Appendix 5

Soakaway Test Records (to BRE365)

Soakaway Test No.	Easting	Northing	Elevation (m OD)
SA01	686044.553	719690.913	79.582
SA02	686159.275	719597.49	79.558
SA03	686281.269	719515.46	79.22
SA04	686404	719434.018	78.346
SA05	686527.198	719353.119	78.611
SA06	686447.219	719668.69	83.453
SA07	686660.25	719566.88	82.861
SA08	686606.497	719388.773	78.995
SA09	686700.381	719648.213	81.639
SA10	686556.719	719845.828	83.877
SA11	686551.16	719788.98	84.239
SA12	686504.63	719684.437	84.324
SA13	686248.393	719737.264	81.662

Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown Contract No. 24330
Test No. SA01
Client DOBA
Date: 20/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.40	TOPSOIL: Soft brown slightly gravelly sandy CLAY	Dry
0.40	1.60	Firm grey mottled orange very sandy gravelly SILT with silty sand horizons	

Notes: Samples:
Test terminated at 30 minutes. No soakage recorded.

Field Data

Depth to Water (m)	Elapsed Time (min)
0.59	0.00
0.59	1.00
0.59	2.00
0.59	3.00
0.59	4.00
0.59	5.00
0.59	6.00
0.59	7.00
0.59	8.00
0.59	10.00
0.59	12.00
0.59	14.00
0.59	16.00
0.59	18.00
0.59	20.00
0.59	25.00
0.59	30.00

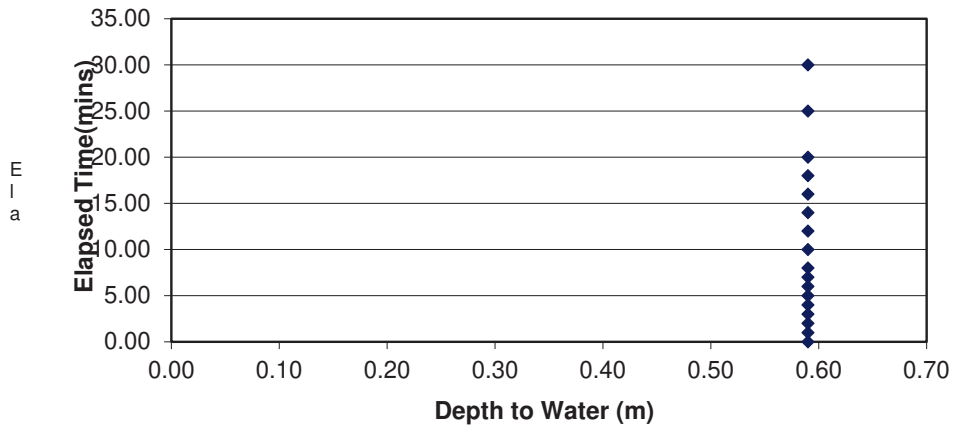
Field Test

Depth of Pit (D)	1.60	m
Width of Pit (B)	0.40	m
Length of Pit (L)	1.60	m
Initial depth to Water =	0.59	m
Final depth to water =	0.59	m
Elapsed time (mins)=	30.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.64	m2
*Av. side area of permeable stratum over test pe	4.04	m2
Total Exposed area =	4.68	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0 m/min or 0 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown Contract No. 24330
Test No. SA02
Client DOBA
Date: 20/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	TOPSOIL: Soft brown slightly gravelly sandy CLAY	Dry
0.30	1.50	Firm grey brown very sandy very gravelly CLAY with a low cobble content	

Notes: Samples:

Field Data

Depth to Water (m)	Elapsed Time (min)
0.55	0.00
0.55	1.00
0.55	2.00
0.55	3.00
0.56	4.00
0.56	5.00
0.56	6.00
0.56	7.00
0.57	8.00
0.57	10.00
0.57	12.00
0.58	14.00
0.58	16.00
0.58	18.00
0.58	20.00
0.59	25.00
0.59	30.00
0.59	35.00
0.60	40.00
0.6	50.00
0.61	60.00

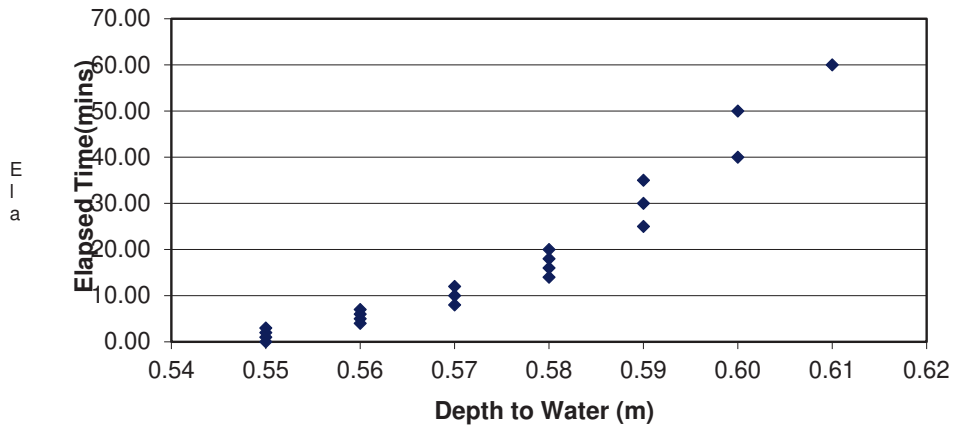
Field Test

Depth of Pit (D)	1.50	m
Width of Pit (B)	0.40	m
Length of Pit (L)	1.50	m
Initial depth to Water =	0.55	m
Final depth to water =	0.61	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.6	m2
*Av. side area of permeable stratum over test pe	3.496	m2
Total Exposed area =	4.096	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.00015 m/min or 2.441E-06 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown Contract No. 24330
Test No. SA03
Client DOBA
Date: 20/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	TOPSOIL: Soft brown slightly gravelly sandy CLAY	Dry
0.30	0.50	Firm brown sandy gravelly SILT	
0.50	1.70	Firm grey brown very sandy gravelly silty CLAY with a low cobble content	

Notes: Samples:

Field Data

Depth to Water (m)	Elapsed Time (min)
1.00	0.00
1.00	1.00
1.00	2.00
1.00	3.00
1.00	4.00
1.00	5.00
1.00	6.00
1.00	7.00
1.00	8.00
1.00	10.00
1.00	12.00
1.00	14.00
1.00	16.00
1.00	18.00
1.00	20.00
1.00	25.00
1.00	30.00

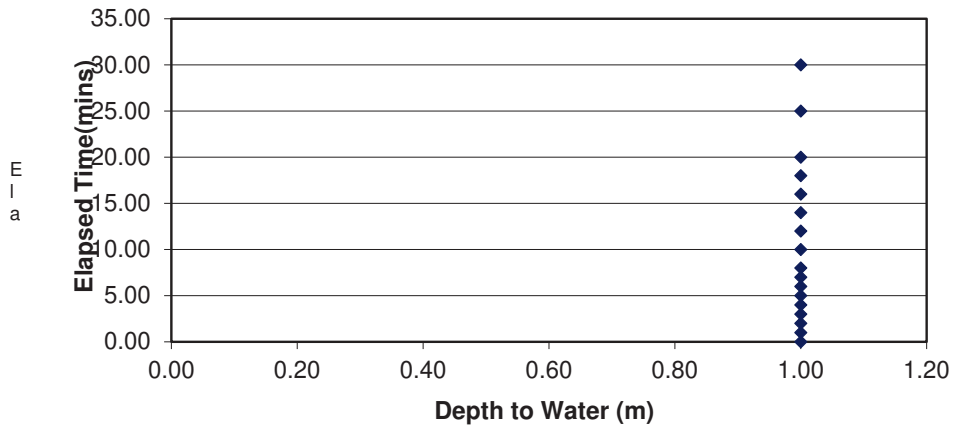
Field Test

Depth of Pit (D)	1.80	m
Width of Pit (B)	0.40	m
Length of Pit (L)	1.60	m
Initial depth to Water =	1.00	m
Final depth to water =	1.00	m
Elapsed time (mins)=	30.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.64	m2
*Av. side area of permeable stratum over test pe	3.2	m2
Total Exposed area =	3.84	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0 m/min or 0 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown Contract No. 24330
Test No. SA04
Client DOBA
Date: 10/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.40	TOPSOIL: Soft brown slightly gravelly sandy CLAY	Dry
0.40	0.90	Grey silty gravelly SAND with low cobbles	
0.90	2.10	Firm to stiff light grey mottled orange slightly sandy gravelly SILT	

Notes: Samples:

Field Data

Depth to Water (m)	Elapsed Time (min)
1.13	0.00
1.13	1.00
1.13	2.00
1.13	3.00
1.13	4.00
1.13	5.00
1.13	6.00
1.13	7.00
1.13	8.00
1.13	10.00
1.14	12.00
1.14	14.00
1.14	16.00
1.14	18.00
1.14	20.00
1.14	25.00
1.14	30.00
1.15	35.00
1.15	40.00
1.15	50.00
1.15	60.00

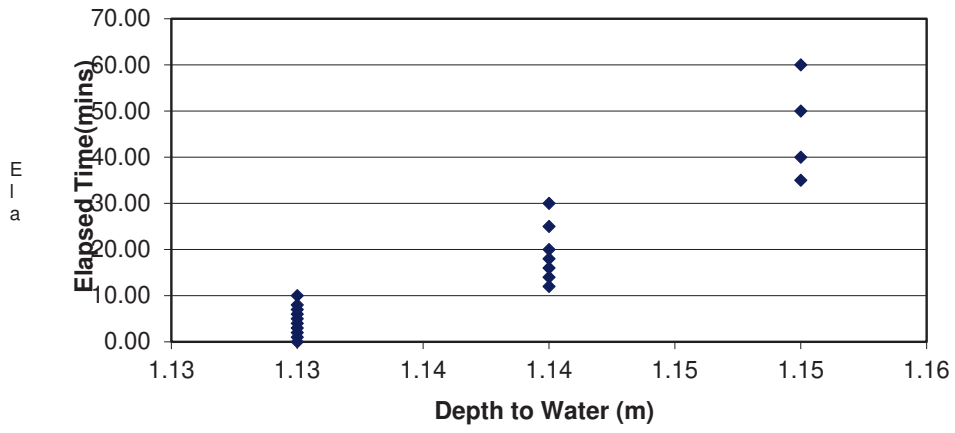
Field Test

Depth of Pit (D)	2.10	m
Width of Pit (B)	0.45	m
Length of Pit (L)	1.60	m
Initial depth to Water =	1.13	m
Final depth to water =	1.15	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.72	m2
*Av. side area of permeable stratum over test pe	3.936	m2
Total Exposed area =	4.656	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 5.2E-05 m/min or 8.591E-07 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown Contract No. 24330
Test No. SA05 A
Client DOBA
Date: 04/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.50	TOPSOIL: Soft brown slightly gravelly sandy CLAY with a low cobble content and rootlets	Moderate flow at 1.7
0.50	1.10	(Medium dense) Grey very gravelly SAND with a medium cobble content	
1.10	1.70	(Medium dense) Grey sandy GRAVEL with a medium to high cobble content	

Notes:
Side wall collapse throughout test.

Samples: AA185472
AA185473

Field Data

Depth to Water (m)	Elapsed Time (min)
1.10	0.00
1.10	1.00
1.11	2.00
1.11	3.00
1.12	4.00
1.13	5.00
1.14	6.00
1.14	7.00
1.14	8.00
1.15	10.00
1.15	12.00
1.16	14.00
1.16	16.00
1.16	18.00
1.17	20.00
1.18	25.00
1.19	30.00
1.19	35.00
1.20	40.00
1.2	50.00
1.2	60.00

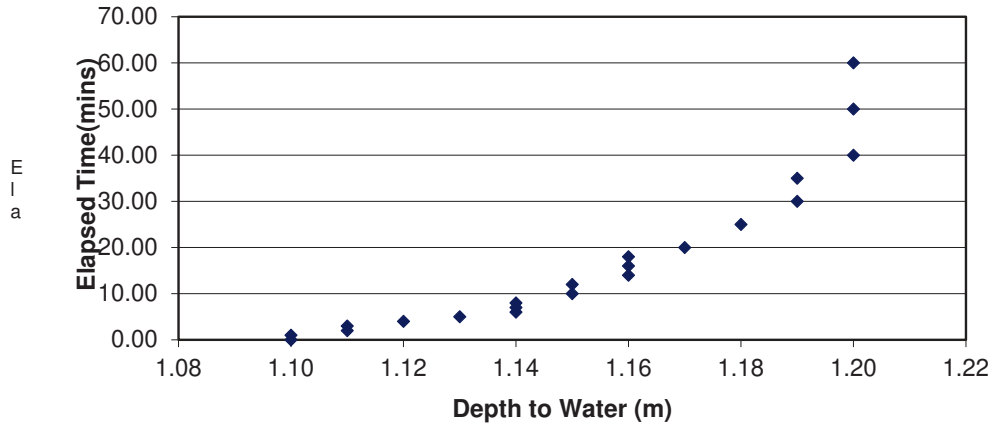
Field Test

Depth of Pit (D)	1.70	m
Width of Pit (B)	0.60	m
Length of Pit (L)	2.20	m
Initial depth to Water =	1.10	m
Final depth to water =	1.20	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	1.32	m2
*Av. side area of permeable stratum over test perioc	3.08	m2
Total Exposed area =	4.4	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.0005 m/min or 8.333E-06 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown Contract No. 24330
Test No. SA05 B (Cycle 1)
Client DOBA
Date: 04/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.50	TOPSOIL: Soft brown slightly gravelly sandy CLAY with a low cobble content and rootlets	Dry
0.50	1.20	(Medium dense) Grey very gravelly silty SAND with a medium cobble content	

Notes:
Side wall collapse throughout test

Samples:

Field Data

Depth to Water (m)	Elapsed Time (min)
0.60	0.00
0.61	1.00
0.62	2.00
0.62	3.00
0.62	4.00
0.63	5.00
0.63	6.00
0.63	7.00
0.63	8.00
0.64	10.00
0.64	12.00
0.64	14.00
0.65	16.00
0.65	18.00
0.66	20.00
0.67	25.00
0.68	30.00
0.69	35.00
0.70	40.00
0.71	50.00
0.72	60.00

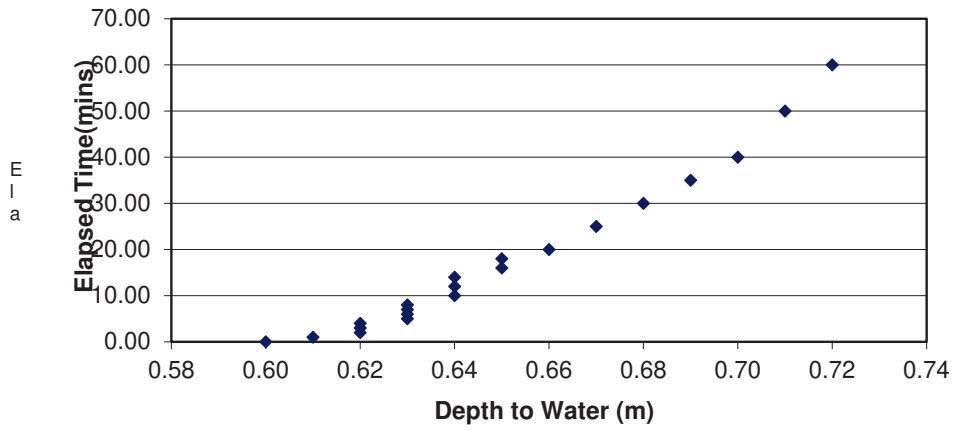
Field Test

Depth of Pit (D)	1.20	m
Width of Pit (B)	0.60	m
Length of Pit (L)	1.50	m
Initial depth to Water =	0.60	m
Final depth to water =	0.72	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.9	m2
*Av. side area of permeable stratum over test pe	2.268	m2
Total Exposed area =	3.168	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.00057 m/min or 9.47E-06 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown Contract No. 24330
Test No. SA05 B (Cycle 2)
Client DOBA
Date: 04/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.50	TOPSOIL: Soft brown slightly gravelly sandy CLAY with a low cobble content and rootlets	Dry
0.50	1.20	(Medium dense) Grey very gravelly silty SAND with a medium cobble content	

Notes: Samples:
Side wall collapse throughout test.

