transfer Station	Atmospheric Pollutants and Effects	Smoke
1162018	25/09/2013 03:51	TR 33347 61101	Transfer Station	Contaminated Water	Firefighting Run-Off
1162018	25/09/2013 03:51	TR 33347 61101	Transfer Station	Atmospheric Pollutants and Effects	Damage to Buildings, Vehicles and Vegetation
898799	01/07/2011 14:59	TR 33443 61211	Other Waste Management Source	General Biodegradable Materials and Wastes	Other General Biodegradable Material or Waste
1468771	06/09/2016 15:57	TR 33451 61234	Transfer Station	Specific Waste Materials	Household Waste
801759	13/07/2010 16:21	TR 33507 61650		Inert Materials and Wastes	Other Inert Material or Waste
884763	13/05/2011 14:04	TR 33374 61953	Other Power Generation/Supply Source	Contaminated Water	Chemically Contaminated Run-Off
884763	13/05/2011 14:04	TR 33374 61953	Other Power Generation/Supply Source	Atmospheric Pollutants and Effects	Dust
1122947	17/06/2013 00:46	TR 33962 62127	Emergency Services	Contaminated Water	Firefighting Run-Off
113600	09/10/2002 09:49	TR 33518 62128	Road	Inorganic Chemicals/Products	Acids
765685	29/03/2010 13:34	TR 33561 62134	Petrol Stations	Contaminated Water	Vehicle and Plant Washings
1135384	18/07/2013 17:21	TR 33560 62137	Catering and Accommodation	Sewage Materials	Crude Sewage
666395	01/04/2009 11:15	TR 33565 62137	Other Service Sector Premises	Contaminated Water	Vehicle and Plant Washings
1501765	14/02/2017 16:26	TR 33578 62158	Other Service Sector Premises	Contaminated Water	Vehicle and Plant Washings
1501765	14/02/2017 16:26	TR 33578 62158	Other Service Sector Premises	General Biodegradable Materials and Wastes	Other General Biodegradable Material or Waste
595395	11/06/2008 08:32	TR 33684 62478	Rising Main	Sewage Materials	Crude Sewage
48904	19/12/2001 10:14	TR 3450 6250		Oils and Fuel	Unidentified Oil
709841	21/08/2009 22:35	TR 33080 62621	Sewage Treatment Works	Sewage Materials	Final Effluent
838553	15/11/2010 16:17	TR 33364 59144	Chemical Manufacturing	Atmospheric Pollutants and Effects	Fumes
465154	27/01/2007 22:14	TR 33257 59163	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects	Other Atmospheric Pollutant or Effect
499267	01/06/2007 09:04	TR 33275 59164	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects	Smoke
947404	13/12/2011 02:59	TR 33403 59179		Contaminated Water	Firefighting Run-Off
763658	22/03/2010 00:44	TR 33526 59620	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects	Fumes
326113	02/07/2005 00:57	TR 33430 59660		Inorganic Chemicals/Products	Acids
1007516	29/06/2012 19:07	TR 33757 59777	Waste Incinerator	Atmospheric Pollutants and Effects	Other Atmospheric Pollutant or Effect
964076	23/02/2012 01:02	TR 33754 59779	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
955695	19/01/2012 12:27	TR 33760 59782	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
1157477	08/09/2013 15:08	TR 33752 59783	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
1317225	28/02/2015 15:13	TR 33760 59783	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
968698	09/03/2012 09:49	TR 33755 59783	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
1059951	24/11/2012 13:05	TR 33752 59783	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
936426	28/10/2011 20:58	TR 33760 59783	Waste Incinerator	Pollutant Not Identified	Not Identified
1043567	02/10/2012 03:21	TR 33754 59783	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
802867	16/07/2010 13:30	TR 33758 59786	Waste Incinerator	Specific Waste Materials	Other Specific Waste Material
1068693	17/12/2012 01:39	TR 33755 59787	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
1077133	10/01/2013 21:10	TR 33752 59787	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
940067	11/11/2011 03:02	TR 33753 59787	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
515898	21/07/2007 09:24	TR 33759 59788	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects	Smoke
875398	13/04/2011 10:23	TR 33761 59787	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
1271648	26/08/2014 23:59	TR 33762 59787	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
1406606	27/01/2016 23:52	TR 33762 59802	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
487652	19/04/2007 22:02	TR 33763 59786	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects	Smoke
1177975	22/11/2013 11:30	TR 33769 59791	Waste Incinerator	Atmospheric Pollutants and Effects	Smoke
488293	21/04/2007 19:18	TR 33769 59781	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects	Smoke
895226	20/06/2011 07:55	TR 33772 59784	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes

EA Incident Ref	Cause Type	Cause Detail	AIR	LAND	WATER
606404	Containment and Control Failure	Accidental Spillage	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
1104193	Containment and Control Failure	Other Inadequate Control or Containment	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
1162018	Fires	Other Fire	Category 3 (Minor)	Category 3 (Minor)	Category 4 (No Impact)
1162018	Fires	Other Fire	Category 3 (Minor)	Category 3 (Minor)	Category 4 (No Impact)
1162018	Fires	Other Fire	Category 3 (Minor)	Category 3 (Minor)	Category 4 (No Impact)
898799	Unauthorised Activity	Illegal Waste Site	Category 3 (Minor)	Category 3 (Minor)	Category 4 (No Impact)
1468771	Unauthorised Activity	Unauthorised Waste Management Activity	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
801759	Other Cause	Other	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
884763	Unauthorised Activity	Unauthorised Discharge or Disposal	Category 3 (Minor)	Category 4 (No Impact)	Category 3 (Minor)
884763	Unauthorised Activity	Unauthorised Discharge or Disposal	Category 3 (Minor)	Category 4 (No Impact)	Category 3 (Minor)
1122947	Fires	Other Fire	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
113600	Containment and Control Failure	Accidental Spillage	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
765685	Unauthorised Activity	Unauthorised Discharge or Disposal	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1135384	Unauthorised Activity	Unauthorised Discharge or Disposal	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
666395	Containment and Control Failure	Control Measure Failure	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1501765	Unauthorised Activity	Unauthorised Discharge or Disposal	Category 4 (No Impact)	Category 3 (Minor)	Category 3 (Minor)
1501765	Unauthorised Activity	Unauthorised Discharge or Disposal	Category 4 (No Impact)	Category 3 (Minor)	Category 3 (Minor)
595395	Containment and Control Failure	Sewer Failure or Overflow	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
48904	Cause Not Identified	Not Identified	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
709841	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
838553	Cause Not Identified	Not Identified	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
465154	Containment and Control Failure	Other Inadequate Control or Containment	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
499267	Containment and Control Failure	Process Plant Failure (sudden)	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
947404	Fires	Other Fire	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
499267	Containment and Control Failure	Process Plant Failure (sudden)	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
947404	Fires	Other Fire	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
763658	Containment and Control Failure	Control Measure Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
326113	Other Cause	Other	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1007516	Containment and Control Failure	Abnormal Process Operation	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
964076	Other Cause	Other	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
955695	Containment and Control Failure	Control System Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1157477	Containment and Control Failure	Control Measure Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1317225	Cause Not Identified	Not Identified	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
968698	Containment and Control Failure	Other Inadequate Control or Containment	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1059951	Containment and Control Failure	Control Measure Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
936426	Containment and Control Failure	Monitoring System Failure	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
1043567	Containment and Control Failure	Control System Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
802867	Cause Not Identified	Not Identified	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
1068693	Containment and Control Failure	Control Measure Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1077133	Containment and Control Failure	Control Measure Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
940067	Other Cause	Other	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
515898	Containment and Control Failure	Control System Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
875398	Other Cause	Other	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1271648	Unauthorised Activity	Other Unauthorised Activity	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1406606	Unauthorised Activity	Unauthorised Discharge or Disposal	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
487652	Containment and Control Failure	Control Measure Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1177975	Containment and Control Failure	Control Measure Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
488293	Cause Not Identified	Not Identified	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
895226	Containment and Control Failure	Abnormal Process Operation	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)

EA Incident Ref	Date & Time	Location: NGR	Premises Type	Category of Pollutant	Pollutant Detail
735714	26/11/2009 10:45	TR 33775 59797	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects	Chemical Odour
839855	20/11/2010 16:19	TR 33779 59788	Waste Incinerator	Atmospheric Pollutants and Effects	Other Atmospheric Pollutant or Effect
775835	30/04/2010 14:50	TR 33787 59785	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects	Fumes
194117	03/10/2003 11:04	TR 3382 5917		Agricultural Materials and Wastes	Other Agricultural Material or Waste
1217521	13/03/2014 11:46	TR 34027 58660		Oils and Fuel	Diesel
983311	23/04/2012 13:30	TR 34029 58750		Specific Waste Materials	Tyres
1142375	01/08/2013 14:22	TR 34055 59452	Other	Oils and Fuel	Unidentified Oil
1136002	19/07/2013 15:57	TR 35508 59921		Other Pollutant	Microbiological
1463291	18/08/2016 09:20	TR 35780 59040	Other Natural Source	Other Pollutant	Microbiological
1021100	02/08/2012 10:02	TR 33798 58556	Garages and Vehicle Sales	Oils and Fuel	Mixed/Waste Oils
1287192	15/10/2014 18:18	TR 33822 58066	Rising Main	Sewage Materials	Crude Sewage
853464	27/01/2011 20:11	TR 33841 57718	Other Retail Sector Premises	Contaminated Water	Firefighting Run-Off
853464	27/01/2011 20:11	TR 33841 57718	Other Retail Sector Premises	Atmospheric Pollutants and Effects	Smoke
702962	31/07/2009 14:43	TR 33847 57931		Specific Waste Materials	Vehicles and Vehicle Parts
999512	10/06/2012 10:58	TR 33877 58087	Rising Main	Sewage Materials	Crude Sewage
1389162	19/11/2015 15:13	TR 33970 58045	Other Natural Source	Other Pollutant	Microbiological
393835	26/04/2006 13:35	TR 34012 58803		Pollutant Not Identified	Not Identified
21926	04/08/2001 15:01	TR 34234 57606		Oils and Fuel	Petrol
905303	21/07/2011 20:49	TR 34392 58806	Air	Oils and Fuel	Kerosene and Aviation Fuel
636643	23/11/2008 11:32	TR 34486 58596		Pollutant Not Identified	Not Identified
112758	05/10/2002 08:42	TR 34584 57750		Specific Waste Materials	Batteries
1249081	24/06/2014 17:02	TR 34597 57688	Private Dwellings	Oils and Fuel	Diesel
799655	08/07/2010 13:15	TR 36314 57689		Atmospheric Pollutants and Effects	Smoke
799655	08/07/2010 13:15	TR 36314 57689		Contaminated Water	Firefighting Run-Off
582733	29/04/2008 16:50	TR 36382 57757		Pollutant Not Identified	Not Identified
1053538	05/11/2012 16:23	TR 33567 58059	Pumping Station	Sewage Materials	Storm Sewage
1367455	24/08/2015 11:01	TR 33675 58082	Rising Main	Sewage Materials	Crude Sewage
1450230	06/07/2016 02:26	TR 33526 58098	Pumping Station	Sewage Materials	Crude Sewage
708546	18/08/2009 14:14	TR 33539 58102	Pumping Station	Sewage Materials	Crude Sewage
141537	06/03/2003 16:22	TR 3364 5813	Pumping Station	Sewage Materials	Other Sewage Material
396887	08/05/2006 11:32	TR 33550 58150	Pumping Station	Sewage Materials	Crude Sewage
415770	11/07/2006 19:36	TR 33347 58156		Atmospheric Pollutants and Effects	Fumes
164099	07/06/2003 20:41	TR 33584 58314	Other Transport Source	Contaminated Water	Firefighting Run-Off
644655	07/01/2009 16:29	TR 33566 58381	Chemical Manufacturing	Inorganic Chemicals/Products	Acids
750937	04/02/2010 15:22	TR 33450 58480		Specific Waste Materials	Vehicles and Vehicle Parts
1420507	19/03/2016 02:22	TR 33556 58484	Garages and Vehicle Sales	Contaminated Water	Firefighting Run-Off
750940	04/02/2010 15:25	TR 33510 58520		Specific Waste Materials	Vehicles and Vehicle Parts
1405695	25/01/2016 10:34	TR 33749 58577	Metal Recycling	Oils and Fuel	Lubricating Oils
538115	12/10/2007 21:24	TR 33347 58154	Chemical Manufacturing	Atmospheric Pollutants and Effects	Chemical Odour
534916	30/09/2007 16:25	TR 33347 58156	Chemical Manufacturing	Atmospheric Pollutants and Effects	Other Atmospheric Pollutant or Effect
536521	07/10/2007 10:57	TR 33343 58162	Chemical Manufacturing	Atmospheric Pollutants and Effects	Chemical Odour
184539	23/08/2003 12:47	TR 33181 58257	Arable	Organic Chemicals/Products	Pesticides and Biocides
645274	09/01/2009 18:53	TR 35190 56090	Rail	Oils and Fuel	Insulating and Cable Oils
724091	12/10/2009 11:41	TR 35174 56100		Oils and Fuel	Unidentified Oil
1205633	11/02/2014 03:00	TR 35296 56315	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
751764	08/02/2010 13:08	TR 36790 57076	Other Natural Source	Oils and Fuel	Diesel
374236	31/01/2006 10:33	TR 33294 58250		Oils and Fuel	Diesel

EA Incident Ref	Cause Type	Cause Detail	AIR	LAND	WATER
735714	Containment and Control Failure	Control Measure Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
839855	Other Cause	Other	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
775835	Containment and Control Failure	Control Measure Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
194117	Cause Not Identified	Not Identified	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1217521	Unauthorised Activity	Unauthorised Discharge or Disposal	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
983311	Unauthorised Activity	Fly-Tipping	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
1142375	Containment and Control Failure	Accidental Spillage	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
1136002	Natural Causes	Algal Activity	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1463291	Natural Causes	Algal Activity	Category 4 (No Impact)	Category 4 (No Impact)	Category 2 (Significant)
1021100	Unauthorised Activity	Unauthorised Waste Management Activity	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
1287192	Containment and Control Failure	Sewer Failure or Overflow	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
853464	Fires	Other Fire	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
853464	Fires	Other Fire	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
702962	Containment and Control Failure	Road Traffic Accident (RTA)	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
999512	Containment and Control Failure	Pipe Failure below ground	Category 4 (No Impact)	Category 3 (Minor)	Category 2 (Significant)
1389162	Natural Causes	Algal Activity	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
393835	Cause Not Identified	Not Identified	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
21926	Unauthorised Activity	Fly-Tipping	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
905303	Containment and Control Failure	Pipe Failure above ground	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
636643	Cause Not Identified	Not Identified	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
112758	Unauthorised Activity	Fly-Tipping	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1249081	Containment and Control Failure	Accidental Spillage	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
799655	Fires	Other Fire	Category 3 (Minor)	Category 3 (Minor)	Category 4 (No Impact)
799655	Fires	Other Fire	Category 3 (Minor)	Category 3 (Minor)	Category 4 (No Impact)
799655	Fires	Other Fire	Category 3 (Minor)	Category 3 (Minor)	Category 4 (No Impact)
582733	Cause Not Identified	Not Identified	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
1053538	Containment and Control Failure	Sewer Failure or Overflow	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
1367455	Containment and Control Failure	Sewer Failure or Overflow	Category 4 (No Impact)	Category 3 (Minor)	Category 3 (Minor)
1450230	Containment and Control Failure	Control System Failure	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
708546	Containment and Control Failure	Control System Failure	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
141537	Unauthorised Activity	Unauthorised Discharge or Disposal	Category 3 (Minor)	Category 4 (No Impact)	Category 3 (Minor)
396887	Authorised Activity	Other Authorised Activity	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
415770	Authorised Activity	Other Authorised Activity	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
164099	Fires	Other Fire	Category 3 (Minor)	Category 3 (Minor)	Category 3 (Minor)
644655	Unauthorised Activity	Unauthorised Discharge or Disposal	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
750937	Unauthorised Activity	Unauthorised Waste Management Activity	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
1420507	Fires	Other Fire	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
750940	Unauthorised Activity	Unauthorised Waste Management Activity	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
1405695	Unauthorised Activity	Unauthorised Waste Management Activity	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
538115	Containment and Control Failure	Control Measure Failure	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
534916	Unauthorised Activity	Unauthorised Discharge or Disposal	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
536521	Unauthorised Activity	Unauthorised Discharge or Disposal	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
184539	Containment and Control Failure	Accidental Spillage	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
645274	Containment and Control Failure	Other Inadequate Control or Containment	Category 4 (No Impact)	Category 3 (Minor)	Category 3 (Minor)
724091	Cause Not Identified	Not Identified	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1205633	Containment and Control Failure	Control Measure Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
751764	Unauthorised Activity	Vandalism	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
374236	Cause Not Identified	Not Identified	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)