Field Data

Depth to Water (m)	Elapsed Time (min)
0.50	0.00
0.50	1.00
0.51	2.00
0.51	3.00
0.51	4.00
0.52	5.00
0.52	6.00
0.52	7.00
0.52	8.00
0.53	10.00
0.53	12.00
0.53	14.00
0.54	16.00
0.54	18.00
0.55	20.00
0.57	25.00
0.57	30.00
0.58	35.00
0.59	40.00
0.59	50.00
0.6	60.00

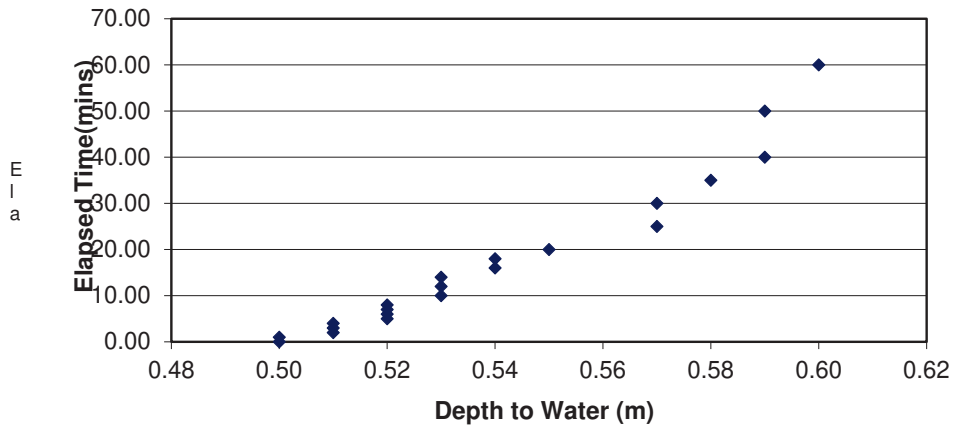
Field Test

Depth of Pit (D)	1.20	m
Width of Pit (B)	0.60	m
Length of Pit (L)	1.50	m
Initial depth to Water =	0.50	m
Final depth to water =	0.60	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.9	m2
*Av. side area of permeable stratum over test pe	2.73	m2
Total Exposed area =	3.63	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.00041 m/min or 6.887E-06 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown
Contract No. 24330
Test No. SA06 (Cycle 1)
Client DOBA
Date: 10/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.40	TOPSOIL: Soft brown sandy CLAY with rootlets	Dry
0.30	1.20	Firm brown sandy gravelly CLAY	
1.20	2.00	Grey brown gravelly silty SAND with a low cobble content	

Notes: Samples: AA181953
AA181954

Field Data

Depth to Water (m)	Elapsed Time (min)
1.12	0.00
1.13	1.00
1.14	2.00
1.14	3.00
1.15	4.00
1.15	5.00
1.16	6.00
1.16	7.00
1.17	8.00
1.17	10.00
1.17	12.00
1.18	14.00
1.18	16.00
1.18	18.00
1.19	20.00
1.19	25.00
1.19	30.00
1.20	35.00
1.20	40.00
1.21	50.00
1.22	60.00

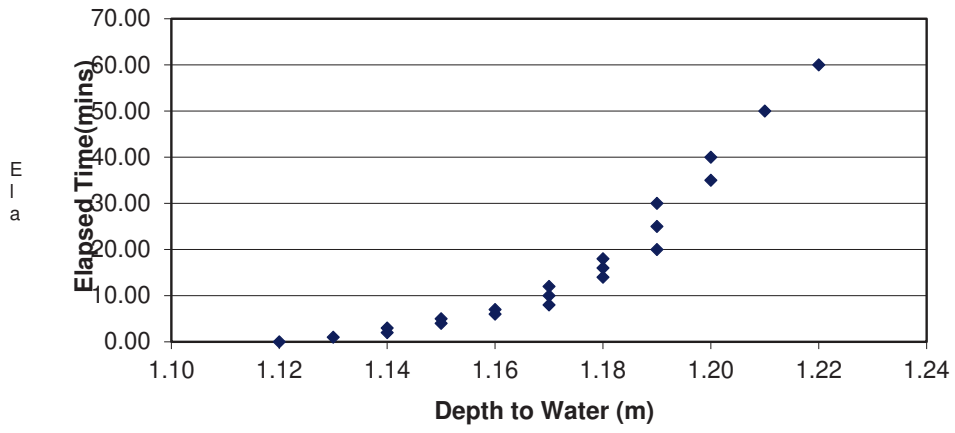
Field Test

Depth of Pit (D)	2.00	m
Width of Pit (B)	0.45	m
Length of Pit (L)	1.60	m
Initial depth to Water =	1.12	m
Final depth to water =	1.22	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.72	m2
*Av. side area of permeable stratum over test pe	3.403	m2
Total Exposed area =	4.123	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.00029 m/min or 4.851E-06 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown
Contract No. 24330
Test No. SA06 (Cycle 2)
Client DOBA
Date: 10/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.40	TOPSOIL: Soft brown sandy CLAY with rootlets	Dry
0.30	1.20	Firm brown sandy gravelly CLAY	
1.20	2.00	Grey brown gravelly silty SAND with a low cobble content	

Notes: Samples: AA181953
AA181954

Field Data

Depth to Water (m)	Elapsed Time (min)
1.01	0.00
1.02	1.00
1.03	2.00
1.03	3.00
1.04	4.00
1.04	5.00
1.04	6.00
1.05	7.00
1.05	8.00
1.05	10.00
1.06	12.00
1.06	14.00
1.06	16.00
1.06	18.00
1.07	20.00
1.07	25.00
1.07	30.00
1.07	35.00
1.08	40.00
1.08	50.00
1.09	60.00

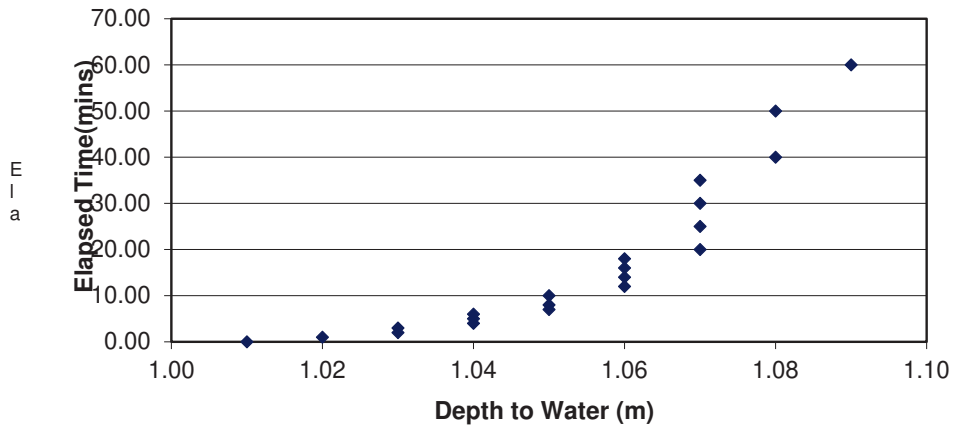
Field Test

Depth of Pit (D)	2.00	m
Width of Pit (B)	0.45	m
Length of Pit (L)	1.60	m
Initial depth to Water =	1.01	m
Final depth to water =	1.09	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.72	m2
*Av. side area of permeable stratum over test pe	3.895	m2
Total Exposed area =	4.615	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.00021 m/min or 3.467E-06 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown
Contract No. 24330
Test No. SA07
Client DOBA
Date: 11/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.40	TOPSOIL: Soft brown sandy CLAY with rootlets	Dry
0.40	1.00	Stiff brown grey sandy slightly gravelly silty CLAY	
1.00	2.20	Firm brown sandy gravelly CLAY with a medium cobble content and occassional boulders	

Notes: Samples: AA185492
AA185493

Field Data

Depth to Water (m)	Elapsed Time (min)
1.17	0.00
1.17	1.00
1.17	2.00
1.17	3.00
1.17	4.00
1.18	5.00
1.18	6.00
1.18	7.00
1.18	8.00
1.18	10.00
1.18	12.00
1.18	14.00
1.18	16.00
1.19	18.00
1.19	20.00
1.19	25.00
1.19	30.00
1.20	35.00
1.20	40.00
1.2	50.00
1.21	60.00

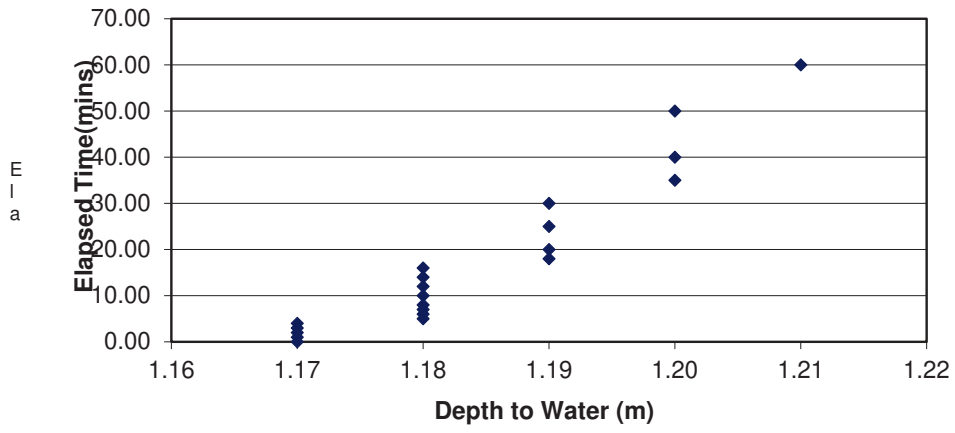
Field Test

Depth of Pit (D)	2.20	m
Width of Pit (B)	0.45	m
Length of Pit (L)	1.40	m
Initial depth to Water =	1.17	m
Final depth to water =	1.21	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.63	m2
*Av. side area of permeable stratum over test pe	3.737	m2
Total Exposed area =	4.367	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 9.6E-05 m/min or 1.603E-06 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown
Contract No. 24330
Test No. SA08
Client DOBA
Date: 10/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	TOPSOIL: Soft dark brown very sandy slightly gravelly CLAY	Dry
0.30	0.80	Firm grey very sandy slightly gravelly SILT	
0.80	1.80	Firm to stiff light grey mottled orange slightly sandy gravelly SILT with a low cobble content	

Notes:
Terminated after 30 minutes. No soakage recorded

Samples: AA181951
AA181952

Field Data

Depth to Water (m)	Elapsed Time (min)
1.20	0.00
1.20	1.00
1.20	2.00
1.20	3.00
1.20	4.00
1.20	5.00
1.20	6.00
1.20	7.00
1.20	8.00
1.20	10.00
1.20	12.00
1.20	14.00
1.20	16.00
1.20	18.00
1.20	20.00
1.20	25.00
1.20	30.00

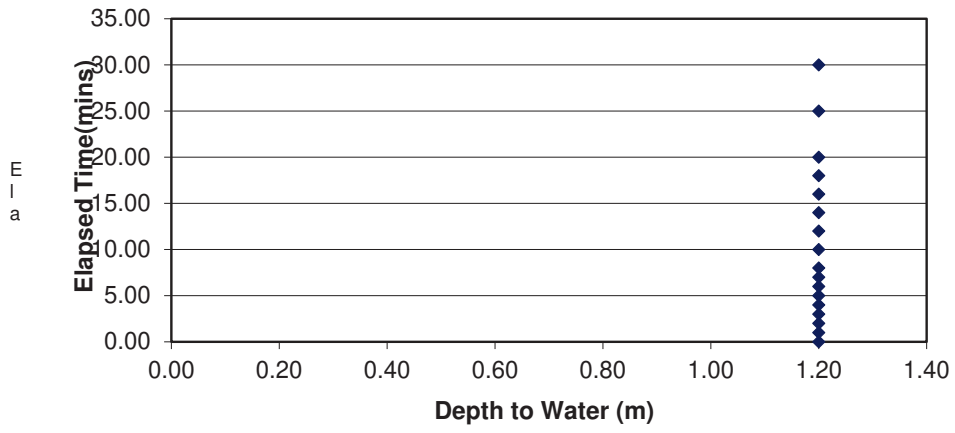
Field Test

Depth of Pit (D)	2.10	m
Width of Pit (B)	0.45	m
Length of Pit (L)	1.60	m
Initial depth to Water =	1.20	m
Final depth to water =	1.20	m
Elapsed time (mins)=	30.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.72	m2
*Av. side area of permeable stratum over test pe	3.69	m2
Total Exposed area =	4.41	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0 m/min or 0 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown
Contract No. 24330
Test No. SA09 (Cycle 1)
Client DOBA
Date: 11/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	TOPSOIL: Soft brown sandy CLAY with rootlets	Dry
0.30	0.80	Stiff grey mottled orange sandy slightly gravelly SILT	
0.80	1.80	Grey brown gravelly silty SAND with a low cobble content	
1.80	2.00	Stiff brown sandy gravelly SILT	

Notes:

Samples: AA185494
AA185495
AA185496

Field Data

Depth to Water (m)	Elapsed Time (min)
1.22	0.00
1.22	1.00
1.22	2.00
1.23	3.00
1.23	4.00
1.23	5.00
1.24	6.00
1.24	7.00
1.24	8.00
1.25	10.00
1.25	12.00
1.25	14.00
1.25	16.00
1.26	18.00
1.26	20.00
1.27	25.00
1.27	30.00
1.28	35.00
1.29	40.00
1.3	50.00
1.3	60.00

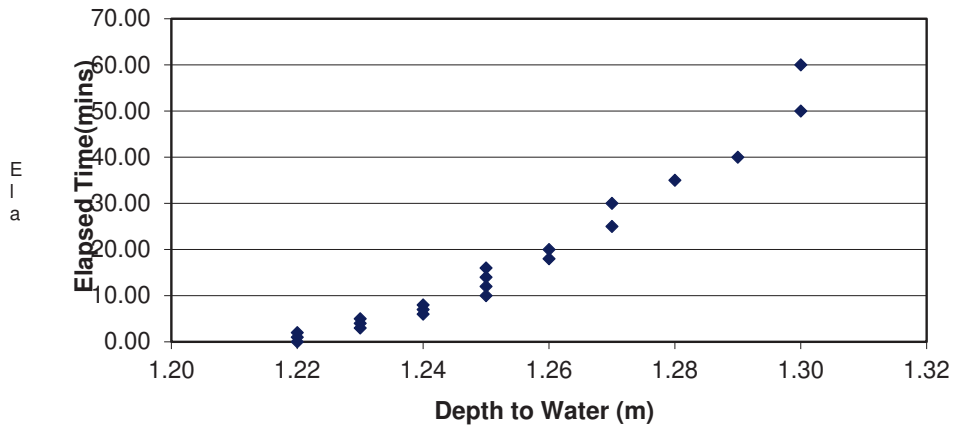
Field Test

Depth of Pit (D)	2.00	m
Width of Pit (B)	0.45	m
Length of Pit (L)	1.50	m
Initial depth to Water =	1.22	m
Final depth to water =	1.30	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.675	m2
*Av. side area of permeable stratum over test pe	2.886	m2
Total Exposed area =	3.561	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.00025 m/min or 4.212E-06 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown
Contract No. 24330
Test No. SA09 (Cycle 2)
Client DOBA
Date: 11/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	TOPSOIL: Soft brown sandy CLAY with rootlets	Dry
0.30	0.80	Stiff grey mottled orange sandy slightly gravelly SILT	
0.80	1.80	Grey brown gravelly silty SAND with a low cobble content	
1.80	2.00	Stiff brown sandy gravelly SILT	

Notes:

Samples: AA185494
AA185495
AA185496

Field Data

Depth to Water (m)	Elapsed Time (min)
0.90	0.00
0.90	1.00
0.90	2.00
0.91	3.00
0.91	4.00
0.92	5.00
0.92	6.00
0.92	7.00
0.93	8.00
0.93	10.00
0.93	12.00
0.93	14.00
0.94	16.00
0.94	18.00
0.94	20.00
0.95	25.00
0.95	30.00
0.96	35.00
0.96	40.00
0.97	50.00
0.97	60.00