EA Incident Ref	Date & Time	Location: NGR	Premises Type	Category of Pollutant	Pollutant Detail
360356	15/11/2005 12:31	TR 33210 58267		Pollutant Not Identified	Not Identified
1463889	19/08/2016 17:32	TR 33207 58280	Inland Waterways	Oils and Fuel	Lubricating Oils
1254185	09/07/2014 12:47	TR 33171 58288		Oils and Fuel	Unidentified Oil
1195560	17/01/2014 16:30	TR 33233 58312	Other	Oils and Fuel	Hydraulic Oils
423679	02/08/2006 02:24	TR 33422 58326	General Engineering	Atmospheric Pollutants and Effects	Smoke
78318	13/05/2002 10:44	TR 3313 5836		Specific Waste Materials	Household Waste
1291832	04/11/2014 15:36	TR 33061 58378	Other	Other Pollutant	Other
1291832	04/11/2014 15:36	TR 33061 58378	Other	Oils and Fuel	Diesel
281938	08/12/2004 13:42	TR 33263 58589	Other Waste Management Source	Other Pollutant	Other
1032436	30/08/2012 19:23	TR 33381 59050		Oils and Fuel	Petrol
635459	17/11/2008 09:06	TR 33241 59137	Chemical Manufacturing	Inorganic Chemicals/Products	Other Inorganic Chemical or Product
672986	23/04/2009 09:12	TR 33377 59188	Chemical Manufacturing	Atmospheric Pollutants and Effects	Fumes
1261093	25/07/2014 22:45	TR 33160 60050	Rising Main	Sewage Materials	Crude Sewage
1068585	16/12/2012 09:05	TR 33264 59616		Atmospheric Pollutants and Effects	Smoke
1038727	19/09/2012 11:18	TR 33275 60181	Foul Sewer	Sewage Materials	Crude Sewage
1187710	28/12/2013 00:43	TR 33355 60306	Rising Main	Sewage Materials	Crude Sewage
203532	25/11/2003 15:52	TR 33362 60205	Chemical Manufacturing	Sewage Materials	Crude Sewage
1118939	04/06/2013 22:48	TR 33387 60201	Road	Oils and Fuel	Diesel
1151958	25/08/2013 21:03	TR 33391 60309	Rising Main	Sewage Materials	Crude Sewage
13647	06/04/2001 14:34	TR 3340 5945	Biotechnology and Pharmaceuticals	Inorganic Chemicals/Products	Other Inorganic Chemical or Product
700785	23/07/2009 15:39	TR 33407 59197	Chemical Manufacturing	Atmospheric Pollutants and Effects	Fumes
1177859	21/11/2013 18:49	TR 33445 59663	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
684658	04/06/2009 14:34	TR 33460 60050	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects	Fumes
10967	23/04/2001 15:40	TR 3350 6025		Oils and Fuel	Other Oil or Fuel
439929	29/09/2006 14:32	TR 33553 59800	Chemical Manufacturing	Organic Chemicals/Products	Solvents
749073	27/01/2010 18:28	TR 33573 59485	Biotechnology and Pharmaceuticals	Organic Chemicals/Products	Other Organic Chemical or Product
251511	16/07/2004 15:19	TR 33577 59963		Inorganic Chemicals/Products	Acids
1195662	18/01/2014 04:52	TR 33650 59860	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
397868	10/05/2006 17:19	TR 33673 59491	Biotechnology and Pharmaceuticals	Inorganic Chemicals/Products	Other Inorganic Chemical or Product
1043046	29/09/2012 17:20	TR 33751 59785	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
1150452	21/08/2013 21:05	TR 33751 59787	Waste Incinerator	Atmospheric Pollutants and Effects	Fumes
899628	04/07/2011 16:34	TR 32880 62328	Other Power Generation/Supply Source	Contaminated Water	Chemically Contaminated Run-Off
1220102	21/03/2014 08:52	TR 32925 62613	Sewage Treatment Works	Sewage Materials	Final Effluent
1220102	21/03/2014 08:52	TR 32925 62613	Sewage Treatment Works	Sewage Materials	Sludge
590416	25/05/2008 10:59	TR 32961 62785	Sewage Treatment Works	Sewage Materials	Crude Sewage
945205	02/12/2011 07:50	TR 32980 62770		Sewage Materials	Sludge
99401	12/08/2002 09:56	TR 3302 6231	Oil-Fired	Contaminated Water	Other Contaminated Water
712843	02/09/2009 18:03	TR 33024 62792	Sewage Treatment Works	Sewage Materials	Final Effluent
787750	07/06/2010 16:20	TR 33031 62775	Sewage Treatment Works	Sewage Materials	Final Effluent
696409	08/07/2009 17:20	TR 33050 62680	Water Treatment Works	Sewage Materials	Final Effluent
842970	07/12/2010 18:30	TR 33050 62680	Sewage Treatment Works	Sewage Materials	Final Effluent
711533	27/08/2009 18:33	TR 33050 62680	Sewage Treatment Works	Sewage Materials	Final Effluent
652574	10/02/2009 16:19	TR 33050 62680	Sewage Treatment Works	Sewage Materials	Final Effluent
727075	22/10/2009 16:33	TR 33130 62908	Sewage Treatment Works	Sewage Materials	Final Effluent

EA Incident Ref	Cause Type	Cause Detail	AIR	LAND	WATER
360356	Cause Not Identified	Not Identified	Category 4 (No Impact)	Category 4 (No Impact)	Category 2 (Significant)
1463889	Containment and Control Failure	Accidental Spillage	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1254185	Cause Not Identified	Not Identified	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1195560	Containment and Control Failure	Accidental Spillage	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
423679	Cause Not Identified	Not Identified	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
78318	Containment and Control Failure	Other Inadequate Control or Containment	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1291832	Fires	Other Fire	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1291832	Fires	Other Fire	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
281938	Authorised Activity	Other Authorised Activity	Category 4 (No Impact)	Category 3 (Minor)	Category 3 (Minor)
1032436	Containment and Control Failure	Road Traffic Accident (RTA)	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
635459	Authorised Activity	Consented Works on Land	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
672986	Containment and Control Failure	Control Measure Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1261093	Containment and Control Failure	Pipe Failure below ground	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1068585	Fires	Other Fire	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
1038727	Containment and Control Failure	Sewer Failure or Overflow	Category 3 (Minor)	Category 3 (Minor)	Category 4 (No Impact)
1187710	Containment and Control Failure	Pipe Failure below ground	Category 4 (No Impact)	Category 3 (Minor)	Category 3 (Minor)
203532	Containment and Control Failure	Pipe Failure above ground	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1118939	Other Cause	Other	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1151958	Containment and Control Failure	Sewer Failure or Overflow	Category 4 (No Impact)	Category 3 (Minor)	Category 3 (Minor)
13647	Containment and Control Failure	Accidental Spillage	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
700785	Containment and Control Failure	Process Plant Failure (sudden)	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1177859	Unauthorised Activity	Unauthorised Discharge or Disposal	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
684658	Containment and Control Failure	Control System Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
10967	Other Cause	Other	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
439929	Containment and Control Failure	Process Plant Failure (sudden)	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
749073	Cause Not Identified	Not Identified	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
251511	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1195662	Containment and Control Failure	Control Measure Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
397868	Containment and Control Failure	Other Inadequate Control or Containment	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1043046	Containment and Control Failure	Control Measure Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1150452	Containment and Control Failure	Control System Failure	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
899628	Unauthorised Activity	Unauthorised Discharge or Disposal	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1220102	Containment and Control Failure	Septic Tank or Sewage Treatment Plant Failure	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1220102	Containment and Control Failure	Septic Tank or Sewage Treatment Plant Failure	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
590416	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
945205	Containment and Control Failure	Accidental Spillage	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
99401	Authorised Activity	Other Authorised Activity	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
712843	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
787750	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
696409	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
842970	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
711533	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
652574	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
727075	Containment and Control Failure	Process Plant Failure (sudden)	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)

Environment Agency	**Kent, South London & East Sussex Area**
Search for Amec Foster Wheeler. **Search Criteria: Abstraction Licenses within 1 km buffer zone of lines of interest (as shown on map supplied with request).**	**Results of Abstraction Licence Search**

Please note: An abstraction licence may have more than one point and/or purpose. Some licences have different maximum quantities associated with each point/purpose. Because of this we have included the 'Total Qty for the whole licence' fields (Max_Annual_Qty and Max_Daily Qty)