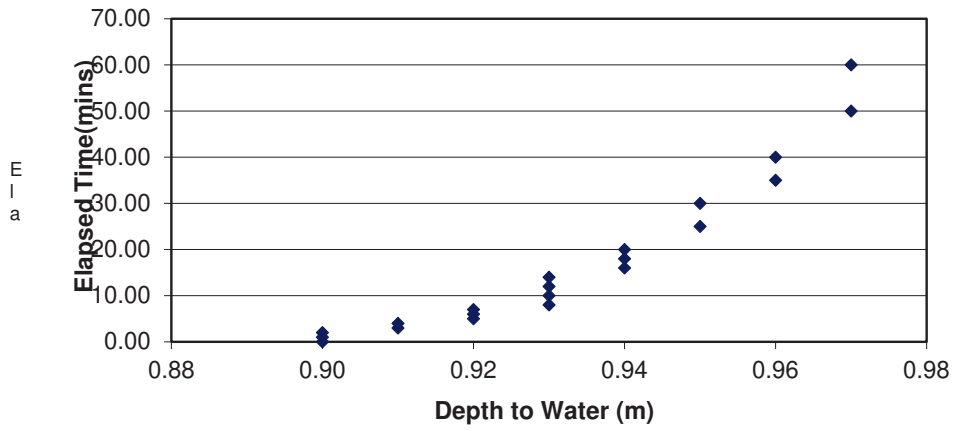
Field Test

Depth of Pit (D)	2.00	m
Width of Pit (B)	0.45	m
Length of Pit (L)	1.50	m
Initial depth to Water =	0.90	m
Final depth to water =	0.97	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.675	m2
*Av. side area of permeable stratum over test pe	4.1535	m2
Total Exposed area =	4.8285	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.00016 m/min or 2.718E-06 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown Contract No. 24330
Test No. SA10
Client DOBA
Date: 14/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	TOPSOIL: Soft brown slightly gravelly sandy silty CLAY	Dry
0.30	0.80	Stiff brown slightly gravelly sandy silty CLAY with a medium cobble content	
1.00	1.60	Firm to stiff brown very sandy gravelly CLAY with a medium cobble content	

Notes: Samples:

Field Data

Depth to Water (m)	Elapsed Time (min)
1.08	0.00
1.08	1.00
1.08	2.00
1.09	3.00
1.09	4.00
1.09	5.00
1.09	6.00
1.10	7.00
1.10	8.00
1.10	10.00
1.10	12.00
1.11	14.00
1.11	16.00
1.11	18.00
1.11	20.00
1.11	25.00
1.12	30.00
1.12	35.00
1.12	40.00
1.13	50.00
1.13	60.00

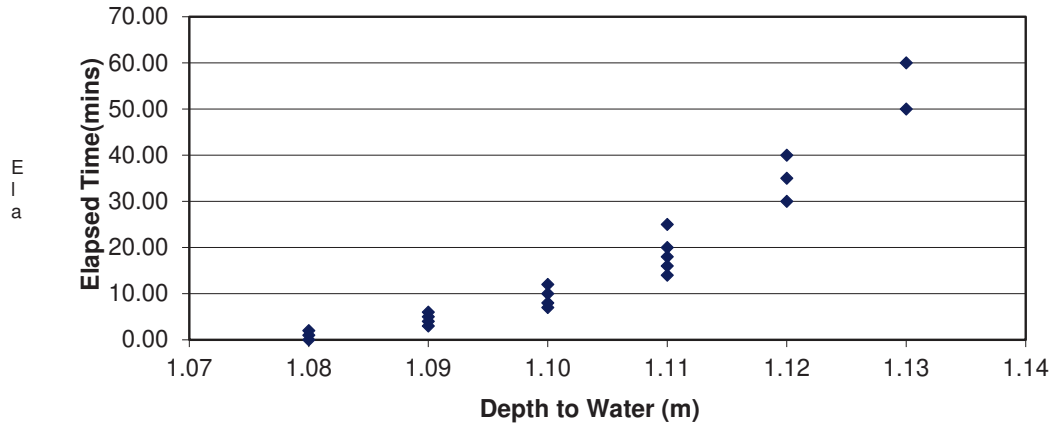
Field Test

Depth of Pit (D)	1.60	m
Width of Pit (B)	0.40	m
Length of Pit (L)	1.80	m
Initial depth to Water =	1.08	m
Final depth to water =	1.13	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.72	m2
*Av. side area of permeable stratum over test period=	2.178	m2
Total Exposed area =	2.898	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.000207039 m/min or 3.451E-06 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown Contract No. 24330
Test No. SA11
Client DOBA
Date: 14/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.40	TOPSOIL: Soft brown sandy gravelly CLAY	Dry
0.40	1.20	Firm brown sandy gravelly silty CLAY with a medium cobble content	
1.20	1.80	Firm brown very sandy gravelly CLAY with a medium cobble content	

Notes: Samples:

Field Data

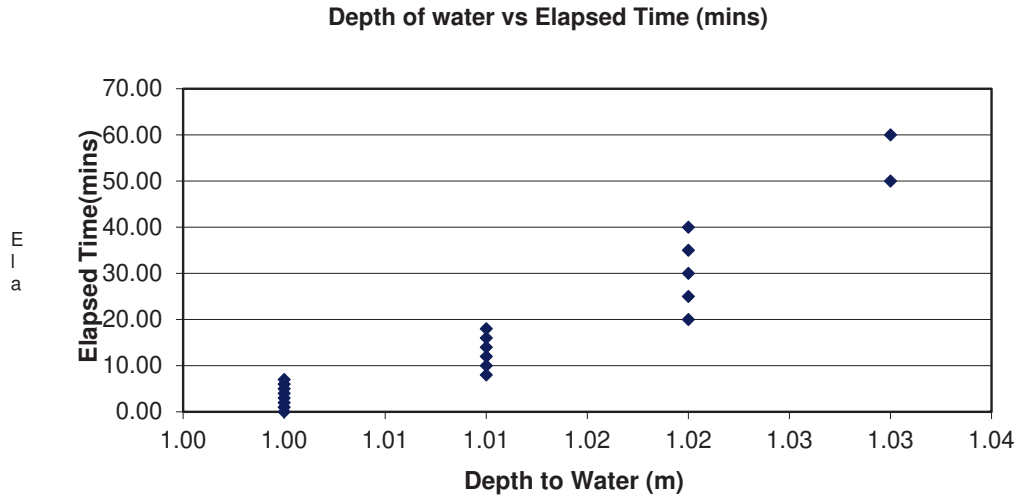
Depth to Water (m)	Elapsed Time (min)
1.00	0.00
1.00	1.00
1.00	2.00
1.00	3.00
1.00	4.00
1.00	5.00
1.00	6.00
1.00	7.00
1.01	8.00
1.01	10.00
1.01	12.00
1.01	14.00
1.01	16.00
1.01	18.00
1.02	20.00
1.02	25.00
1.02	30.00
1.02	35.00
1.02	40.00
1.03	50.00
1.03	60.00

Field Test

Depth of Pit (D)	1.80	m
Width of Pit (B)	0.40	m
Length of Pit (L)	1.60	m
Initial depth to Water =	1.00	m
Final depth to water =	1.03	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.64	m2
*Av. side area of permeable stratum over test period=	3.14	m2
Total Exposed area =	3.78	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 8.46561E-05 m/min or 1.411E-06 m/sec



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown
Contract No. 24330
Test No. SA12 (Cycle 1)
Client DOBA
Date: 10/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.40	TOPSOIL: Soft brown sandy CLAY with rootlets	Dry
0.40	1.20	Firm brown sandy silty CLAY	
1.10	2.20	Grey brown gravelly silty SAND with a medium cobble content	

Notes:

Samples: AA181955
AA181956

Field Data

Depth to Water (m)	Elapsed Time (min)
1.34	0.00
1.35	1.00
1.35	2.00
1.36	3.00
1.36	4.00
1.37	5.00
1.37	6.00
1.37	7.00
1.38	8.00
1.38	10.00
1.38	12.00
1.39	14.00
1.39	16.00
1.40	18.00
1.40	20.00
1.40	25.00
1.41	30.00
1.41	35.00
1.42	40.00
1.43	50.00
1.44	60.00

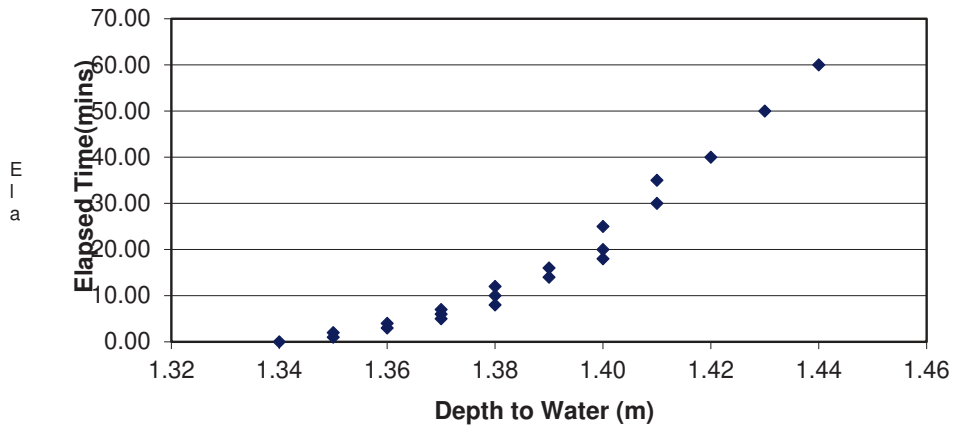
Field Test

Depth of Pit (D)	2.20	m
Width of Pit (B)	0.45	m
Length of Pit (L)	1.70	m
Initial depth to Water =	1.34	m
Final depth to water =	1.44	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.765	m2
*Av. side area of permeable stratum over test pe	3.483	m2
Total Exposed area =	4.248	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.0003 m/min or 5.002E-06 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown
Contract No. 24330
Test No. SA12 (Cycle 2)
Client DOBA
Date: 10/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.40	TOPSOIL: Soft brown sandy CLAY with rootlets	Dry
0.40	1.20	Firm brown sandy silty CLAY	
1.10	2.20	Grey brown gravelly silty SAND with a medium cobble content	

Notes:

Samples: AA181955
AA181956

Field Data

Depth to Water (m)	Elapsed Time (min)
1.21	0.00
1.21	1.00
1.22	2.00
1.22	3.00
1.22	4.00
1.23	5.00
1.23	6.00
1.23	7.00
1.24	8.00
1.24	10.00
1.24	12.00
1.25	14.00
1.25	16.00
1.26	18.00
1.26	20.00
1.27	25.00
1.27	30.00
1.28	35.00
1.28	40.00
1.29	50.00
1.3	60.00

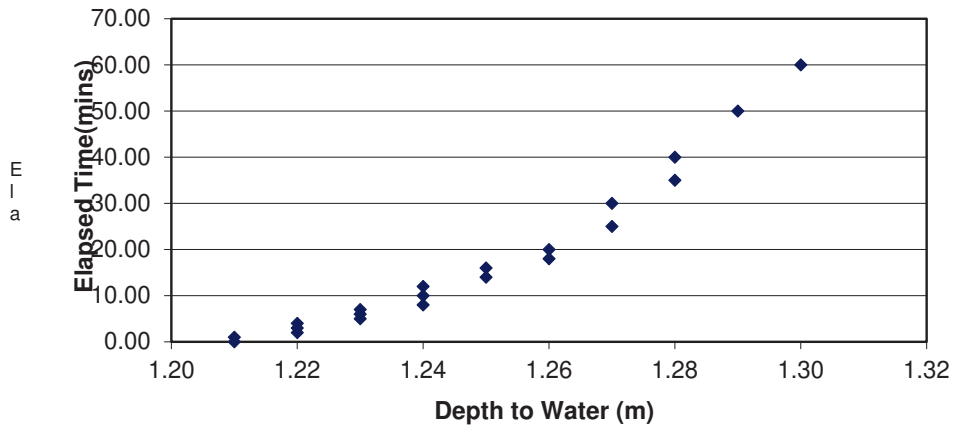
Field Test

Depth of Pit (D)	2.20	m
Width of Pit (B)	0.45	m
Length of Pit (L)	1.70	m
Initial depth to Water =	1.21	m
Final depth to water =	1.30	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.765	m2
*Av. side area of permeable stratum over test pe	4.0635	m2
Total Exposed area =	4.8285	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.00024 m/min or 3.961E-06 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown
Contract No. 24330
Test No. SA13
Client DOBA
Date: 14/10/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	TOPSOIL: Soft brown slightly gravelly sandy silty CLAY	Dry
0.30	0.80	Stiff brown slightly gravelly sandy CLAY	
0.80	1.60	Firm to stiff brown very sandy gravelly CLAY with a medium cobble content	

Notes: Samples: AA181981
AA181982

Field Data

Depth to Water (m)	Elapsed Time (min)
0.85	0.00
0.85	1.00
0.85	2.00
0.85	3.00
0.86	4.00
0.86	5.00
0.86	6.00
0.87	7.00
0.87	8.00
0.87	10.00
0.88	12.00
0.88	14.00
0.88	16.00
0.88	18.00
0.89	20.00
0.89	25.00
0.89	30.00
0.90	35.00
0.90	40.00
0.91	50.00
0.92	60.00

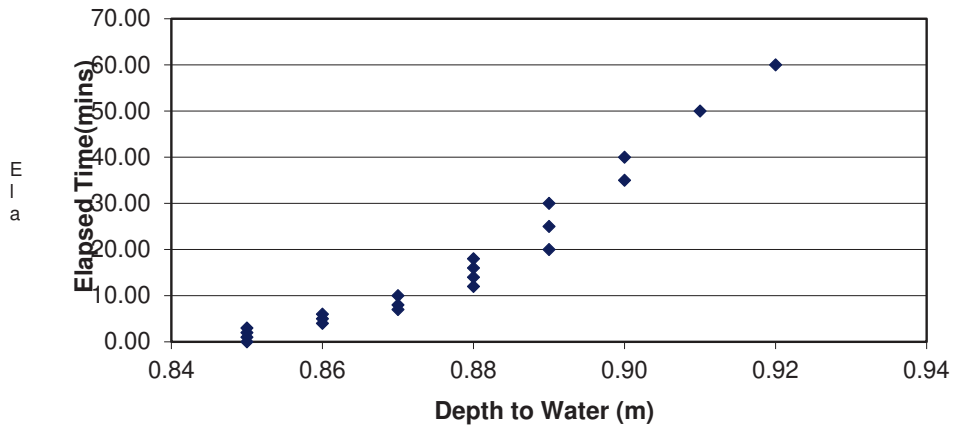
Field Test

Depth of Pit (D)	1.60	m
Width of Pit (B)	0.40	m
Length of Pit (L)	1.70	m
Initial depth to Water =	0.85	m
Final depth to water =	0.92	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.68	m2
*Av. side area of permeable stratum over test pe	3.003	m2
Total Exposed area =	3.683	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.00022 m/min or 3.59E-06 m/sec

Depth of water vs Elapsed Time (mins)



TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**SATP01**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,044.55 E 719,690.91 N
		DATE STARTED	20/10/2022
		DATE COMPLETED	20/10/2022
CLIENT		**GROUND LEVEL (m)**	79.58
		EXCAVATION METHOD	7t Hitachi
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL: Soft brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to medium subrounded.									
Firm grey mottled orange very sandy gravelly SILT with silty sand horizons. Sand is fine to coarse. Gravel is fine to coarse subrounded.		0.40	79.18						
End of Trial Pit at 1.60m		1.60	77.98						

0.0
1.0
2.0
3.0

Groundwater Conditions
Dry

Stability
Good

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings. Soakaway test carried out in pit.

IGSL TP LOG 24330.GPJ IGSL.GDT 31/1/23

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**SATP02**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,159.28 E 719,597.49 N
		DATE STARTED	20/10/2022
		DATE COMPLETED	20/10/2022
CLIENT		**GROUND LEVEL (m)**	79.56
		EXCAVATION METHOD	7t Hitachi
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Soft brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to medium subrounded.									
		0.30	79.26						
Firm grey brown very sandy very gravelly CLAY with a low cobble content. Sand is medium to coarse. Gravel is fine to coarse subrounded. Cobbles are subrounded to rounded of limestone.									
1.0									
		1.50	78.06						
End of Trial Pit at 1.50m									
2.0									
3.0									

Groundwater Conditions
Dry

Stability
Good

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings. Soakaway test carried out in pit.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**SATP03**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,281.27 E 719,515.46 N
		DATE STARTED	20/10/2022
		DATE COMPLETED	20/10/2022
CLIENT		**GROUND LEVEL (m)**	79.22
		EXCAVATION METHOD	7t Hitachi
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL: Soft brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to medium subrounded.		0.30	78.92						
Firm brown sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse subrounded.		0.50	78.72						
Firm grey brown very sandy gravelly silty CLAY with a low cobble content. Sand is medium to coarse. Gravel is fine to coarse subrounded. Cobbles are subrounded to rounded of limestone.									
End of Trial Pit at 1.80m		1.70	77.52						

0.0 1.0 2.0 3.0

Groundwater Conditions
Dry

Stability
Good

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings. Soakaway test carried out in pit.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**SATP04**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,404.00 E 719,434.02 N
		DATE STARTED	10/10/2022
		DATE COMPLETED	10/10/2022
CLIENT		**GROUND LEVEL (m)**	78.35
ENGINEER	DOBA	**EXCAVATION METHOD**	7t Hitachi

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Soft brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to medium subrounded.									
Grey silty gravelly SAND with low cobbles. Sand is fine to coarse. Gravel is fine to coarse subrounded. Cobbles are subrounded to rounded of limestone.		0.40	77.95						
Firm to stiff light grey mottled orange slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded.		0.90	77.45						
1.0									
2.0									
End of Trial Pit at 2.10m		2.10	76.25						
3.0									

Groundwater Conditions
Dry

Stability
Good

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings. Soakaway test carried out in pit.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**SATP05**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,527.20 E 719,353.12 N
		DATE STARTED	04/10/2022
		DATE COMPLETED	04/10/2022
CLIENT		**GROUND LEVEL (m)**	78.61
		EXCAVATION METHOD	7t Hitachi
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL: Soft brown slightly gravelly sandy CLAY with a low cobble content and rootlets. Sand is fine to coarse. Gravel is fine to medium subrounded. Cobbles are subrounded to rounded of limestone									
(Medium dense) Grey very gravelly SAND with a medium cobble content. Sand is medium to coarse. Gravel is fine to coarse subrounded. Cobbles are subrounded to rounded of limestone Side wall collapse from 0.70-1.70m		0.50	78.11		AA185472	B	0.70-0.80		
(Medium dense) Grey sandy GRAVEL with a medium to high cobble content. Sand is medium to coarse. Gravel is fine to coarse subrounded.		1.10	77.51		AA185473	B	1.40-1.50		
End of Trial Pit at 1.70m		1.70	76.91	1 (Moderate)					

Groundwater Conditions
Moderate flow at 1.70m

Stability
Unstable, side wall collapse from 0.70m

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings. Soakaway test carried out in pit.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**SATP06**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,447.22 E 719,668.69 N
		DATE STARTED	10/10/2022
		DATE COMPLETED	10/10/2022
CLIENT		**GROUND LEVEL (m)**	83.45
		EXCAVATION METHOD	7t Hitachi
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Soft brown sandy CLAY with rootlets. Sand is fine to coarse.									
		0.30	83.15						
Firm brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subrounded.					AA181953	B	0.50-0.50		
1.0									
		1.20	82.25						
Grey brown gravelly silty SAND with a low cobble content. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded. Cobbles are subrounded to rounded of limestone					AA181954	B	1.50-1.50		
		2.00	81.45						
2.0 End of Trial Pit at 2.00m									
3.0									

Groundwater Conditions
Dry

Stability
Good

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings. Soakaway test carried out in pit.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**SATP07**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,660.25 E 719,566.88 N
		DATE STARTED	11/10/2022
		DATE COMPLETED	11/10/2022
CLIENT		**GROUND LEVEL (m)**	82.86
		EXCAVATION METHOD	7t Hitachi
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Soft brown sandy CLAY with rootlets. Sand is fine to coarse.									
Firm to stiff brown grey sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to coarse subrounded.		0.40	82.46		AA185492	B	0.50-0.60		
1.0 Firm to stiff brown sandy gravelly CLAY with a medium cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse subrounded. Cobbles and boulders are subrounded to rounded of limestone		1.00	81.86		AA185493	B	1.50-1.60		
2.0 End of Trial Pit at 2.20m		2.20	80.66						
3.0									

Groundwater Conditions
Dry

Stability
Good

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings. Soakaway test carried out in pit.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**SATP08**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,606.50 E 719,388.77 N
		DATE STARTED	10/10/2022
		DATE COMPLETED	10/10/2022
CLIENT		**GROUND LEVEL (m)**	79.00
		EXCAVATION METHOD	7t Hitachi
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Soft dark brown very sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium subrounded.		0.30	78.70						
Firm grey very sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse subrounded.					AA181951	B	0.50-0.50		
Firm to stiff light grey mottled orange slightly sandy gravelly SILT with a low cobble content. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded. Cobbles are subrounded to rounded of limestone		0.80	78.20						
1.0					AA181952	B	1.50-1.50		
End of Trial Pit at 1.80m		1.80	77.20						
2.0									
3.0									

Groundwater Conditions
Dry

Stability
Good

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings. Soakaway test carried out in pit.

IGSL TP LOG 24330.GPJ IGSL.GDT 31/1/23

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**SATP09**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,700.38 E 719,648.21 N
		DATE STARTED	11/10/2022
		DATE COMPLETED	11/10/2022
CLIENT		**GROUND LEVEL (m)**	81.64
		EXCAVATION METHOD	7t Hitachi
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Soft brown sandy CLAY with rootlets. Sand is fine to coarse.									
Stiff grey mottled orange sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse subrounded.		0.30	81.34		AA185494	B	0.50-0.60		
Grey brown gravelly silty SAND with a low cobble content. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded. Cobbles are subrounded to rounded of limestone		0.80	80.84						
1.0					AA185495	B	1.40-1.50		
Stiff brown sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded		1.80	79.84		AA185496	B	1.90-1.90		
2.0 End of Trial Pit at 2.00m		2.00	79.64						
3.0									

Groundwater Conditions
Dry

Stability
Good

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings. Soakaway test carried out in pit.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**SATP10**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,556.72 E 719,845.83 N
		DATE STARTED	14/10/2022
		DATE COMPLETED	14/10/2022
CLIENT		**GROUND LEVEL (m)**	83.88
		EXCAVATION METHOD	7t Hitachi
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Soft brown slightly gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is fine to medium subrounded.									
Stiff brown slightly gravelly sandy silty CLAY with a medium cobble content. Sand is fine to coarse. Gravel is fine to coarse subrounded. Cobbles are subrounded to rounded of limestone.		0.30	83.58						
1.0 Firm to stiff brown very sandy gravelly CLAY with a medium cobble content. Sand is fine to coarse. Gravel is fine to coarse subrounded. Cobbles are subrounded to rounded of limestone.		0.80	83.08						
End of Trial Pit at 1.60m		1.60	82.28						
2.0									
3.0									

Groundwater Conditions
Dry

Stability
Good

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**SATP11**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,551.16 E 719,788.98 N
		DATE STARTED	14/10/2022
		DATE COMPLETED	14/10/2022
CLIENT		**GROUND LEVEL (m)**	84.24
		EXCAVATION METHOD	7t Hitachi
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Soft brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium subrounded.									
Firm brown sandy gravelly silty CLAY with a medium cobble content. Sand is fine to coarse. Gravel is fine to coarse subrounded. Cobbles are subrounded to rounded of limestone.		0.40	83.84						
1.0 Firm brown very sandy gravelly CLAY with a medium cobble content. Sand is fine to coarse. Gravel is fine to coarse subrounded. Cobbles are subrounded to rounded of limestone.		1.20	83.04						
End of Trial Pit at 1.80m		1.80	82.44						
2.0									
3.0									

Groundwater Conditions
Dry

Stability
Good

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**SATP12**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,504.63 E 719,684.44 N
		DATE STARTED	10/10/2022
		DATE COMPLETED	10/10/2022
CLIENT		**GROUND LEVEL (m)**	84.32
		EXCAVATION METHOD	7t Hitachi
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Soft brown sandy CLAY with rootlets. Sand is fine to coarse.									
Firm brown sandy silty CLAY. Sand is fine to coarse.		0.40	83.92		AA181955	B	0.70-0.70		
1.0 Grey brown gravelly silty SAND with a medium cobble content. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded. Cobbles are subrounded to rounded of limestone		1.20	83.12		AA181956	B	1.60-1.70		
2.0 End of Trial Pit at 2.20m		2.20	82.12						
3.0									

Groundwater Conditions
Dry

Stability
Good

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings. Soakaway test carried out in pit.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**SATP13**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,248.39 E 719,737.26 N
		DATE STARTED	14/10/2022
		DATE COMPLETED	14/10/2022
CLIENT		**GROUND LEVEL (m)**	81.66
		EXCAVATION METHOD	7t Hitachi
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Soft brown slightly gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is fine to medium subrounded.									
Stiff brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse subrounded.		0.30	81.36		AA181981	B	0.50-0.60		
Firm to stiff brown very sandy gravelly CLAY with a medium cobble content. Sand is fine to coarse. Gravel is fine to coarse subrounded.Cobbles are subrounded to rounded of limestone.		0.80	80.86						
1.0									
					AA181982	B	1.50-1.60		
End of Trial Pit at 1.50m		1.60	80.06						
2.0									
3.0									

Groundwater Conditions
Dry

Stability
Good

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings. Soakaway test carried out in pit.

Report No: 24330
Halverstown – Soakaway Test Photographs

SA01 – 1 of 2

SA01 – 2 of 2

SA02 – 1 of 2

SA02 – 2 of 2

Report No: 24330
Halverstown – Soakaway Test Photographs

SA03 1 of 2

SA03 2 of 2

SA04 1 of 2

SA04 2 of 2

SA05 1 of 2

SA05 2 of 2

SA06 1 of 2

SA06 2 of 2

SA07 1 of 2

SA07 2 of 2

Report No: 24330
Halverstown – Soakaway Test Photographs

SA08 1 of 2

SA08 2 of 2

SA09 1 of 2

SA09 2 of 2

SA10 1 of 2

SA10 2 of 2

SA11 1 of 2

SA11 2 of 2

SA12 1 of 2

SA12 2 of 2

SA13 1 of 2

SA13 2 of 2

Appendix 5A

Soakaway Test Records (BRE SA)

Soakaway Design f -value from field tests

(F2C) IGSL

Contract:	Halverstown	Contract No.	24330
Test No.	BRE SA01		
Client	DOBA		
Date:	28/04/2023		

Summary of ground conditions

from	to	Description	Ground water
0.00	0.15	TOPSOIL: Firm light brown sandy clay with roolets.	
0.15	0.60	Firm light brown sandy slightly gravelly CLAY with occasional cobbles.	
0.60	1.00	Soft to firm brown slightly sandy gravelly CLAY with occ. cobbles.	water seepage at 2.8m
1.00	2.00	Firm to stiff brown gravelly CLAY with some cobbles, occ. boulders.	
2.00	2.40	Firm brown sandy very gravelly CLAY with many cobbles, some boulders.	
2.40	2.80	Grey sandy clayey GRAVEL with many cobbles and some boulders.	

Notes: For full strata description please see TP Logs.

Field Data

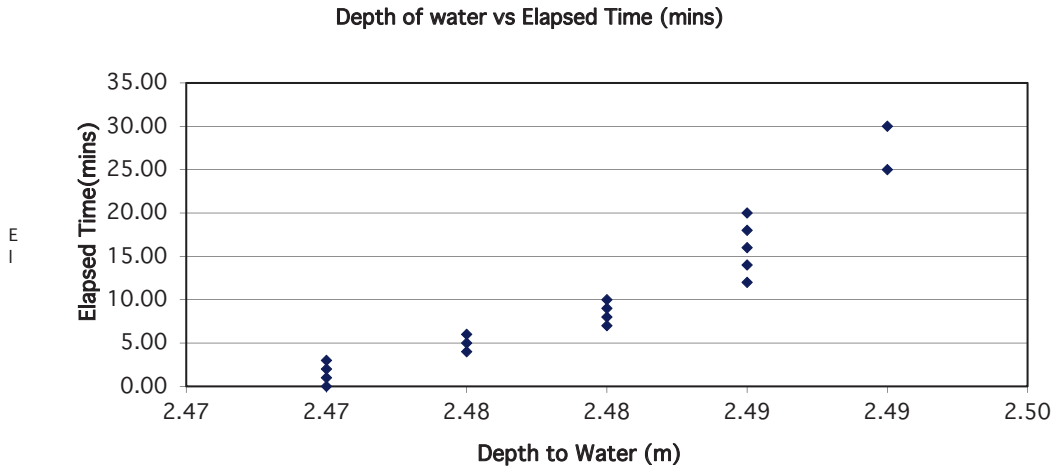
Depth to Water (m)	Elapsed Time (min)
2.47	0.00
2.47	1.00
2.47	2.00
2.47	3.00
2.48	4.00
2.48	5.00
2.48	6.00
2.48	7.00
2.48	8.00
2.48	9.00
2.48	10.00
2.49	12.00
2.49	14.00
2.49	16.00
2.49	18.00
2.49	20.00
2.49	25.00
2.49	30.00

Field Test

Depth of Pit (D)	2.80	m
Width of Pit (B)	0.70	m
Length of Pit (L)	2.20	m
Initial depth to Water =	2.47	m
Final depth to water =	2.49	m
Elapsed time (mins)=	30.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	1.54	m2
*Av. side area of permeable stratum over test perio	1.856	m2
Total Exposed area =	3.396	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.0003 m/min or 5.03861E-06 m/sec



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Halverstown Contract No. 24330
Test No. BRE SA06_A
Client DOBA
Date: 26/04/2023

Summary of ground conditions

from	to	Description	Ground water
0.00	0.10	TOPSOIL: Soft brown sandy clay.	
0.10	0.65	Firm brown sandy CLAY.	
0.65	1.40	Firm to stiff sandy gravelly CLAY with low cobble content.	water seepage at 2.5m
1.40	2.25	Firm brown sandy gravelly CLAY with some cobbles and rare boulders.	
2.25	3.10	Stiff grey slightly sandy very gravelly CLAY with some cobbles.	
3.10	3.30	Very stiff grey sandy gravelly CALY with some cobbles occ. boulders.	

Notes: For full strata description please see TP Logs.
Due to the instability of the side walls, a new zero was set after six minutes (BRE SA6_A1).

Field Data

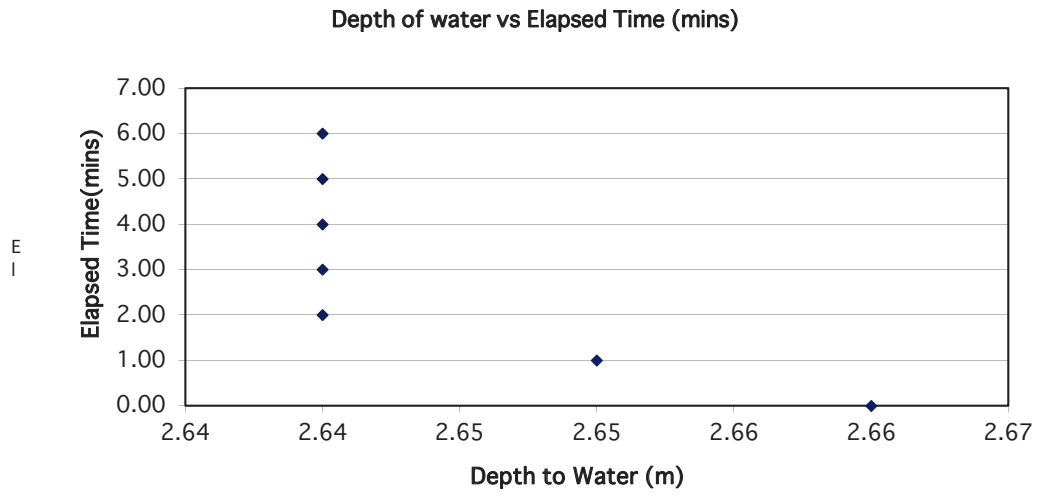
Depth to Water (m)	Elapsed Time (min)
2.66	0.00
2.65	1.00
2.64	2.00
2.64	3.00
2.64	4.00
2.64	5.00
2.64	6.00

Field Test

Depth of Pit (D)	3.30	m
Width of Pit (B)	0.70	m
Length of Pit (L)	2.40	m
Initial depth to Water =	2.66	m
Final depth to water =	2.64	m
Elapsed time (mins)=	6.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	1.68	m2
*Av. side area of permeable stratum over test perio	4.03	m2
Total Exposed area =	5.71	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= -0.001 m/min or -1.635E-05 m/sec



Soakaway Design f -value from field tests (F2C) IGSL

Contract:	Halverstown	Contract No.	24330
Test No.	BRE SA06_A1		
Client	DOBA		
Date:	26/04/2023		

Summary of ground conditions

from	to	Description	Ground water
0.00	0.10	TOPSOIL: Soft brown sandy clay.	
0.10	0.65	Firm brown sandy CLAY.	
0.65	1.40	Firm to stiff sandy gravelly CLAY with low cobble content.	water seepage at 2.5m
1.40	2.25	Firm brown sandy gravelly CLAY with some cobbles and rare boulders.	
2.25	3.10	Stiff grey slightly sandy very gravelly CLAY with some cobbles.	
3.10	3.30	Very stiff grey sandy gravelly CALY with some cobbles occ. boulders.	