Please see Caveats at the bottom of the page

Abstraction Licence Number	Licence Holder Name	Address Line 1	Address Line 2	Address Town	Address Postcode	Purpose Description	Sub-purpose Description	Use Description	Start Date	End Date	Maximum Annual Quantity (m^3)	Maximum Daily Quantity (m^3)	Source Description	Abstraction Name	National Grid Reference
09/179	Stonelees Golf Centre	Ebbsfleet Lane		Nr Ramsgate	CT12 5DJ	Agriculture	General Agriculture	Spray Irrigation - Storage	01-Apr	31-Oct	5,950.0	864.0	Southern Region Surface Waters	Point A, Drainage Dyke NE of B2048, Ebbsfleet	TR33836361
									01-Nov	31-Mar				Point A, Drainage Dyke NE of B2048, Ebbsfleet	TR33836361
09/182	S.G. Robertson	Sarness Farm	Waltham	Canterbury	CT4 5SB	Agriculture	General Agriculture	Spray Irrigation - Direct	01-Apr	30-Sep	105,510.0	3,412.0	Southern Region Surface Waters	Points A-C, Minster Stream & Tribs at Minster Marshes	TR3279563265
								Spray Irrigation - Storage	01-Nov	31-Mar				Points A-C, Minster Stream & Tribs at Minster Marshes	TR3279563265
09/183	St Nicholas Court Farms Ltd	St Nicholas Court	Court Road	Birchington	CT7 0NJ	Agriculture	General Agriculture	Spray Irrigation - Direct	01-Apr	30-Sep	9,188.0	280.0	Southern Region Surface Waters	Point A, Watercourse at Ebbsfleet.	TR33436233
									01-Apr	30-Sep				Point B, Watercourse at Ebbsfleet.	TR33276275
09/206/R01	Betteshanger Farms Ltd	Northbourne Court	Northbourne	Deal	CT14 0LW	Agriculture	General Agriculture	Spray Irrigation - Storage	01-Nov	28-Feb	45,454.0	1,440.0	Southern Region Surface Waters	Point 'A' North Stream (New Cut) New Downs Farm, Sandwich	TR3451158531
09/208/R01	D.H. Clifton	Abbey Farm	Minster	Ramsgate	CT12 4HQ	Agriculture	General Agriculture	Spray Irrigation - Direct	01-Apr	31-Oct	123,182.0	3,000.0	Southern Region Surface Waters	Watercourses within Minster Marshes	TR3234462337
9/40/04/0018/SR	The Quex Park Estates Co Ltd	Quex Park		Birchington	CT7 0BH	Agriculture	General Agriculture	Spray Irrigation - Direct	01-Apr	30-Sep	8,183.0	682.0	Southern Region Surface Waters	Watercourses at Fleet Valley, Near Weatherlees	TR3220061725
9/40/04/0029/A/GR	J.R.S. Tapp	Ambry Court		Nr Birchington	CT7 0NG	Agriculture	General Agriculture	General Farming & Domestic	01-Oct	30-Sep	12,611.0	34.5	Southern Region (Chalk) Groundwater	Borehole at Ebbsfleet Farm	TR33246309
9/40/04/0131/SR	Betteshanger Farms Ltd	Home Farm	Betteshanger	Deal	CT14 0NT	Agriculture	General Agriculture	Spray Irrigation - Direct	01-Mar	31-Oct	56,825.0	454.6	Southern Region Surface Waters	The East Bank of the North Stream at New Downs Farm, Worth	TR3449058390
									01-Mar	31-Oct				Marsh Dykes at New Downs Farm	TR3432559250
9/40/04/0178/SR	H. Burch & Son	Downs Court Farm	Sandown Road	Sandwich	CT13 9JZ	Agriculture	General Agriculture	Spray Irrigation - Direct	01-Mar	31-Oct	14,000.0	460.0	Southern Region Surface Waters	Watercourse at The Horseshoes, Sandwich	TR3420557545
9/40/04/0182/SR	Royal St Georges Golf Club	Royal St Georges Golf Club	Sandwich Bay	Sandwich	CT13 9PD	Industrial, Commercial and Public Services	Golf Courses	Spray Irrigation - Storage	01-Nov	31-Mar	23,867.0	545.0	Southern Region Surface Waters	North Stream at St George's Road Bridge	TR3482657620
							Golf Courses	Spray Irrigation - Direct	01-Apr	31-Oct				North Stream at Royal St. Georges, Sandwich	TR3475658121
9/40/04/0212/SR	A., R. & N. Daw	Castle Farm	Richborough	Sandwich	CT13 9JH	Agriculture	General Agriculture	Spray Irrigation - Direct	01-Apr	31-Aug	9,274.0	127.3	Southern Region Surface Waters	Point 1 A, Marsh Dykes and Streams at Old Downs Farm, Worth	TR35235685
									01-Apr	31-Aug				Point 1 B, Marsh Dykes and Streams at Old Downs Farm, Worth	TR35275676
									01-Apr	31-Aug				Point 2, Marsh Dykes and Streams at Old Downs Farm, Worth	TR35105663
									01-Apr	31-Aug				Point 4, Marsh Dykes and Streams at Old Downs Farm, Worth	TR35455638
									01-Apr	31-Aug				Point 6a, Marsh Dykes and Streams at Old Downs Farm, Worth	TR35725605
									01-Apr	31-Aug				Point 6b, Marsh Dykes and Streams at Old Downs Farm, Worth	TR35985615
9/40/04/0230/SR	Princes Leisure Group Limited	Sandwich Bay		Sandwich	CT13 9QB	Industrial, Commercial and Public Services	Golf Courses	Spray Irrigation - Storage	01-Apr	31-Oct	70,000.0	864.0	Southern Region Surface Waters	North Stream Near New Downs Farm, Sandwich	TR3450958571
									01-Nov	31-Mar				North Stream Near New Downs Farm, Sandwich	TR3450958571
9/40/04/0442/S	Edward Spanton Farms	Minster House	Minster	Ramsgate	CT12 4HN	Agriculture	General Agriculture	Spray Irrigation - Direct	01-Apr	31-Oct	14,811.0	546.0	Southern Region Surface Waters	Points 1-2, Ebbsfleet Stream at Cliffsend.	TR3376563505
9/40/04/0445/S	Chislet Court Farm	Chislet Court Farm	Chislet	Canterbury	CT3 4DU	Agriculture	General Agriculture	Spray Irrigation - Direct	01-Apr	30-Sep	13,182.0	909.0	Southern Region Surface Waters	Points E-F, South Stream & Tribs. in Sandwich.	TR3468557405
9/40/04/0500/S	H. Burch & Son	Downs Court Farm	Sandown Road	Sandwich	CT13 9JZ	Agriculture	General Agriculture	Spray Irrigation - Direct	01-May	30-Sep	35,273.3	1,682.0	Southern Region Surface Waters	Point A-B, North Stream at Sandwich.	TR3403058030
									01-May	30-Sep				Point C, South Stream at Sandwich	TR33905750
									01-May	30-Sep				Point C1, North Stream at Sandwich.	TR34615777