Notes: For full strata description please see TP Logs.
Due to the instability of the side walls, a new zero was set after six minutes (BRE SA6_A1).

Field Data

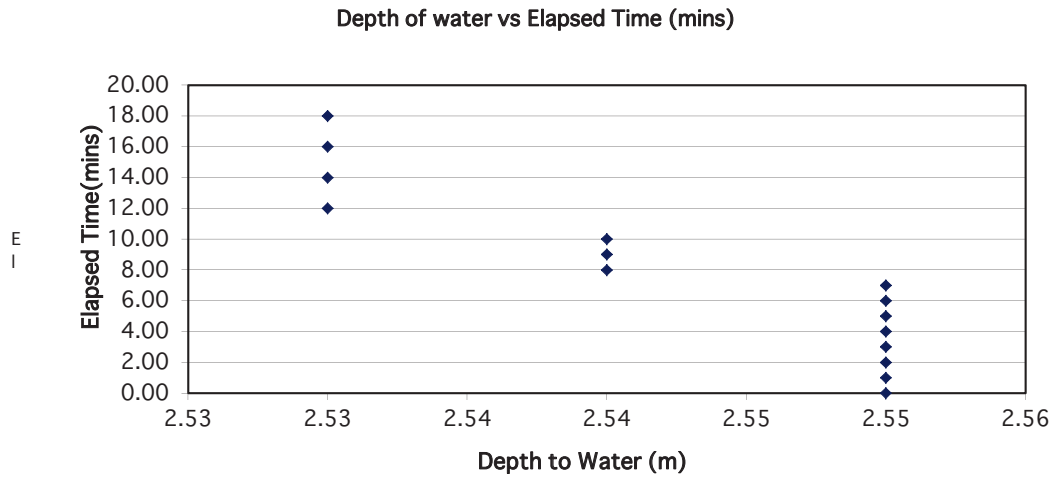
Depth to Water (m)	Elapsed Time (min)
2.55	0.00
2.55	1.00
2.55	2.00
2.55	3.00
2.55	4.00
2.55	5.00
2.55	6.00
2.55	7.00
2.54	8.00
2.54	9.00
2.54	10.00
2.53	12.00
2.53	14.00
2.53	16.00
2.53	18.00

Field Test

Depth of Pit (D)	3.30	m
Width of Pit (B)	0.70	m
Length of Pit (L)	2.40	m
Initial depth to Water =	2.55	m
Final depth to water =	2.53	m
Elapsed time (mins)=	18.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	1.68	m2
*Av. side area of permeable stratum over test period	4.712	m2
Total Exposed area =	6.392	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= -0.0003 m/min or -4.867E-06 m/sec



TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**BRE SA01**
		SHEET	Sheet 1 of 1
LOGGED BY	IC	**CO-ORDINATES**	686,287.89 E 719,888.50 N
		DATE STARTED	28/04/2023
		DATE COMPLETED	28/04/2023
CLIENT		**GROUND LEVEL (m)**	84.73
		EXCAVATION METHOD	13t Tracked Excavator
ENGINEER	DOBA		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TOPSOIL: Firm light brown sandy clay with roolets. Sand is fine to coarse.		0.15	84.58						
	Firm light brown sandy slightly gravelly CLAY with occasional cobbles. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular. Cobbles are rounded to subangular of limestone.								110	
						AA198241	B	0.50-0.50		
	Soft to firm orangish brown mottled black slightly sandy gravelly CLAY with occasional cobbles. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular. Cobbles are rounded to subangular of limestone.		0.60	84.13					95	
1.0	Firm to stiff light brown slightly sandy gravelly CLAY with medium cobble content and occasional boulders. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular. Cobbles are rounded to subangular of limestone. Boulders are subrounded of limestone.		1.00	83.73						
						AA198242	B	1.50-1.50		
2.0	Firm greyish brown sandy very gravelly CLAY with high cobble and medium boulder content. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular. Cobbles are rounded to subangular of limestone. Boulders are subrounded of limestone.		2.00	82.73						
	Brownish grey sandy clayey GRAVEL with high cobble and medium boulder content. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular. Cobbles are rounded to subangular of limestone. Boulders are subrounded of limestone (up to 500mm).		2.40	82.33						
						AA198243	B	2.50-2.50		
			2.80	81.93	(Seepage)	AA198244	B	2.80-2.80		
	End of Trial Pit at 2.80m									
3.0										

Groundwater Conditions
Seepage at 2.80m

Stability
Unstable from 2.00m

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Shear vanes (set of three) carried out at 0.30m & 0.70m bgl. Soakaway test undertaken in pit (BRE SA01). Pit backfilled with arisings.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**BRE SA02**
		SHEET	Sheet 1 of 1
LOGGED BY	IC	**CO-ORDINATES**	686,134.44 E 719,803.48 N
		DATE STARTED	28/04/2023
		DATE COMPLETED	28/04/2023
CLIENT		**GROUND LEVEL (m)**	82.23
		EXCAVATION METHOD	13t Tracked Excavator
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Firm light brown sandy clay with roolets. Sand is fine to coarse.		0.15	82.08						
Firm light brown sandy slightly gravelly CLAY with occasional cobbles. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular. Cobbles are rounded to subangular of limestone.		0.50	81.73					80	
Firm orangish brown sandy gravelly CLAY with occasional cobbles. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular. Cobbles are rounded to subangular of limestone.					AA198245	B	0.50-0.50	90	
1.0									
Firm to stiff light brown slightly sandy very gravelly CLAY with medium cobble content and occasional boulders. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular. Cobbles are rounded to subangular of limestone. Boulders are subrounded of limestone.		1.30	80.93		AA198246	B	1.50-1.50		
2.0					AA198247	B	2.30-2.30		
TP terminated due to rapid water flow End of Trial Pit at 2.60m		2.60	79.63	(Rapid)					
3.0									

Groundwater Conditions
Rapid water flow at 2.60m (rising 150mm after 14min)

Stability
Good

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Shear vanes (set of three) carried out at 0.30m bgl. Pit backfilled with arisings.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**BRE SA03**
		SHEET	Sheet 1 of 1
LOGGED BY	IC	**CO-ORDINATES**	686,050.77 E 719,689.75 N
		DATE STARTED	28/04/2023
		DATE COMPLETED	28/04/2023
CLIENT		**GROUND LEVEL (m)**	79.68
		EXCAVATION METHOD	13t Tracked Excavator
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Firm brown sandy clay with roolets. Sand is fine to coarse.		0.15	79.53						
Firm brown sandy slightly gravelly CLAY with occasional cobbles. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular. Cobbles are rounded to subangular of limestone.		0.30	79.38					87	
					AA198249	B	0.50-0.50		
Brownish grey very sandy GRAVEL with high cobble and medium boulder content, occasional pockets of clay. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular. Cobbles are rounded to subangular of limestone. Boulders are subrounded of limestone. (Possible gravelly sand).									
1.0		1.10	78.58						
Firm yellowish grey sandy very gravelly CLAYwith high cobble and medium boulder content, frequent pockets of sand. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular. Cobbles are rounded to subangular of limestone.				1 (Seepage)					
					AA198248	B	1.50-1.50		
2.0 Grey sandy clayey GRAVEL with high cobble and medium boulder content. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular. Cobbles are rounded to subangular of limestone. Boulders are subrounded of limestone.		2.00	77.68						
				2 (Rapid)	AA198250	B	2.30-2.30		
TP terminated due to rapid water flow End of Trial Pit at 2.50m		2.50	77.18						
3.0									

Groundwater Conditions
Seepage at 1.40, rapid water flow at 2.40m (rising 150mm in 4min)

Stability
Unstable, sidewall collapse from 0.40m

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Shear vanes (set of three) carried out at 0.30m & 0.70m bgl. Pit backfilled with arisings.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**BRE SA04**
		SHEET	Sheet 1 of 1
LOGGED BY	IC	**CO-ORDINATES**	686,270.92 E 719,493.31 N
		DATE STARTED	28/04/2023
		DATE COMPLETED	28/04/2023
CLIENT		**GROUND LEVEL (m)**	78.31
		EXCAVATION METHOD	13t Tracked Excavator
ENGINEER	DOBA		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TOPSOIL: Firm brown sandy clay with roolets. Sand is fine to coarse.		0.15	78.16						
	Firm brown sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular.		0.30	78.01					90	
	Grey sandy slightly clayey GRAVEL with high cobble content, some pockets of clay. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular. Cobbles are rounded to subangular of limestone.				1 (Seepage)	AA198175	B	0.50-0.50	60	
1.0					2 (Seepage)					
	Soft to firm dark grey slightly sandy very gravelly CLAY with high cobble content and occasional boulder. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular. Cobbles are rounded to subangular of limestone. Boulders are subrounded of limestone.		1.20	77.11	3 (Seepage)	AA198177	B	1.50-1.50		
2.0						AA198178	B	2.50-2.50		
3.0	End of Trial Pit at 3.00m		3.00	75.31						

Groundwater Conditions
Multiple seepages at 0.70m, 1.20m and 1.50m

Stability
Unstable, sidewall collapse from 0.70m

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Shear vanes (set of three) carried out at 0.30m & 0.70m bgl. Pit backfilled with arisings.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**BRE SA05**
		SHEET	Sheet 1 of 1
LOGGED BY	IC	**CO-ORDINATES**	686,525.81 E 719,367.00 N
		DATE STARTED	26/04/2023
		DATE COMPLETED	26/04/2023
CLIENT		**GROUND LEVEL (m)**	78.84
		EXCAVATION METHOD	13t Tracked Excavator
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Firm brown sandy clay with roolets. Sand is fine to coarse.		0.15	78.69						
Firm brown sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular.		0.40	78.44					68	
Brownish grey slightly gravelly slightly clayey SAND with occasional cobbles. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular. Cobbles are rounded to subangular of limestone		0.80	78.04		AA193198	B	0.70-0.70		
1.0 Greyish brown SAND with occasional cobbles. Sand is fine to coarse. Cobbles are rounded to subangular of limestone.					AA193199	B	1.40-1.40		
TP terminated due to major instability End of Trial Pit at 1.70m		1.70	77.14	(Moderate)					
2.0									
3.0									

Groundwater Conditions
Moderate flow at 1.70m

Stability
Unstable from 0.60m

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Shear vanes (set of three) carried out at 0.30m bgl. Pit backfilled with arisings.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**BRE SA06**
		SHEET	Sheet 1 of 1
LOGGED BY	IC	**CO-ORDINATES**	686,644.85 E 719,561.07 N
		DATE STARTED	26/04/2023
		DATE COMPLETED	26/04/2023
CLIENT		**GROUND LEVEL (m)**	82.55
		EXCAVATION METHOD	13t Tracked Excavator
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Soft brown sandy clay with roolets. Sand is fine to coarse.		0.10	82.45						
Firm brown sandy CLAY. Sand is fine to coarse.								78	
					AA198223	B	0.50-0.50		
Firm to stiff sandy gravelly CLAY with low cobble content. Sand is fine to medium. Gravel is fine to medium subrounded to subangular.		0.65	81.90					97	
1.0					AA198224	B	0.90-0.90		
Soft to firm light brown mottled golden brown and grey sandy gravelly CLAY with occasional pockets of sand, medium cobble content and rare boulders. Sand is fine to coarse. Gravel is fine to medium subrounded to subangular. Cobbles are rounded to subangular of limestone. Boulders are subrounded of limestone (up to 300mm).		1.40	81.15						
					AA198225	B	1.70-1.70		
2.0									
Stiff occasionally very stiff grey slightly sandy very gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse subrounded to subangular. Cobbles are rounded to subangular of limestone and mudstone.		2.25	80.30	1 (Seepage)	AA198226	B	2.30-2.30		
3.0									
Very stiff dark grey slightly sandy gravelly CLAY with medium cobble content and occasional boulders. Sand is fine to coarse. Gravel is fine to coarse subangular to angular. Cobbles are subangular of limestone. Boulder are subrounded of limestone (up to 500mm).		3.10	79.45						
					AA198227	B	3.20-3.20		
End of Trial Pit at 3.30m		3.30	79.25						

Groundwater Conditions
Seepage at 2.50m

Stability
Slightly unstable from 1.25m

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Shear vanes (set of three) carried out at 0.30m & 0.90m bgl. Soakaway tests (BRE SA01) carried out in pit. Pit backfilled with arisings.

BRE SA01 – 1 of 5

BRE SA01 – 2 of 5

BRE SA01 – 3 of 5

BRE SA01 – 4 of 5

BRE SA01 – 5 of 5

BRE SA02 – 1 of 4

BRE SA02 – 2 of 4

BRE SA02 – 3 of 4

BRE SA02 – 4 of 4

BRE SA03 – 1 of 5

BRE SA03 – 2 of 5

BRE SA03 – 3 of 5

BRE SA03 – 4 of 5

BRE SA03 – 5 of 5

BRE SA04 – 1 of 4

BRE SA04 – 2 of 4

BRE SA04 – 3 of 4

BRE SA04 – 4 of 4

BRE SA05 – 1 of 5

BRE SA05 – 2 of 5

BRE SA05 – 3 of 5

BRE SA05 – 4 of 5

BRE SA05 – 5 of 5

BRE SA06 – 1 of 4

BRE SA06 – 2 of 4

BRE SA06 – 3 of 4

BRE SA06 – 4 of 4

Appendix 6

Resistivity Survey

6659d-005-Report

Halverstown Data Centre

Naas, Co. Kildare

Electrical Resistivity Testing

Report Status: Draft

MGX Project Number: 6659

MGX File Ref: 6659d-005.doc

21st of November 2022

Confidential Report To:

IGSL
Unit F
M7 Business Park
Newhall
Naas, Co. Kildare

Report submitted by:
Minerex Geophysics Limited

Unit F4, Maynooth Business Campus
Maynooth, Co. Kildare
Ireland
Tel.: 01-6510030
Fax.: 01-6510033
Email: info@mgx.ie

Issued by:

Hartmut Krahn (Senior Geophysicist)

Minerex Geophysics Limited

Subsurface Geophysical Investigations

CONTENTS

List of Tables, Maps and Figures:

1. INTRODUCTION

1.1 Background

Minerex Geophysics Ltd. (MGX) carried out Resistivity Testing using the Wenner electrode configuration with two different methods for the Halverstown Data Center in Naas, Co. Kildare. The survey was commissioned by IGSL who are the main ground investigation contractor for the project. Eight deep vertical electrical sounding (VES) and 18 shallow soil resistivity (SR) tests were carried out. The coordinate system used on this site was Irish Transverse Mercator (ITM).

The test sequence was conducted as part of the overall ground investigation programme for the development of the data center. The purpose of the survey was to provide information to be used in the design and construction phases of the project.

These tests are conducted in order to increase the knowledge of the resistivity of the soil and rock and to assist with the design and installation of earthing systems and underground cabling systems. Soil resistivity depends on a number of factors like soil type, mineral content, temperature, moisture, salt content and compaction.

The methodology specified here encompasses onsite in–situ measurements and the presentation of the results, but does not include the design of the earthing or cabling system.

1.2 Objectives

The main objective of the geophysical survey was:

- To determine the electrical resistivity at a range of depths for each location

1.3 Site Description

The site is shown on Map 1 and the area consists of unused agricultural land.

1.4 Report

This report includes a location map of the resistivity testing locations and two tables of results. The client provided maps of the site and the digital versions were used as the background map in this report.

The indirect nature and the non-invasive survey methods must be taken into account when considering the results of this survey and Minerex Geophysics Limited, while using appropriate practice to execute the measurements and to present the data, give no guarantees in relation to the existing subsurface.

2. TESTING ON SITE

2.1 Methodology

The methodology consisted of using Vertical Electrical Sounding (VES) and Soil Resistivity (SR) in the Wenner electrode configuration at a range of electrode spacing agreed with the client prior to the fieldwork. The increase in the electrode spacing leads to an increase in the depth.

Two different electrical resistivity tests were used:

1 VES - Vertical Electrical Sounding – Deep

Objective: Determine the resistivity for ground, soil and rock to a depth around 50m below ground level (bgl) and also as two tests in two directions (check for anisotropy).

Purpose: This test is generally done to deliver values for the design of an earthing or grounding system

Test Method: Four probe array in Wenner electrode configuration with expanding electrode spacing

Spacings: 1, 2, 3, 4, 5, 7, 10, 15, 20, 30, 40 and 50m

Directions: There are two tests done at each location in two orthogonal directions

Instrument: Tigre Resistivity Meter (high power)

Comment: This test includes the 'Soil Resistivity Test – Shallow' intrinsically

2 SR - Soil Resistivity Test – Shallow

Objective: Determine the shallow soil around 1 – 3m bgl. In one direction

Purpose: This test is generally done to deliver values for the design of the cable system

Test Method: Four probe array in Wenner electrode configuration with three electrode spacings

Spacings: 1, 2 and 3m

Directions: The test is done in one direction

Instrument: Tigre or Megger Resistivity Meter

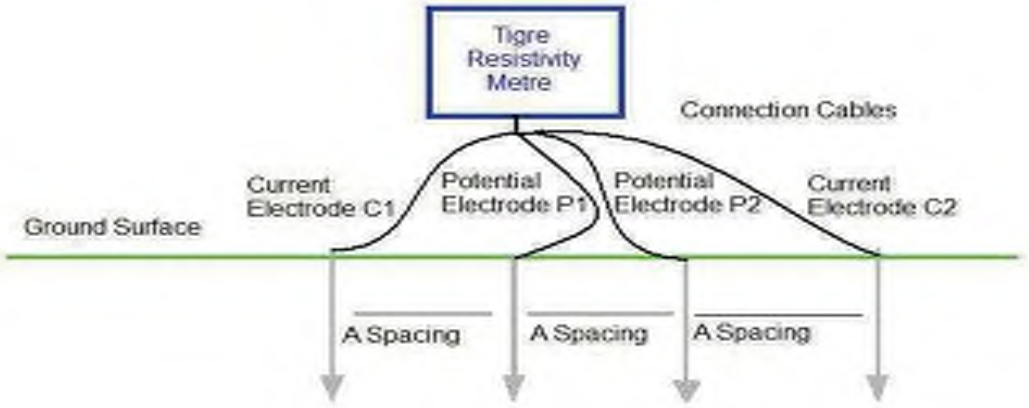
2.2 Measurements

Eight Vertical Electrical Soundings were conducted at four locations on the site.

All measurements were acquired in accordance with Minerex Geophysics Ltd. procedures, protocols, QC procedures and in compliance with appropriate IEEE and British Standards. The relevant IEEE standards are 81-1983 part 1 – Guide to Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of Ground Systems (ANSI/IEEE Std 81-1983) for the resistivity testing (IEEE 1983).

The Vertical Electrical Sounding (VES) and the soil resistivity (SR) was conducted using a Tigre Resistivity Meter with variable current input, a suite of four cables and four stainless steel electrodes. This 'four probe array' is called a Wenner Array as the spacing (A) between the four electrodes was the same for each measurement. At each electrode spacing, the test resistance in Ohms (Ω) was recorded in a detailed field sheet for later office-based computing of ground resistivities.

Figure 1: Resistivity Testing using the Wenner Array.



2.3 Testing Equipment

All equipment used was portable and intrinsically safe. The methods were non-destructive and non-intrusive. Only low voltage power requirements of 12 Volts or less were needed on site and were supplied by batteries. The following equipment was used:

- An ALLIED Tigre Resistivity Meter
- A suite of cables with 4 reels and distance marks for resistivity readings
- Stainless Steel Electrodes
- Measuring tapes
- Handheld GPS

Equipment checks and QC procedures were applied prior to the commencement of data acquisition.

2.4 Site Work

The data acquisition was carried out on the 9th – 10th of November 2022 in good weather conditions. Health and safety standards were adhered to at all times.

3. RESULTS

The recorded test resistance in Ω allows for the calculation of the resistivity value in Ωm for each individual electrode spacing.

The resistivity at a given electrode spacing was calculated using the following formula:

$\rho = 2^{*}\pi * A * R$

Where;

ρ = Resistivity in Ωm

π = Pi = 3.141592

A = electrode spacing in m

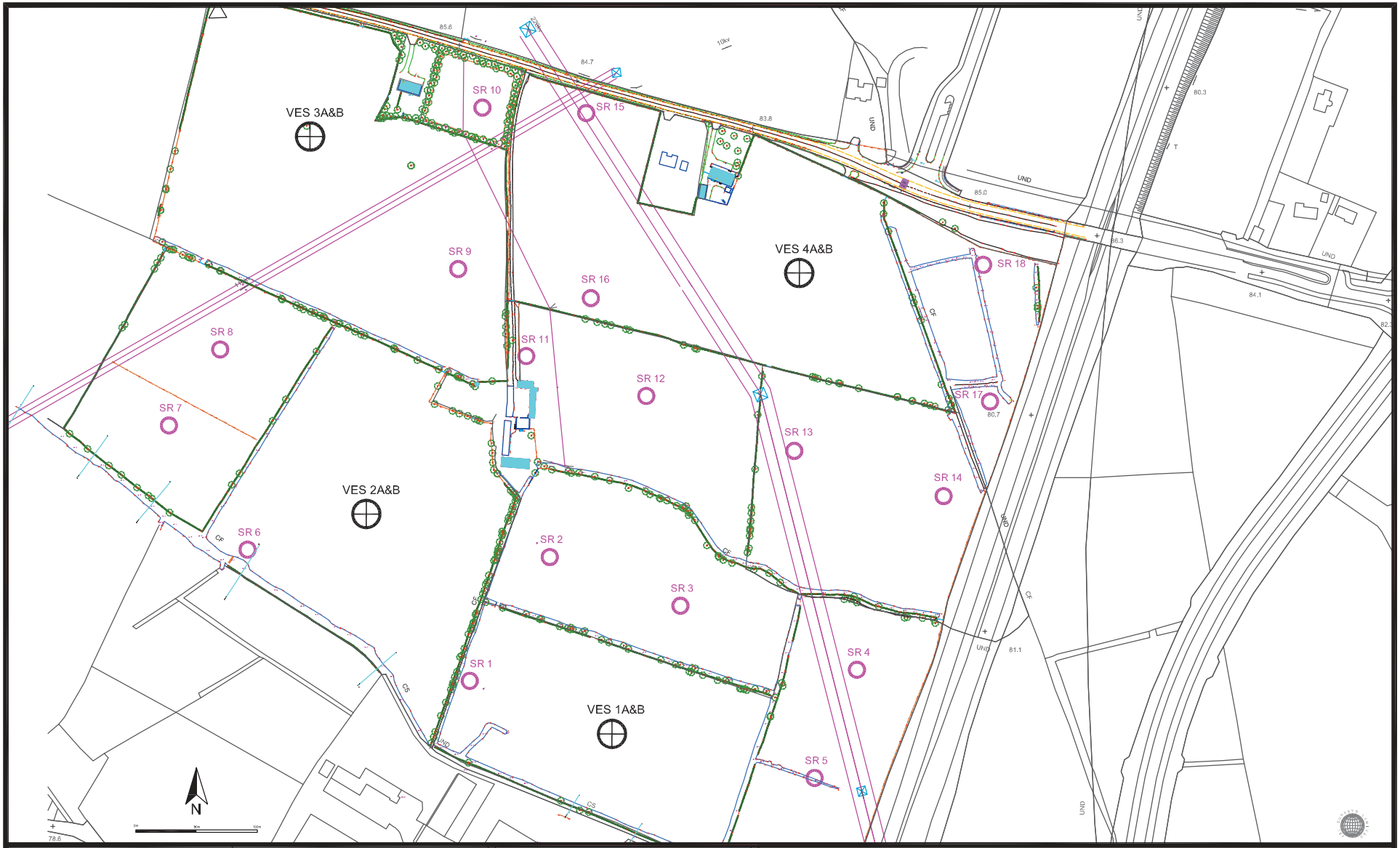
R = Measured Resistance value in Ω

The survey results with electrode spacing, resistances and resistivities are displayed in Table 1 for the VES and in Table 2 for the SR.

The resistivity values recorded at given electrode spacing can be allocated to approximate depth values. For the Wenner array the average resistivity taken at a particular A-spacing is equal to the average resistivity for a depth range between the ground surface and the A-spacing. Therefore, the average resistivity value recorded in the last column of Table 1 and 2 corresponds to the depth range between 0m bgl and the value in the first column. The depth mentioned in this report is given for visualisation purpose but may change when using the resistivity values in the design of the earthing system.

4. REFERENCES

1. **IEEE, 1983.** ANSI/IEEE Std. 83-1983. IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potential of a Ground System. The Institute of Electrical and Electronics Engineers Inc.



Minerex
Geophysics Limited

Unit F4, Maynooth Business Campus
Maynooth, Co. Kildare
Tel. (01) 6510030
Email: info@mgx.ie
Web: www.mgx.ie

CLIENT	IGSL
PROJECT	Halverstown Data Centre Electrical Resistivity Testing
TITLE	Map 1: Location Map

SCALE:	1:3000 @ A3
PROJECT:	6659
DRAWN:	JS
DATE:	11/11/2022
MGX FILE:	6659d_Map.dwg
STATUS:	Draft

LEGEND:

⊕ VES 1 — Vertical Electrical Sounding In Wenner Electrode Configuration

○ SR 1 — Soil Resistivity Testing in Wenner Electrode Configuration with A = 1, 2 and 3m

Table 1: VES Ground Resistivity Testing Results

Location:	Direction:	**ITM** Coordinates East:	**ITM** Coordinates North:	Elevation:	Date:
VES 1A	**SW-NE**	**686430.5**	**719396.9**	**78.3 mOD**	**09/11/2022**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	10.38	65
2	1	3	6	5.718	72
3	1.5	4.5	9	4.165	79
4	2	6	12	3.287	83
5	2.5	7.5	15	3.106	98
7	3.5	10.5	21	2.743	121
10	5	15	30	2.339	147
15	7.5	22.5	45	2.057	194
20	10	30	60	1.956	246
30	15	45	90	1.845	348
40	20	60	120	1.583	398
50	25	75	150	1.432	450

Table 1: VES Ground Resistivity Testing Results

Location:	Direction:	**ITM** Coordinates East:	**ITM** Coordinates North:	Elevation:	Date:
VES 1B	**NW-SE**	**686430.5**	**719396.9**	**78.3 mOD**	**09/11/2022**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	11.79	74
2	1	3	6	5.254	66
3	1.5	4.5	9	4.215	79
4	2	6	12	3.66	92
5	2.5	7.5	15	3.106	98
7	3.5	10.5	21	2.622	115
10	5	15	30	2.339	147
15	7.5	22.5	45	2.198	207
20	10	30	60	2.148	270
30	15	45	90	1.95	368
40	20	60	120	1.625	408
50	25	75	150	1.411	443

Table 1: VES Ground Resistivity Testing Results

Location:	Direction:	**ITM** Coordinates East:	**ITM** Coordinates North:	Elevation:	Date:
VES 2A	**SW-NE**	**686228.8**	**719577.5**	**79.8 mOD**	**09/11/2022**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	16.03	101
2	1	3	6	9.308	117
3	1.5	4.5	9	7.14	135
4	2	6	12	5.849	147
5	2.5	7.5	15	5.123	161
7	3.5	10.5	21	4.316	190
10	5	15	30	3.67	231
15	7.5	22.5	45	3.156	297
20	10	30	60	2.833	356
30	15	45	90	2.559	482
40	20	60	120	2.289	575
50	25	75	150	2.017	634

Table 1: VES Ground Resistivity Testing Results

Location:	Direction:	**ITM** Coordinates East:	**ITM** Coordinates North:	Elevation:	Date:
VES 2B	**NW-SE**	**686228.8**	**719577.5**	**79.8 mOD**	**09/11/2022**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	16.74	105
2	1	3	6	9.368	118
3	1.5	4.5	9	7.21	136
4	2	6	12	5.899	148
5	2.5	7.5	15	5.123	161
7	3.5	10.5	21	4.235	186
10	5	15	30	3.66	230
15	7.5	22.5	45	2.874	271
20	10	30	60	2.561	322
30	15	45	90	2.208	416
40	20	60	120	1.919	482
50	25	75	150	1.734	545

Table 1: VES Ground Resistivity Testing Results

Location:	Direction:	**ITM** Coordinates East:	**ITM** Coordinates North:	Elevation:	Date:
VES 3A	**NW-SE**	**686182.6**	**719887.4**	**84.1 mOD**	**09/11/2022**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	26.01	163
2	1	3	6	10.08	127
3	1.5	4.5	9	7.048	133
4	2	6	12	6.192	156
5	2.5	7.5	15	5.375	169
7	3.5	10.5	21	4.175	184
10	5	15	30	3.096	195
15	7.5	22.5	45	2.087	197
20	10	30	60	1.653	208
30	15	45	90	1.28	241
40	20	60	120	1.21	304
50	25	75	150	1.159	364

Table 1: VES Ground Resistivity Testing Results

Location:	Direction:	**ITM** Coordinates East:	**ITM** Coordinates North:	Elevation:	Date:
VES 3B	**SW-NE**	**686182.6**	**719887.4**	**84.1 mOD**	**09/11/2022**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	25.29	159
2	1	3	6	10.38	130
3	1.5	4.5	9	6.815	128
4	2	6	12	5.546	139
5	2.5	7.5	15	4.921	155
7	3.5	10.5	21	4.134	182
10	5	15	30	3.136	197
15	7.5	22.5	45	2.168	204
20	10	30	60	1.593	200
30	15	45	90	1.23	232
40	20	60	120	1.149	289
50	25	75	150	1.139	358

Table 1: VES Ground Resistivity Testing Results

Location:	Direction:	**ITM** Coordinates East:	**ITM** Coordinates North:	Elevation:	Date:
VES 4A	**S-N**	**686584.2**	**719775.4**	**83.7 mOD**	**10/11/2022**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	16.14	101
2	1	3	6	10.28	129
3	1.5	4.5	9	7.5	141
4	2	6	12	6.373	160
5	2.5	7.5	15	5.38	169
7	3.5	10.5	21	4.397	193
10	5	15	30	3.72	234
15	7.5	22.5	45	3.108	293
20	10	30	60	2.64	332
30	15	45	90	2.117	399
40	20	60	120	1.93	485
50	25	75	150	1.835	576

Table 1: VES Ground Resistivity Testing Results

Location:	Direction:	**ITM** Coordinates East:	**ITM** Coordinates North:	Elevation:	Date:
VES 4B	**E-W**	**686584.2**	**719775.4**	**83.7 mOD**	**10/11/2022**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	17.44	110
2	1	3	6	10.8	136
3	1.5	4.5	9	7.957	150
4	2	6	12	6.55	165
5	2.5	7.5	15	5.677	178
7	3.5	10.5	21	4.42	194
10	5	15	30	3.64	229
15	7.5	22.5	45	3.065	289
20	10	30	60	2.62	329
30	15	45	90	2.218	418
40	20	60	120	1.936	487
50	25	75	150	1.79	562

Table 2: Soil Resistivity Testing Results

Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR1	**77.3**	**686313.7**	**719440.5**	**09/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	9.328	59
2	1	3	6	5.506	69
3	1.5	4.5	9	4.044	76
Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR2	**80.2**	**686379.4**	**719542.2**	**09/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	17.54	110
2	1	3	6	7.866	99
3	1.5	4.5	9	5.748	108
Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR3	**80.2**	**686486.7**	**719502.1**	**09/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	18.35	115
2	1	3	6	9.681	122
3	1.5	4.5	9	6.363	120
Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR4	**80**	**686631.5**	**719449.5**	**09/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	15.02	94
2	1	3	6	9.293	117
3	1.5	4.5	9	6.595	124

Table 2: Soil Resistivity Testing Results

Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR5	**79.1**	**686596.8**	**719360.7**	**09/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	13.21	83
2	1	3	6	6.686	84
3	1.5	4.5	9	4.366	82
Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR6	**77.8**	**686131.3**	**719548.2**	**09/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	20.27	127
2	1	3	6	11.69	147
3	1.5	4.5	9	8.531	161
Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR7	**79.3**	**686066.8**	**719650.2**	**09/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	17.74	111
2	1	3	6	11.88	149
3	1.5	4.5	9	8.884	167
Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR8	**81**	**686108.8**	**719712.6**	**09/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	15.93	100
2	1	3	6	9.651	121
3	1.5	4.5	9	7.362	139