Abstraction Licence Number	Licence Holder Name	Address Line 1	Address Line 2	Address Town	Address Postcode	Purpose Description	Sub-purpose Description	Use Description	Start Date	End Date	Maximum Annual Quantity (m^3)	Maximum Daily Quantity (m^3)	Source Description	Abstraction Name	National Grid Reference
9/40/04/0501/S	J. & S. Hopkins	Horseshoes	Sandown Road	Sandwich	CT13 9NX	Agriculture	General Agriculture	Spray Irrigation - Direct	01-May	30-Sep	3,822.0	136.0	Southern Region Surface Waters	Point D1, South Stream, Sandwich.	TR34295730
9/40/04/0507/S	Messrs J.P. Ash & Sons	Newlands Farm	Newlands Lane	Ramsgate	CT12 6RH	Agriculture	General Agriculture	Spray Irrigation - Direct	01-Apr	30-Sep	5,000.0	250.0	Southern Region Surface Waters	Point C-D, North Stream, The Delf, Poll Bay Dyke & Unnamed.	TR3431557520
									01-Apr	30-Sep				Point E-G, North Stream, The Delf, Poll Bay Dyke & Unnamed.	TR3490057370
									01-Apr	30-Sep				Point F-N, The Delf	TR3484057345
									01-Apr	30-Sep				Point J-K, North Stream, The Delf, Poll Bay Dyke & Unnamed.	TR3455057020
									01-Apr	30-Sep				Point N-H, The Delf	TR3461057220
9/40/04/0539/S	P.E. Dyas	Sevenscore Farmhouse	Cottington Road	Thanet	CT12 5DW	Agriculture	General Agriculture	Spray Irrigation - Direct	01-Apr	30-Sep	30,460.0	940.0	Southern Region Surface Waters	Point R, Watercourse at Ebbsfleet	TR33156300
9/40/04/0540/S	B.E. Young	43 Canterbury Road East		Ramsgate	CT11 0JX	Agriculture	General Agriculture	Spray Irrigation - Direct	01-Apr	30-Sep	4,320.0	140.0	Southern Region Surface Waters		
9/40/04/0541/S	S.G. Robertson	Sarness Farm	Waltham	Canterbury	CT4 5SB	Agriculture	General Agriculture	Spray Irrigation - Storage	01-Oct	31-Mar	31,600.0	980.0	Southern Region Surface Waters		
								Spray Irrigation - Direct	01-Apr	30-Sep					
SO/040/0009/002/R01	A.E. Daw & Son	Castle Farm	Richborough	Sandwich	CT13 9JH	Agriculture	General Agriculture	Spray Irrigation - Direct	01-Mar	31-Oct	4,072.0	91.8	Southern Region Surface Waters	Point A - North Stream & Connected Watercourses in Sandwich	TR3516557041
SO/040/0009/003/R01	R.A. & E.P. Daw	Old Downs Farm		Sandwich Bay	CT13 9PF	Agriculture	General Agriculture	Spray Irrigation - Direct	01-Mar	31-Oct	30,000.0	754.0	Southern Region Surface Waters	Point A, North Stream, Sandhills Sewer and Connected Waters	TR3497957403
									01-Mar	31-Oct				Point B, North Stream, Sandhills Sewer and Connected Waters	TR3522057162
									01-Mar	31-Oct				Point C, North Stream, Sandhills Sewer and Connected Waters	TR3530956620
									01-Mar	31-Oct				Point D, North Stream, Sandhills Sewer and Connected Waters	TR3562356679
SO/040/0009/004/R01	The Royal Society for the Protection of Birds	UK Head Quarters	The Lodge	Sandy	SG19 2DL	Environmental	Non-Remedial River/Wetland Support	General Use Relating To Secondary Category (Low Loss)	01-Mar	31-Oct	6,818.0	154.0	Southern Region Surface Waters	Point A, Sandhills Lead Dyke	TR3579456434
									01-Mar	31-Oct				Point B, Sandhills Lead Dyke	TR3602656396
									01-Mar	31-Oct				Point C, Unnamed Drain in Sandwich	TR3598756160
									01-Mar	31-Oct				Point D, Unnamed Drain in Sandwich	TR3583355976

Please note that the data provided is based on that available at the time of preparation. It may be subject to subsequent updating by way of amendment or addition. The grid Reference relates to one point only. The licence may authorise abstraction from more than one point or from a reach or area.

This search only includes abstractions licensed by the Environment Agency and does not include abstractions under 20m3/day (lawful abstractions) nor abstractions uses that are exempt from licensing.

Notification Identifier	Notification Date	National Grid Reference	Easting	Northing	Substantiated	Incident Status	Air - Incident Category	Land - Incident Category	Water - Incident Category
1405695	25/01/2016 10:34	TR 33749 58577	633749	158577	Yes	Closed	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
1217521	13/03/2014 11:46	TR 34027 58660	634027	158660	Yes	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
983311	23/04/2012 13:30	TR 34029 58750	634029	158750	Yes	Closed	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
905303	21/07/2011 20:49	TR 34392 58806	634392	158806	Yes	Closed	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
194117	03/10/2003 11:04	TR 3382 5917	633820	159170	Yes	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1142375	01/08/2013 14:22	TR 34055 59452	634055	159452	Yes	Closed	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
749073	27/01/2010 18:28	TR 33573 59485	633573	159485	Yes	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
397868	10/05/2006 17:19	TR 33673 59491	633673	159491	Yes	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1007516	29/06/2012 19:07	TR 33757 59777	633757	159777	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
964076	23/02/2012 01:02	TR 33754 59779	633754	159779	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
488293	21/04/2007 19:18	TR 33769 59781	633769	159781	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
955695	19/01/2012 12:27	TR 33760 59782	633760	159782	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
968698	09/03/2012 09:49	TR 33755 59783	633755	159783	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1059951	24/11/2012 13:05	TR 33752 59783	633752	159783	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1157477	08/09/2013 15:08	TR 33752 59783	633752	159783	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1043567	02/10/2012 03:21	TR 33754 59783	633754	159783	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
936426	28/10/2011 20:58	TR 33760 59783	633760	159783	Yes	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
1317225	28/02/2015 15:13	TR 33760 59783	633760	159783	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
895226	20/06/2011 07:55	TR 33772 59784	633772	159784	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
775835	30/04/2010 14:50	TR 33787 59785	633787	159785	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1043046	29/09/2012 17:20	TR 33751 59785	633751	159785	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
802867	16/07/2010 13:30	TR 33758 59786	633758	159786	Yes	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
487652	19/04/2007 22:02	TR 33763 59786	633763	159786	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1068693	17/12/2012 01:39	TR 33755 59787	633755	159787	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1150452	21/08/2013 21:05	TR 33751 59787	633751	159787	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
940067	11/11/2011 03:02	TR 33753 59787	633753	159787	Yes	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
1077133	10/01/2013 21:10	TR 33752 59787	633752	159787	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
875398	13/04/2011 10:23	TR 33761 59787	633761	159787	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1271648	26/08/2014 23:59	TR 33762 59787	633762	159787	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
515898	21/07/2007 09:24	TR 33759 59788	633759	159788	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
839855	20/11/2010 16:19	TR 33779 59788	633779	159788	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1177975	22/11/2013 11:30	TR 33769 59791	633769	159791	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
735714	26/11/2009 10:45	TR 33775 59797	633775	159797	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
439929	29/09/2006 14:32	TR 33553 59800	633553	159800	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1406606	27/01/2016 23:52	TR 33762 59802	633762	159802	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1195662	18/01/2014 04:52	TR 33650 59860	633650	159860	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
620838	12/09/2008 11:23	TR 33583 59928	633583	159928	Yes	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
251511	16/07/2004 15:19	TR 33577 59963	633577	159963	Yes	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
898160	30/06/2011 02:30	TR 33551 60001	633551	160001	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1068585	16/12/2012 09:05	TR 33264 59616	633264	159616	Yes	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)
326113	02/07/2005 00:57	TR 33430 59660	633430	159660	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1177859	21/11/2013 18:49	TR 33445 59663	633445	159663	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1261093	25/07/2014 22:45	TR 33160 60050	633160	160050	Yes	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
684658	04/06/2009 14:34	TR 33460 60050	633460	160050	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1038727	19/09/2012 11:18	TR 33275 60181	633275	160181	Yes	Closed	Category 3 (Minor)	Category 3 (Minor)	Category 4 (No Impact)
1118939	04/06/2013 22:48	TR 33387 60201	633387	160201	Yes	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
203532	25/11/2003 15:52	TR 33362 60205	633362	160205	Yes	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)