Table 2: Soil Resistivity Testing Results

Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR9	**83.2**	**686304.3**	**719778.6**	**09/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	24.7	155
2	1	3	6	12.2	153
3	1.5	4.5	9	8.632	163
Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR10	**85**	**686324.1**	**719911.2**	**09/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	21.73	137
2	1	3	6	11.39	143
3	1.5	4.5	9	9.389	177
Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR11	**82.9**	**686360.1**	**719707.1**	**10/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	14.11	89
2	1	3	6	9.681	122
3	1.5	4.5	9	7.311	138
Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR12	**83.7**	**686458.6**	**719674.4**	**10/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	18.48	116
2	1	3	6	9.82	123
3	1.5	4.5	9	6.9	130

Table 2: Soil Resistivity Testing Results

Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR13	**83.7**	**686580.1**	**719629.3**	**10/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	16.08	101
2	1	3	6	9.03	113
3	1.5	4.5	9	6.04	114
Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR14	**82.2**	**686702.7**	**719592.2**	**10/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	13.71	86
2	1	3	6	8.219	103
3	1.5	4.5	9	6.287	119
Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR15	**85.1**	**686409.3**	**719906.7**	**10/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	13	82
2	1	3	6	7.64	96
3	1.5	4.5	9	6.353	120
Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR16	**84.8**	**686413.1**	**719754.8**	**10/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	26.2	165
2	1	3	6	13.4	168
3	1.5	4.5	9	8.85	167

Table 2: Soil Resistivity Testing Results

Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR17	**80.6**	**686740.8**	**719669.9**	**10/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	15.02	94
2	1	3	6	8.54	107
3	1.5	4.5	9	6.13	116
Test Name:	Elevation:	**ITM** Coordinates East:	**ITM** Coordinates North:	Date:	Instrument:
SR18	**80.6**	**686735.2**	**719782.1**	**10/11/2022**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ω)	Apparent Resistivity (Ωm)
1	0.5	1.5	3	20.77	130
2	1	3	6	8.75	110
3	1.5	4.5	9	6.646	125

Appendix 7

Rotary Drillhole Logs & Photographs

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**DRILLHOLE NO**	**RC01**
		SHEET	Sheet 1 of 3
CO-ORDINATES	686,380.19 E 719,855.77 N	**DATE DRILLED**	16/05/2023
GROUND LEVEL (mOD)	85.33	**DATE LOGGED**	17/05/2023
RIG TYPE	GEO-205		
FLUSH	Air/Mist		
CLIENT		**DRILLED BY**	IGSL -DH
ENGINEER	DOBA	**LOGGED BY**	D. O'Shea
INCLINATION (deg)	-90		
CORE DIAMETER (mm)			

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown, gravellly silty sandy CLAY with boulders				
1												N = 13 (1, 2, 3, 3, 4, 3)
2												
3												N = 22 (3, 4, 3, 5, 6, 8)
4												
5									5.00	80.33		N = 49 (4, 6, 8, 11, 14, 16)
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown, sandy gravelly CLAY with boulders				
6												N = 28 (3, 3, 5, 7, 7, 9)
7									7.50	77.83		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of damp grey/brown sandy, silty clayey GRAVEL				N = 16 (2, 3, 3, 3, 4, 6)
8												
9												N = 50 (4, 7, 10, 13, 12, 15)
									9.60	75.73		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown gravelly sandy SILT.				

REMARKS

Hole cased 0.00-14.80m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
14.50	14.50	N/S			Seepage

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 24330

CONTRACT Halverstown

DRILLHOLE NO RC01
SHEET Sheet 2 of 3

CO-ORDINATES 686,380.19 E
719,855.77 N
GROUND LEVEL (mOD) 85.33

RIG TYPE GEO-205
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm)

DATE DRILLED 16/05/2023
DATE LOGGED 17/05/2023

CLIENT
ENGINEER DOBA

DRILLED BY IGSL -DH
LOGGED BY D. O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10									10.40	74.93		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown clayey sandy coarse GRAVEL.				N = 65 (3, 5, 11, 14, 17, 23)
11												
12												N = 20/35 mm (7, 31, 20)
13												
												N = 17/10 mm (33, 17)
14									14.80	70.53		
								Returns of brown, slightly sandy, clayey, medium to coarse GRAVEL with occassional cobble. Sand is fine to coarse, gravel is subangular.				
15												
16									16.30	69.03		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of possible weathered / dolomitised rock / crystalline calcite				
17												
18												
19												

REMARKS

Hole cased 0.00-14.80m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
14.50	14.50	N/S			Seepage

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 24330

CONTRACT Halverstown

DRILLHOLE NO RC01
SHEET Sheet 3 of 3

CO-ORDINATES 686,380.19 E
719,855.77 N
GROUND LEVEL (mOD) 85.33

RIG TYPE GEO-205
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm)

DATE DRILLED 16/05/2023
DATE LOGGED 17/05/2023

CLIENT
ENGINEER DOBA

DRILLED BY IGSL -DH
LOGGED BY D. O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
20								SYMMETRIX DRILLING: No recovery, observed by driller as returns of possible weathered / dolomitised rock / crystalline calcite *(continued)*				
21												
22												
23												
24												
25									25.60	59.73		
26								End of Borehole at 25.60 m				
27												
28												
29												

REMARKS

Hole cased 0.00-14.80m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
14.50	14.50	N/S			Seepage

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
17-05-23	25.60	14.80	3.50	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**DRILLHOLE NO**	**RC01A**
		SHEET	Sheet 1 of 3
CO-ORDINATES	686,381.78 E 719,859.74 N	**DATE DRILLED**	18/05/2023
GROUND LEVEL (mOD)	85.33	**DATE LOGGED**	19/05/2023
RIG TYPE	GEO-205		
FLUSH	Air/Mist		
CLIENT		**DRILLED BY**	IGSL -DH
ENGINEER	DOBA	**LOGGED BY**	D. O'Shea
INCLINATION (deg)	-90		
CORE DIAMETER (mm)			

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown, gravellly silty sandy CLAY with boulders				
1												
2												
3												
4												
5									5.00	80.33		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown, sandy gravelly CLAY with boulders				
6												
7									7.50	77.83		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of damp grey/brown sandy, silty clayey GRAVEL				
8												
9									9.60	75.73		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown gravelly sandy SILT.				

REMARKS

Hole cased 0.00-17.10m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
16.80	16.80	N/S			Seepage

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
19-05-23	19.60	5.00	19.60	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 24330

CONTRACT Halverstown

DRILLHOLE NO RC01A
SHEET Sheet 2 of 3

CO-ORDINATES 686,381.78 E
719,859.74 N
GROUND LEVEL (mOD) 85.33

RIG TYPE GEO-205
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm)

DATE DRILLED 18/05/2023
DATE LOGGED 19/05/2023

CLIENT
ENGINEER DOBA

DRILLED BY IGSL -DH
LOGGED BY D. O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10									10.40	74.93		
11								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown clayey sandy coarse GRAVEL.				
12												
13												
14									14.80	70.53		
15								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown, slightly clayey, sandy, GRAVEL with some boulders. Sand is fine to coarse, gravel is coarse.				N = 28/40 mm (10, 22, 28)
16												N = 23/20 mm (16, 27, 23)
17									17.10	68.23		N = 30/50 mm (13, 22, 30)
18								Returns of orange/brown, sandy, gravelly CLAY to clayey GRAVEL. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of highly weathered limestone / crystalline calcite. Possible calcite-filled fault.				
19									18.70	66.63		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of possible weathered rock / dolomitised rock / crystalline calcite				

REMARKS

Hole cased 0.00-17.10m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
16.80	16.80	N/S			Seepage

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
19-05-23	19.60	5.00	19.60	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 24330

CONTRACT Halverstown

DRILLHOLE NO RC01A
SHEET Sheet 3 of 3

CO-ORDINATES 686,381.78 E
719,859.74 N
GROUND LEVEL (mOD) 85.33

RIG TYPE GEO-205
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm)

DATE DRILLED 18/05/2023
DATE LOGGED 19/05/2023

CLIENT
ENGINEER DOBA

DRILLED BY IGSL -DH
LOGGED BY D. O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
20								SYMMETRIX DRILLING: No recovery, observed by driller as returns of possible weathered rock / dolomitised rock / crystalline calcite *(continued)*				
21												
22									22.00	63.33		
								End of Borehole at 22.00 m				
23												
24												
25												
26												
27												
28												
29												

REMARKS

Hole cased 0.00-17.10m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
16.80	16.80	N/S			Seepage

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
19-05-23	22.00	17.10	6.00	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
19-05-23	19.60	5.00	19.60	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**DRILLHOLE NO**	**RC02**
		SHEET	Sheet 1 of 2
CO-ORDINATES	686,605.34 E 719,802.34 N	**DATE DRILLED**	11/05/2023
GROUND LEVEL (mOD)	82.92	**DATE LOGGED**	12/05/2023
RIG TYPE	GEO-205		
FLUSH	Air/Mist		
CLIENT		**DRILLED BY**	IGSL -DH
ENGINEER	DOBA	**LOGGED BY**	D. O'Shea
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy, clayey GRAVEL.				
1												N = 12 (1, 1, 2, 3, 3, 4)
2												
3												N = 21 (2, 3, 4, 5, 5, 7)
4												
5												N = 30 (3, 3, 5, 8, 9, 8)
6												N = 44 (4, 5, 8, 11, 11, 14)
7		0	0	0								N = 60/135 mm (7, 13, 28, 32)
8												
9												N = 33/45 mm (16, 27, 33)

REMARKS

Hole cased 0.00-15.10m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
11.80	11.80	N/S			Seepage

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
12-05-23	19.70	5.00	19.70	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 24330

CONTRACT Halverstown

DRILLHOLE NO RC02
SHEET Sheet 2 of 2

CO-ORDINATES 686,605.34 E
719,802.34 N
GROUND LEVEL (mOD) 82.92

RIG TYPE GEO-205
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 78

DATE DRILLED 11/05/2023
DATE LOGGED 12/05/2023

CLIENT
ENGINEER DOBA

DRILLED BY IGSL -DH
LOGGED BY D. O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy, clayey GRAVEL. *(continued)*				N = 60/125 mm (8, 14, 31, 29)
11												
12												N = 10/25 mm (15, 40, 10)
13												N = 50/60 mm (50, 50)
									13.90	69.02		
14								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown gravelly CLAY.				
15	15.10								15.10	67.82		
16		100	65	65				Strong to very strong, thickly to medium bedded, light blue/grey, sandy, fine grained LIMESTONE (possibly locally slightly dolomitised, stromatactic structure with abundant calcite veining), slightly weathered. Discontinuities are medium to closely spaced, smooth to very locally rough, planar. Apertures are tight to locally moderately open, locally clay smeared (at 16.36m), calcite veined (1-10mm thick), and slight iron oxide staining. Dips are subhorizontal to locally 30°				
	16.60											
17		100	73	73								
	17.35											
		100	94	94								
18	18.15											
		100	92	92								
19						599.999999999998						
	19.70								19.70	63.22		
								End of Borehole at 19.70 m				

REMARKS

Hole cased 0.00-15.10m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
11.80	11.80	N/S			Seepage

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
12-05-23	19.70	15.10	3.40	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
12-05-23	19.70	5.00	19.70	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 24330

CONTRACT Halverstown

DRILLHOLE NO RC03
SHEET Sheet 1 of 2

CO-ORDINATES 686,184.03 E
719,576.09 N
GROUND LEVEL (mOD) 79.37

RIG TYPE GEO-205
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 78

DATE DRILLED 15/05/2023
DATE LOGGED 16/05/2023

CLIENT
ENGINEER DOBA

DRILLED BY IGSL -DH
LOGGED BY D. O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as reutrns of grey/brown sandy silty clayey GRAVEL				N = 7 (1, 0, 1, 2, 2, 2)
1												
2												
3												N = 51/225 mm (1, 2, 3, 3, 45)
4		0	0	0								
5												N = 47 (2, 4, 7, 11, 13, 16)
6												N = 63 (5, 8, 11, 15, 17, 20)
7												
8	8.80								8.80	70.57		N = 69 (4, 9, 13, 14, 20, 22)
9	9.60	100	60	60								

REMARKS
Hole cased 0.00-8.80m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
5.90	5.90	6.40			Seepage

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
16-05-23	14.10	5.00	14.10	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**DRILLHOLE NO**	**RC03**
		SHEET	Sheet 2 of 2
CO-ORDINATES	686,184.03 E 719,576.09 N	**DATE DRILLED**	15/05/2023
GROUND LEVEL (mOD)	79.37	**DATE LOGGED**	16/05/2023
CLIENT		**DRILLED BY**	IGSL -DH
ENGINEER	DOBA	**LOGGED BY**	D. O'Shea
RIG TYPE	GEO-205		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10												
11	11.30	100	67	59				Weak to strong, thickly to thinly bedded, light blue/grey, fine-grained, LIMESTONE (possibly locally slightly dolomitised, stromatactic structure with abundant calcite veining), slightly weathered. Discontinuities are widely to closely spaced, smooth to very locally rough, planar. Apertures are tight to locally moderately open, locally clay smeared (at 9.38m), calcite veined (1-10mm thick), and slight iron oxide staining. Dips are subhorizontal to locally 30° and 45°. *(continued)*				
12	12.60	100	64	62								
13	13.40	100	38	38								
14	14.10	100	60	60					14.10	65.27		
15								End of Borehole at 14.10 m				
16												
17												
18												
19												

REMARKS

Hole cased 0.00-8.80m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
5.90	5.90	6.40			Seepage

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
16-05-23	14.10	8.80	1.70	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
16-05-23	14.10	5.00	14.10	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**DRILLHOLE NO**	**RC04**
		SHEET	Sheet 1 of 2
CO-ORDINATES	686,446.74 E 719,398.98 N	**DATE DRILLED**	09/05/2023
GROUND LEVEL (mOD)	78.32	**DATE LOGGED**	10/05/2023
CLIENT		**DRILLED BY**	IGSL -DH
ENGINEER	DOBA	**LOGGED BY**	D. O'Shea
RIG TYPE	GEO-205		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown, sandy silty, clayey GRAVEL				
1												N = 9 (1, 1, 2, 2, 2, 3)
2												
3												N = 16 (1, 2, 3, 4, 4, 5)
4												
5												N = 33 (2, 5, 6, 8, 8, 11)
6		0	0	0								N = 54 (5, 6, 9, 13, 16, 16)
7												
8												N = 52 (7, 13, 11, 11, 14, 16)
9												N = 62 (6, 6, 9, 12, 18, 23)

REMARKS

Hole cased 0.00-11.60m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
5.40	5.40	6.40			Seepage

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
10-05-23	16.90	5.00	16.90	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**DRILLHOLE NO**	**RC04**
		SHEET	Sheet 2 of 2
CO-ORDINATES	686,446.74 E 719,398.98 N	**DATE DRILLED**	09/05/2023
GROUND LEVEL (mOD)	78.32	**DATE LOGGED**	10/05/2023
RIG TYPE	GEO-205	**DRILLED BY**	IGSL -DH
FLUSH	Air/Mist	**LOGGED BY**	D. O'Shea
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		
CLIENT			
ENGINEER	DOBA		

Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Description	Depth (m)	Elevation	SPT (N Value)
				SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown, sandy silty, clayey GRAVEL *(continued)*	10.60	67.72	N = 50/90 mm (8, 18, 30, 20)
11.60				SYMMETRIX DRILLING: No recovery, observed by driller as returns of possible weathered rock.	11.60	66.72	
12.60	100	30	30	Weak to very strong, thickly to thinly bedded, dark blue/grey, fine-grained LIMESTONE (interbedded calcisiltite and argillaceous layers), slightly weathered. Discontinuities are widely to closely spaced, smooth to very locally rough, planar. Apertures are tight to locally moderately open, locally clay smeared, calcite layered (at 15.12-15.26m), clay/gravel-filled (at 13.29-13.34m and 15.37-15.68m). Dips are subhoriztonal to locally 30° and 45°.			
13.10	100	46	28				
14.10	100	54	45				
15.60	100	59	47				
16.90	100	58	58		16.90	61.42	
				End of Borehole at 16.90 m			