Notification Identifier	Type of cause	Cause of incident	Type of premises	Premises	Category of pollutant
1405695	Unauthorised Activity	Unauthorised Waste Management Activity	Waste Management	Metal Recycling	Oils and Fuel
1217521	Unauthorised Activity	Unauthorised Discharge or Disposal			Oils and Fuel
983311	Unauthorised Activity	Fly-Tipping			Specific Waste Materials
905303	Containment and Control Failure	Pipe Failure above ground	Transport	Air	Oils and Fuel
194117	Cause Not Identified	Not Identified			Agricultural Materials and Wastes
1142375	Containment and Control Failure	Accidental Spillage	Other Source	Other	Oils and Fuel
749073	Cause Not Identified	Not Identified	Manufacturing	Biotechnology and Pharmaceuticals	Organic Chemicals/Products
397868	Containment and Control Failure	Other Inadequate Control or Containment	Manufacturing	Biotechnology and Pharmaceuticals	Inorganic Chemicals/Products
1007516	Containment and Control Failure	Abnormal Process Operation	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
964076	Other Cause	Other	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
488293	Cause Not Identified	Not Identified	Manufacturing	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects
955695	Containment and Control Failure	Control System Failure	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
968698	Containment and Control Failure	Other Inadequate Control or Containment	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
1059951	Containment and Control Failure	Control Measure Failure	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
1157477	Containment and Control Failure	Control Measure Failure	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
1043567	Containment and Control Failure	Control System Failure	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
936426	Containment and Control Failure	Monitoring System Failure	Waste Management	Waste Incinerator	Pollutant Not Identified
1317225	Cause Not Identified	Not Identified	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
895226	Containment and Control Failure	Abnormal Process Operation	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
775835	Containment and Control Failure	Control Measure Failure	Manufacturing	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects
1043046	Containment and Control Failure	Control Measure Failure	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
802867	Cause Not Identified	Not Identified	Waste Management	Waste Incinerator	Specific Waste Materials
487652	Containment and Control Failure	Control Measure Failure	Manufacturing	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects
1068693	Containment and Control Failure	Control Measure Failure	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
1150452	Containment and Control Failure	Control System Failure	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
940067	Other Cause	Other	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
1077133	Containment and Control Failure	Control Measure Failure	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
875398	Other Cause	Other	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
1271648	Unauthorised Activity	Other Unauthorised Activity	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
515898	Containment and Control Failure	Control System Failure	Manufacturing	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects
839855	Other Cause	Other	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
1177975	Containment and Control Failure	Control Measure Failure	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
735714	Containment and Control Failure	Control Measure Failure	Manufacturing	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects
439929	Containment and Control Failure	Process Plant Failure (sudden)	Manufacturing	Chemical Manufacturing	Organic Chemicals/Products
1406606	Unauthorised Activity	Unauthorised Discharge or Disposal	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
1195662	Containment and Control Failure	Control Measure Failure	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
620838	Other Cause	Other	Manufacturing	Chemical Manufacturing	Pollutant Not Identified
251511	Containment and Control Failure	Process Plant Failure (sudden)			Inorganic Chemicals/Products
898160	Containment and Control Failure	Abnormal Process Operation	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
1068585	Fires	Other Fire			Atmospheric Pollutants and Effects
326113	Other Cause	Other			Inorganic Chemicals/Products
1177859	Unauthorised Activity	Unauthorised Discharge or Disposal	Waste Management	Waste Incinerator	Atmospheric Pollutants and Effects
1261093	Containment and Control Failure	Pipe Failure below ground	Water Industry	Rising Main	Sewage Materials
684658	Containment and Control Failure	Control System Failure	Manufacturing	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects
1038727	Containment and Control Failure	Sewer Failure or Overflow	Water Industry	Foul Sewer	Sewage Materials
1118939	Other Cause	Other	Transport	Road	Oils and Fuel
203532	Containment and Control Failure	Pipe Failure above ground	Manufacturing	Chemical Manufacturing	Sewage Materials

Notification Identifier	Pollutant
1405695	Lubricating Oils
1217521	Diesel
983311	Tyres
905303	Kerosene and Aviation Fuel
194117	Other Agricultural Material or Waste
1142375	Unidentified Oil
749073	Other Organic Chemical or Product
397868	Other Inorganic Chemical or Product
1007516	Other Atmospheric Pollutant or Effect
964076	Fumes
488293	Smoke
955695	Fumes
968698	Fumes
1059951	Fumes
1157477	Fumes
1043567	Fumes
936426	Not Identified
1317225	Fumes
895226	Fumes
775835	Fumes
1043046	Fumes
802867	Other Specific Waste Material
487652	Smoke
1068693	Fumes
1150452	Fumes
940067	Fumes
1077133	Fumes
875398	Fumes
1271648	Fumes
515898	Smoke
839855	Other Atmospheric Pollutant or Effect
1177975	Smoke
735714	Chemical Odour
439929	Solvents
1406606	Fumes
1195662	Fumes
620838	Not Identified
251511	Acids
898160	Fumes
1068585	Smoke
326113	Acids
1177859	Fumes
1261093	Crude Sewage
684658	Fumes
1038727	Crude Sewage
1118939	Diesel
203532	Crude Sewage

Notification Identifier	Notification Date	National Grid Reference	Easting	Northing	Substantiated	Incident Status	Air - Incident Category	Land - Incident Category	Water - Incident Category
10967	23/04/2001 15:40	TR 3350 6025	633500	160250	Yes	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
1151958	25/08/2013 21:03	TR 33391 60309	633391	160309	Yes	Closed	Category 4 (No Impact)	Category 3 (Minor)	Category 3 (Minor)
635459	17/11/2008 09:06	TR 33241 59137	633241	159137	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
465154	27/01/2007 22:14	TR 33257 59163	633257	159163	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
499267	01/06/2007 09:04	TR 33275 59164	633275	159164	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
838553	15/11/2010 16:17	TR 33364 59144	633364	159144	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
672986	23/04/2009 09:12	TR 33377 59188	633377	159188	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
13647	06/04/2001 14:34	TR 3340 5945	633400	159450	Yes	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)
947404	13/12/2011 02:59	TR 33403 59179	633403	159179	Yes	Closed	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
700785	23/07/2009 15:39	TR 33407 59197	633407	159197	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
750940	04/02/2010 15:25	TR 33510 58520	633510	158520	Yes	Closed	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
763658	22/03/2010 00:44	TR 33526 59620	633526	159620	Yes	Closed	Category 3 (Minor)	Category 4 (No Impact)	Category 4 (No Impact)
1032436	30/08/2012 19:23	TR 33381 59050	633381	159050	Yes	Closed	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
1021100	02/08/2012 10:02	TR 33798 58556	633798	158556	Yes	Closed	Category 4 (No Impact)	Category 3 (Minor)	Category 4 (No Impact)
393835	26/04/2006 13:35	TR 34012 58803	634012	158803	Yes	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)

Notification Identifier	Type of cause	Cause of incident	Type of premises	Premises	Category of pollutant
10967	Other Cause	Other			Oils and Fuel
1151958	Containment and Control Failure	Sewer Failure or Overflow	Water Industry	Rising Main	Sewage Materials
635459	Authorised Activity	Consented Works on Land	Manufacturing	Chemical Manufacturing	Inorganic Chemicals/Products
465154	Containment and Control Failure	Other Inadequate Control or Containment	Manufacturing	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects
499267	Containment and Control Failure	Process Plant Failure (sudden)	Manufacturing	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects
838553	Cause Not Identified	Not Identified	Manufacturing	Chemical Manufacturing	Atmospheric Pollutants and Effects
672986	Containment and Control Failure	Control Measure Failure	Manufacturing	Chemical Manufacturing	Atmospheric Pollutants and Effects
13647	Containment and Control Failure	Accidental Spillage	Manufacturing	Biotechnology and Pharmaceuticals	Inorganic Chemicals/Products
947404	Fires	Other Fire			Contaminated Water
700785	Containment and Control Failure	Process Plant Failure (sudden)	Manufacturing	Chemical Manufacturing	Atmospheric Pollutants and Effects
750940	Unauthorised Activity	Unauthorised Waste Management Activity			Specific Waste Materials
763658	Containment and Control Failure	Control Measure Failure	Manufacturing	Biotechnology and Pharmaceuticals	Atmospheric Pollutants and Effects
1032436	Containment and Control Failure	Road Traffic Accident (RTA)			Oils and Fuel
1021100	Unauthorised Activity	Unauthorised Waste Management Activity	Retail Sector	Garages and Vehicle Sales	Oils and Fuel
393835	Cause Not Identified	Not Identified			Pollutant Not Identified

Notification Identifier	Pollutant
10967	Other Oil or Fuel
1151958	Crude Sewage
635459	Other Inorganic Chemical or Product
465154	Other Atmospheric Pollutant or Effect
499267	Smoke
838553	Fumes
672986	Fumes
13647	Other Inorganic Chemical or Product
947404	Firefighting Run-Off
700785	Fumes
750940	Vehicles and Vehicle Parts
763658	Fumes
1032436	Petrol
1021100	Mixed/Waste Oils
393835	Not Identified

Permit number	Site name	Permit Address line 1	Permit Address line 2	Permit Address line 3	Permit Address line 4
P06120	CRYSTAL BUSINESS PARK	CRYSTAL BUSINESS PARK	SANDWICH INDUSTRIAL ESTATE	SANDWICH	KENT
P02638	PLOT 1-2 SANDWICH INDUSTRIAL EST	PLOT 1-2 SANDWICH INDUSTRIAL EST	RAMSGATE ROAD		SANDWICH KENT
P07534	LAND ADJOINING HAFFENDEN'S FACTRY	LAND ADJOINING HAFFENDEN'S FACTR	SANDWICH INDUSTRIAL ESTATE	SANDWICH	KENT
AU8083	RELEASE POINT W4	RELEASE POINT W4	PFIZER LTD	RAMSGATE ROAD	SANDWICH, KENT
AU8083	RELEASE POINT W4	RELEASE POINT W4	PFIZER LTD	RAMSGATE ROAD	SANDWICH, KENT

Permit number	Permit postcode	Receiving watercourse	Organisation name	Permit National Grid Reference	Outlet National Grid Reference	Date issued	Outlet type decription
P06120		FRESHWATER RIVER	MR N VIVIAN	TR 33750 58500	TR 33750 58500	26/06/1996	Sewage - not water company
P02638		FRESHWATER RIVER	MR K LEVERTON	TR 33700 58600	TR 33700 58600	22/11/1989	Miscellaneous
P07534	CT13 9QT	INTO LAND	GEOFF FISHER	TR 33800 58770	TR 33800 58770	21/12/2012	Trade
AU8083	CT13 9NJ	SALINE ESTUARY	PFIZER LTD.	TR 33640 59690	TR 33640 59690	19/05/2000	Miscellaneous
AU8083	CT13 9NJ	SALINE ESTUARY	PFIZER LTD.	TR 33640 59690	TR 33870 59700	19/05/2000	Trade

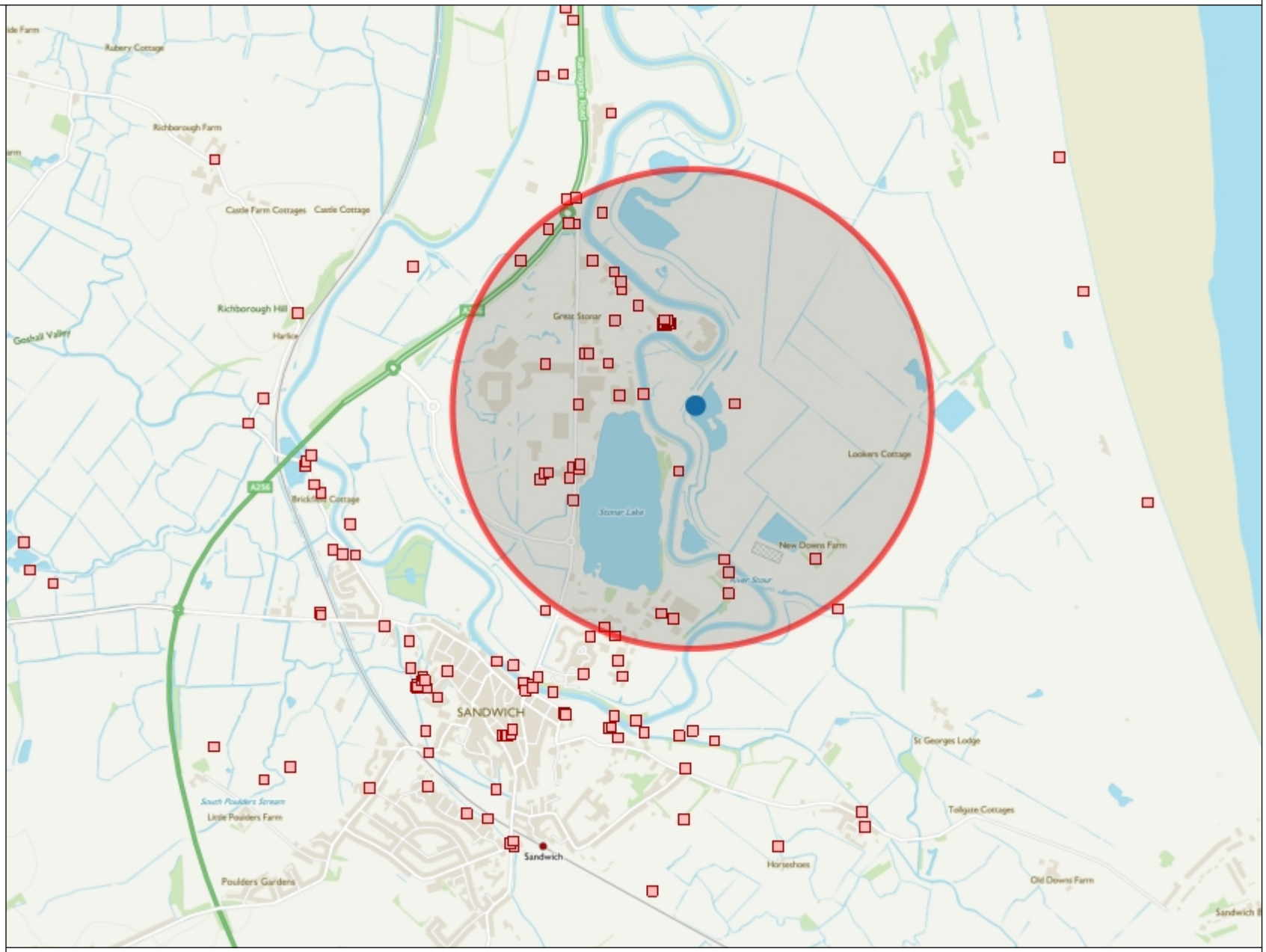
Permit number	Receiving watercourse decription
P06120	Freshwater river
P02638	Freshwater river
P07534	Into land
AU8083	Saline Estuary
AU8083	Saline Estuary

KSL41161 Thanet

Environment Agency

Legend

- Open Pollution Incidents
- Closed Pollution Incidents



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Appendix G
Preliminary Risk Assessment Methodology

The environmental risk assessment aims to assess the significance of each potential contaminant linkage. Each potential linkage is qualitatively assessed using the following criteria:

- Potential consequence of contaminant–receptor linkage;
- Likelihood of contaminant–receptor linkage; and
- Risk classification.

The definitions for the qualitative risk assessment have been taken from "Guidance for the Safe Development of Housing on Land Affected by Contamination" Annex 4 R&D Publication 66: 2008 Volume 2.

The Likelihood Probability Classifications of a Contaminant Linkage being realised is presented in Table G.1.

Table G.1 Likelihood Probability Classifications of Contaminant Linkages

Classification	Definition	Examples
Unlikely	There is pollutant linkage but circumstances are such that it is improbable that an event would occur even in the very long-term.	a) Elevated concentrations of toxic contaminants are present below hardstanding. b) Light industrial unit <10 years old containing a double skinned UST with annual integrity testing results available.
Low Likelihood	There is pollutant linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a long period such an event would take place, and is less likely in the shorter term.	a) Elevated concentrations of toxic contaminants are present in soils at depths >1m in a residential garden, or 0.5-1.0m in public open space. b) Ground/groundwater contamination could be present on a light industrial unit constructed in the 1990s containing a UST in operation over the last 10 years – the tank is double skinned but there is no integrity testing or evidence of leakage.
Likely	There is pollutant linkage and all the elements are present and in the right place which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short-term and likely over the long-term.	a) Elevated concentrations of toxic contaminants are present in soils at depths of 0.5-1.0m in a residential garden, or the top 0.5m in public open space. b) Ground/ groundwater contamination could be present from an industrial site containing a UST present between 1970 and 1990. The tank is known to be single skin. There is no

Classification	Definition	Examples
		evidence of leakage although there are no records of integrity tests.
High Likelihood	There is pollutant linkage and an event would appear very likely in the short-term and almost inevitable over the long-term, or there is evidence at the receptor of harm or pollution	a) Elevated concentrations of toxic contaminants are present in soils in the top 0.5m in a residential garden. b) Ground/groundwater contamination could be present from chemical works, containing a number of USTs, having been in operation on the same site for over 50 years.

"Potential Consequence of Contaminant Linkage" gives an indication of the sensitivity of a given receptor to a particular source or contaminant of concern under consideration. It is a worst case classification and is based on full exposure via the particular linkage being examined. The classification of consequence is presented in Table G.2.

Table G.2 Outline of Worst-Case Hazard Consequence Classifications for Receptor Types from Contamination Impact:

Classification	Human Health	Controlled Water	Ecology	Property Structures/ crops and animals	Examples
Severe	Highly elevated concentrations **likely** to result in "significant harm" to human health as defined by the EPA 1990, Part 2A, if exposure occurs.	Equivalent to EA Category 1 pollution incident including persistent and/ or extensive effects on water quality; leading to closure of a potable abstraction point; major impact on amenity value or major damage to agriculture or commerce.	Major damage to aquatic or other ecosystems, which **is likely** to result in a substantial adverse change in its functioning or harm to a species of special interest that endangers the long-term maintenance of the population.	Catastrophic damage to crops, buildings or property.	Significant harm to humans is defined in circular 01/2006 as death, disease, serious injury, genetic mutation, birth defects or the impairment of reproductive functions. Major fish kill in surface water from large spillage of contaminants from site. Highly elevated concentrations of Hazardous or priority substances present in groundwater close to small potable abstraction (high sensitivity). Explosion, causing building collapse (can also equate to immediate human health risk if buildings are occupied).

Classification	Human Health	Controlled Water	Ecology	Property Structures/ crops and animals	Examples
Medium	Elevated concentrations which **could** result in "significant harm" to human health as defined by the EPA 1990, Part 2A if exposure occurs.	Equivalent to EA Category 2 pollution incident including significant effect on water quality; notification required to abstractors; reduction in amenity value or significant damage to agriculture or commerce.	Significant damage to aquatic or other ecosystems, which **may** result in a substantial adverse change in its functioning or harm to a species of special interest that may endanger the long-term maintenance of the population.	Significant damage to crops, buildings or property.	Significant harm to humans is defined in circular 01/2006 as death, disease, serious injury, genetic mutation, birth defects or the impairment of reproductive functions. Damage to building rendering it unsafe to occupy e.g. foundation damage resulting in instability. Ingress of contaminants through plastic potable water pipes.
Mild	Exposure to human health **unlikely** to lead to "significant harm".	Equivalent to EA Category 3 pollution incident including minimal or short lived effect on water	Minor or short lived damage to aquatic or other ecosystems, which **is unlikely** to result in a substantial adverse change in	Minor damage to crops, buildings or property.	Exposure could lead to slight short-term effects (e.g. mild skin rash). Surface spalling of concrete.

Classification	Human Health	Controlled Water	Ecology	Property Structures/ crops and animals	Examples
		quality; marginal effect on amenity value, agriculture or commerce.	its functioning or harm to a species of special interest that would endanger the long-term maintenance of the population.		
Minor	No measurable effects on humans	Equivalent to insubstantial pollution incident with no observed effect on water quality or ecosystems.	Equivalent to insubstantial pollution incident with no observed effect on water quality or ecosystems.	Repairable effects of damage to buildings, structures and services.	The loss of plants in a landscaping scheme. Discoloration of concrete.

The risk matrix to link the likelihood and consequence is shown in Table G.3.

Table G.3 Risk Matrix

Likelihood:	Unlikely	Low Likelihood	Likely	High Likelihood
Potential Consequence:				
Severe	Moderate/low	Moderate Risk	High Risk	Very High Risk
Medium	Low	Moderate/low	Moderate Risk	High Risk
Mild	Very low risk	Low Risk	Moderate/low	Moderate Risk
Minor	Very low risk	Very low risk	Low Risk	Low Risk

The overall risk definitions are summarised in Table G.4.

Table G.4 Risk Definitions

Very Low	It is a low possibility that harm could arise to a designated receptor, but it is likely at worst, that this harm if realised would normally be mild or minor.
Low	It is possible that harm could arise to a designated receptor from identified hazard, but it is likely at worst, that this harm if realised would normally be mild. It is unlikely that the site owner/or occupier would face substantial liabilities from such a risk. Further investigative work (which is likely to be limited) to clarify the risk may be required. Any subsequent remediation works are likely to be relatively limited.
Medium	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely, that the harm would be relatively mild. Further investigative work is normally required to clarify the risk and to determine the potential liability to site owner/occupier. Some remediation works may be required in the longer term.
High	Harm is likely to arise to a designated receptor from an identified hazard at the site without remediation action. Realisation of the risk is likely to present a substantial liability to the site owner/or occupier. Investigation is required

	as a matter of urgency to clarify the risk. Remediation works may be necessary in the short-term and are likely over the longer term.
Very High	There is a high probability that severe harm could arise to a designated receptor from an identified hazard at the site without remediation action OR there is evidence that severe harm to a designated receptor is already occurring. Realisation of that risk is likely to present a substantial liability to be site owner/or occupier. Investigation is required as a matter of urgency and remediation works likely to follow in the short-term.

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Geotechnical Risk Register GRR 01

AFW Project Number	39080
Project Title:	Thanet Offshore Windfarm
Stage:	Land Quality Study

Compiled by: DG 11/04/2017

The risk register is a means of documenting perceived risks and their importance and recording actions taken to manage them. The key elements of a geotechnical risk register are as follows:

1. Identify the geotechnical risks.
2. Identify the methods of construction that may be incorporated into the project.
3. Scale the risks according to probability and impact.
4. Based on the severity of each risk, decide on the type of action.
5. Identify how each risk should be managed.
6. Record the actions taken to manage the risk.
7. Reassess the severity of each risk after action has been taken.
8. Review the risk register at regular intervals and communicate.

The risk register is a live document and should be reviewed on a regular basis and at the end of each stage of the project.

The probability (P) that a given event will occur is given by the following:

Scale	Likelihood	Chance per section of work (Amend to suit local conditions and to be agreed with the Client)
1	Negligible	< 1 in 100
2	Unlikely	1 in 100 to 1 in 10
3	Possible	1 in 10 to 1 in 5
4	Probable	1 in 5 to 1 in 2
5	Almost certain	> 1 in 2

The impact (I) of a given event is given by the following:

Scale	Effect	Increase in cost or time (% increase) (Amend to suit local conditions and to be agreed with the Client)
1	Negligible	< 1%
2	Very low	1% to 4%
3	Low	4% to 8%
4	High	8% to 15%
5	Very high	> 15%

The risk after the application of risk control measures should be reviewed in the light of the following table:

Degree of Risk	Risk Level	Action Required
1 - 4	Trivial	None
5 - 9	Tolerable	Consider more cost-effective solutions or improvements
10 - 15	Substantial	Work must not start until risk has been reduced
16 - 25	Intolerable	Work must not start until risk has been reduced. If risk cannot be reduced, project should not proceed.

The risks and their potential impacts may vary between the various stages of the project, such as the risk to and from buried services, where the impact can be much higher during a ground investigation than during a desk study.

Stage	Risk No	Hazard	Prior to RCM			Risk Control Measure (RCM)	After RCM		
			Probability (P)	Impact (I)	Risk (R = P x I)		Probability (P)	Impact (I)	Risk (R = P x I)
Land Quality Report	1	Significant depths of Made Ground in Landfill areas	4	3	12	Undertake Intrusive GI to determine thickness, extent and nature of Made Ground	4	2	8
	2	Potential for contaminated ground at former Hoverport and sub-station location	4	3	12	Undertake Intrusive GI and take samples for environmental laboratory testing	4	2	8
	3	Presence of Obstructions within Made Ground associated with former landfill operations	4	3	12	Undertake intrusive GI to determine what Ground Condition exist beneath the site. Consider the hazard in design	4	2	8
	4	Presence of Voids within backfilled materials	3	3	9	Undertake intrusive GI to deterine what Ground Condition exist beneath the site. Consider the hazard in design and construction of structures	3	2	6
	5	Presence of Buried Services	5	2	10	Obtain Relevant Utility plans. Avoid all known services. CAT scan locations prior to breaking ground. Excavate inspection oit by hand to 1.2m bgl	5	1	5
	6	Presence of overhead Services	3	5	15	Visual check - beware of arcing potential. Do not carry long metal objects under overhead wires.	1	5	5
	7	Unexploded Ordnance	1	5	5	Complete Risk Assessment / UXO Desk Study Before GI	1	5	5
	8	Presence of compressible tidal flat deposits	3	3	9	Undertake intrusive GI to determine what Ground Conditions exist beneath the site. Consider the hazard in design	3	2	6
	9	Significant depths of Made Ground (Colliery Spoil) at Hoverport and Richborough Power Station (Sub-station location)	4	2	8	Undertake intrusive GI to determine what Ground Conditions exist beneath the site. Consider the hazard in design	3	2	6
	10	Potential Instability of Cliffs at Pegwell Bay	2	4	8	Consider the hazard when deciding where to bring cable ashore. Carry out stability risk assessment if cliffs are to be disturbed	1	3	3
	11	Potential for expansive slag at former Hoverport Site	2	3	6	Undertake intrusive GI and testing to determine extent and nature of slag materials. Consider the hazard in design	2	2	4