Non-intact Zone: 540.0000000000001

REMARKS

Hole cased 0.00-11.60m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
5.40	5.40	6.40			Seepage

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
10-05-23	16.90	5.00	16.90	50mm SP

GROUNDWATER DETAILS

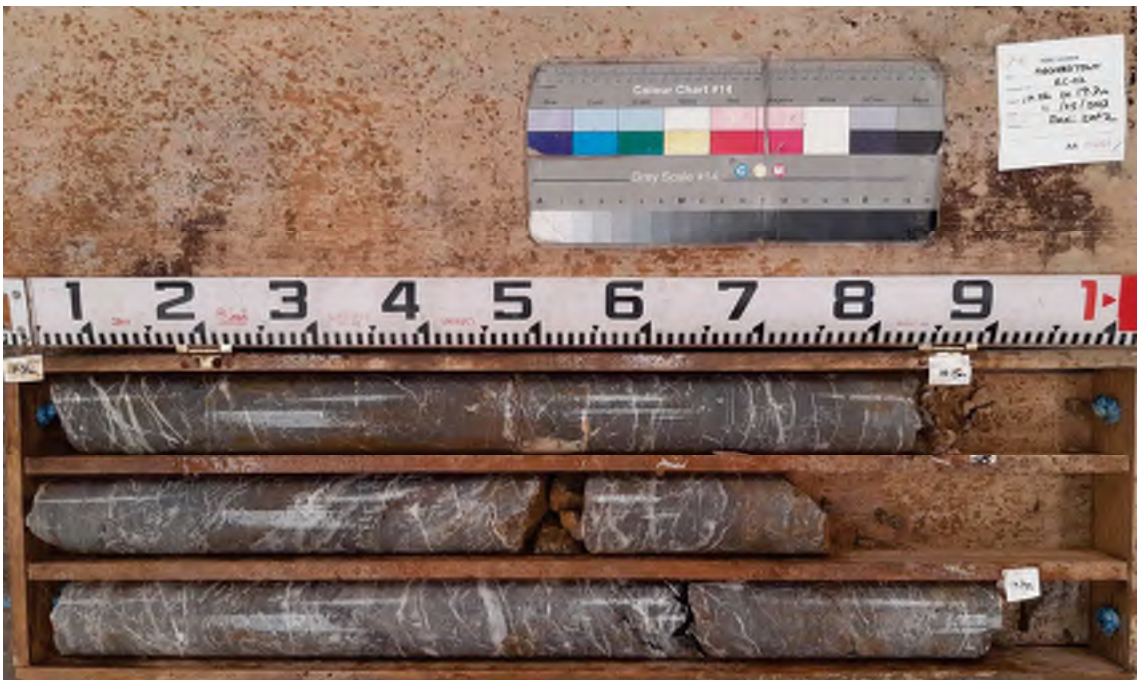
Date	Hole Depth	Casing Depth	Depth to Water	Comments
10-05-23	16.90	11.60	3.50	Water level recorded 5 mins after end of drilling.

RC01 Box 1 of 1 – 14.80-16.30m

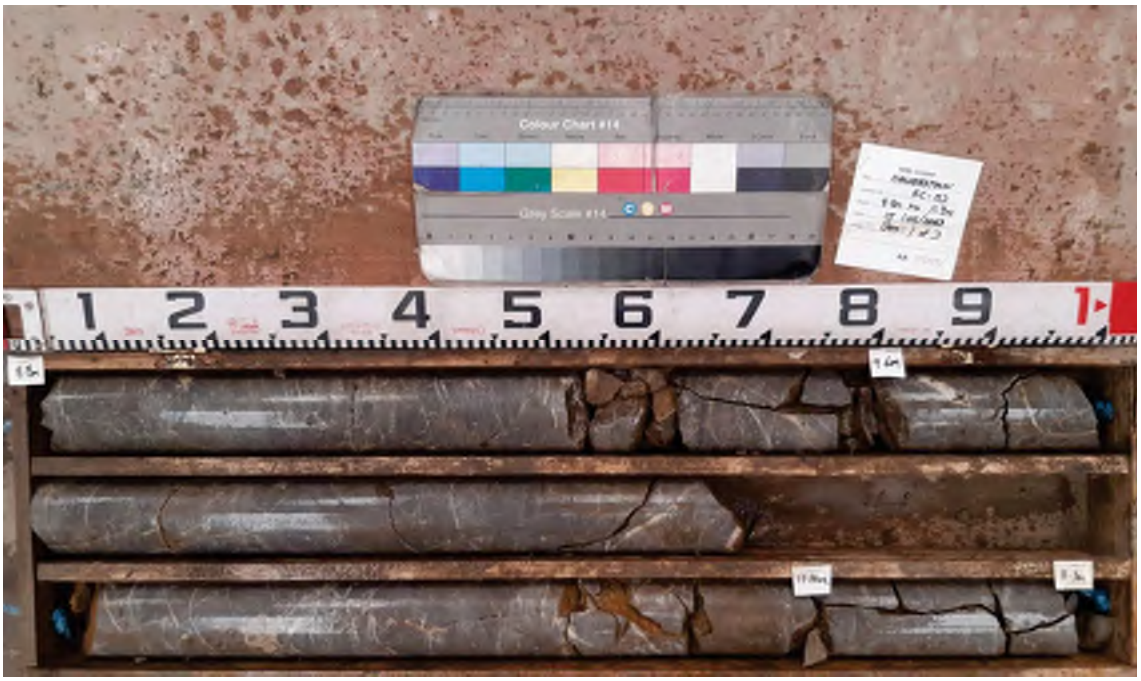
RC01A Box 1 of 1 – 17.30-18.70m

RC02 Box 1 of 2 – 15.10-17.35m

RC02 Box 2 of 2 – 17.35-19.70m



RC03 Box 1 of 3 – 8.80-11.30m



RC03 Box 2 of 3 – 11.30-13.40m

RC03 Box 3 of 3 – 13.40-14.10m

RC04 Box 1 of 2 – 11.60-14.10m

RC04 Box 2 of 2 – 14.10-16.90m

Appendix 8

Rotary Openhole Drilling Records

OPEN HOLE DRILLING RECORD

REPORT NUMBER 24330

CONTRACT Halverstown

DRILLHOLE NO TPRO-01
SHEET Sheet 1 of 1

CO-ORDINATES 686,146.21 E
719,928.64 N
GROUND LEVEL (mOD) 84.06

RIG TYPE GEO-205
INCLINATION (deg) -90
HOLE DIAMETER (mm) 78

DATE DRILLED 28/04/2023
DATE LOGGED 28/04/2023

CLIENT
ENGINEER DOBA

DRILLED BY IGSL -DH

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Zones (m)	Fracture Spacing Min Avg Max (mm)	Fracture Spacing Log (mm) 0 250 500	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0									SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy gravelly CLAY				
1		0	0	0									
	1.50												N = 33 (19, 13, 11, 9, 8, 5)
2										2.20	81.86		
		0	0	0					SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown clayey sandy GRAVEL	2.80			
	3.00								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy gravelly CLAY		81.26		N = 19 (7, 4, 3, 5, 6, 5)
3										3.50			
		0	0	0					SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown slightly clayey sandy GRAVEL		80.56		
4										4.30			
	4.50								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy gravelly CLAY		79.76		N = 26 (4, 5, 7, 6, 6, 7)
		0	0	0									
	5.00									5.00			N = 28 (3, 6, 5, 6, 8, 9)
5									End of Borehole at 5.00 m		79.06		

REMARKS

Rock and soil descriptions are based on examination of drilling returns. These samples can be heavily disturbed and fragmented, with a loss of fines. Typical fragments of 2 to 3 mm are recovered. Accurate descriptions are not, therefore, possible. Similarly, it is not possible to accurately assess soil stratification or rock condition/structure.

Hole cased 0.00-5.00m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
3.50	3.50	N/S			Seepage

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
28-04-23	5.00	1.00	5.00	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
28-04-23	5.00	5.00	4.90	Water level recorded 5 mins after end of drilling.

IGSL RC OPEN HOLE 24330.GPJ IGSL.GDT 3/7/23

OPEN HOLE DRILLING RECORD

REPORT NUMBER 24330

CONTRACT Halverstown

DRILLHOLE NO TPRO-02
SHEET Sheet 1 of 1

CO-ORDINATES 686,088.11 E
719,822.59 N
GROUND LEVEL (mOD) 82.52

RIG TYPE GEO-205
INCLINATION (deg) -90
HOLE DIAMETER (mm) 78

DATE DRILLED 02/05/2023
DATE LOGGED 02/05/2023

CLIENT
ENGINEER DOBA

DRILLED BY IGSL -DH

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Zones (m)	Fracture Spacing Min Avg Max (mm)	Fracture Spacing Log (mm) 0 250 500	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0									SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy gravelly CLAY				
1	1.50	0	0	0									N = 26 (2, 3, 5, 7, 6, 8)
2		0	0	0						2.50	80.02		
	3.00								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown silty sandy gravelly CLAY				N = 21 (1, 3, 6, 4, 5, 6)
3		0	0	0						3.90	78.62		
4	4.50								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown clayey sandy GRAVEL				N = 31 (2, 3, 6, 7, 9, 9)
		0	0	0						5.00	77.52		
5	5.00								End of Borehole at 5.00 m				N = 36 (3, 5, 8, 8, 9, 11)

REMARKS

Rock and soil descriptions are based on examination of drilling returns. These samples can be heavily disturbed and fragmented, with a loss of fines. Typical fragments of 2 to 3 mm are recovered. Accurate descriptions are not, therefore, possible. Similarly, it is not possible to accurately assess soil stratification or rock condition/structure.

Hole cased 0.00-5.00m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
4.40	4.40	N/S			Seepage

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
02-05-23	5.00	5.00	4.80	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
02-05-23	5.00	1.00	5.00	50mm SP

IGSL RC OPEN HOLE 24330.GPJ IGSL.GDT 3/7/23

OPEN HOLE DRILLING RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**DRILLHOLE NO**	**TPRO-03**
		SHEET	Sheet 1 of 1
CO-ORDINATES	686,271.71 E 719,722.30 N	**DATE DRILLED**	02/05/2023
GROUND LEVEL (mOD)	81.63	**DATE LOGGED**	02/05/2023
RIG TYPE	GEO-205		
INCLINATION (deg)	-90		
CLIENT		**DRILLED BY**	IGSL -DH
ENGINEER	DOBA		
HOLE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Zones (m)	Fracture Spacing Min Avg Max (mm)	Fracture Spacing Log (mm) 0 250 500	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0									SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy gravelly CLAY				
1		0	0	0									
	1.50									2.20	79.43		N = 16 (1, 3, 3, 4, 5, 4)
2		0	0	0					SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown silty sandy gravelly CLAY				
	3.00									3.60	78.03		N = 16 (1, 1, 3, 2, 5, 6)
3		0	0	0					SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy gravelly CLAY				
	4.50									4.50	77.13		N = 31 (2, 3, 6, 7, 9, 9)
4		0	0	0					SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown silty sandy gravelly CLAY				
5	5.20								End of Borehole at 5.20 m	5.20	76.43		N = 36 (3, 5, 8, 8, 9, 11)

REMARKS

Rock and soil descriptions are based on examination of drilling returns. These samples can be heavily disturbed and fragmented, with a loss of fines. Typical fragments of 2 to 3 mm are recovered. Accurate descriptions are not, therefore, possible. Similarly, it is not possible to accurately assess soil stratification or rock condition/structure.

Hole cased 0.00-5.20m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
02-05-23	5.20	1.00	5.20	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
02-05-23	5.20	5.20	Dry	Water level recorded 5 mins after end of drilling.

IGSL RC OPEN HOLE 24330.GPJ IGSL.GDT 3/7/23

OPEN HOLE DRILLING RECORD

REPORT NUMBER 24330

CONTRACT Halverstown

DRILLHOLE NO TPRO-04
SHEET Sheet 1 of 1

CO-ORDINATES 686,162.93 E
719,657.11 N
GROUND LEVEL (mOD) 80.28

RIG TYPE GEO-205
INCLINATION (deg) -90
HOLE DIAMETER (mm) 78

DATE DRILLED 03/05/2023
DATE LOGGED 03/05/2023

CLIENT
ENGINEER DOBA

DRILLED BY IGSL -DH

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Zones (m)	Fracture Spacing Min Avg Max (mm)	Fracture Spacing Log (mm) 0 250 500	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0									SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy gravelly CLAY				
		0	0	0						1.30	78.98		N = 11 (2, 1, 2, 3, 3, 3)
1	1.50								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown silty sandy gravelly CLAY	1.80	78.48		
		0	0	0					SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy gravelly CLAY	2.40	77.88		
2									SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown silty sandy gravelly CLAY				N = 20 (3, 5, 3, 5, 6, 6)
	3.00	0	0	0						3.70	76.58		
3									SYMMETRIX DRILLING: No recovery, observed by driller as returns of dark grey slightly clayey sandy GRAVEL				
	4.50	0	0	0									N = 44 (2, 6, 7, 11, 12, 14)
4	5.00									5.00	75.28		
5									End of Borehole at 5.00 m				N = 39 (5, 6, 9, 8, 9, 13)

REMARKS

Rock and soil descriptions are based on examination of drilling returns. These samples can be heavily disturbed and fragmented, with a loss of fines. Typical fragments of 2 to 3 mm are recovered. Accurate descriptions are not, therefore, possible. Similarly, it is not possible to accurately assess soil stratification or rock condition/structure.

Hole cased 0.00-5.00m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
4.50	4.50	N/S			Seepage

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
03-05-23	5.00	1.00	5.00	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
03-05-23	5.00	5.00	4.70	Water level recorded 5 mins after end of drilling.

IGSL RC OPEN HOLE 24330.GPJ IGSL.GDT 3/7/23

OPEN HOLE DRILLING RECORD

REPORT NUMBER 24330

CONTRACT Halverstown

DRILLHOLE NO TPRO-05
SHEET Sheet 1 of 1

CO-ORDINATES 686,383.86 E
719,788.02 N
GROUND LEVEL (mOD) 84.64

RIG TYPE GEO-205
INCLINATION (deg) -90
HOLE DIAMETER (mm) 78

DATE DRILLED 05/05/2023
DATE LOGGED 05/05/2023

CLIENT
ENGINEER DOBA

DRILLED BY IGSL -DH

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Zones (m)	Fracture Spacing Min Avg Max (mm)	Fracture Spacing Log (mm) 0 250 500	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0									SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown silty sandy gravelly CLAY				
1	1.50	0	0	0						1.60	83.04		N = 12 (1, 2, 3, 2, 4, 3)
									SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown clayey sandy GRAVEL	2.00			
2		0	0	0					SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy gravelly CLAY		82.64		
3	3.00	0	0	0									N = 27 (2, 4, 5, 7, 7, 8)
4	4.50	0	0	0						4.60			N = 47 (3, 6, 7, 9, 14, 17)
									SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown clayey sandy GRAVEL		80.04		
5	5.10									5.10			N = 64 (5, 9, 11, 16, 17, 20)
									End of Borehole at 5.10 m		79.54		

REMARKS

Rock and soil descriptions are based on examination of drilling returns. These samples can be heavily disturbed and fragmented, with a loss of fines. Typical fragments of 2 to 3 mm are recovered. Accurate descriptions are not, therefore, possible. Similarly, it is not possible to accurately assess soil stratification or rock condition/structure.

Hole cased 0.00-5.10m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
05-05-23	5.10	1.00	5.10	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
05-05-23	5.10	5.10	Dry	Water level recorded 5 mins after end of drilling.

IGSL RC OPEN HOLE 24330.GPJ IGSL.GDT 3/7/23

OPEN HOLE DRILLING RECORD

REPORT NUMBER 24330

CONTRACT Halverstown

DRILLHOLE NO TPRO-06
SHEET Sheet 1 of 1

CO-ORDINATES 686,487.53 E
719,815.50 N
GROUND LEVEL (mOD) 85.03

RIG TYPE GEO-205
INCLINATION (deg) -90
HOLE DIAMETER (mm) 78

DATE DRILLED 04/05/2023
DATE LOGGED 04/05/2023

CLIENT
ENGINEER DOBA

DRILLED BY IGSL -DH

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Zones (m)	Fracture Spacing Min Avg Max (mm)	Fracture Spacing Log (mm) 0 250 500	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0									SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy gravelly CLAY				
1		0	0	0									
	1.50												N = 15 (1, 2, 2, 4, 5, 4)
2										2.20			
		0	0	0					SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown silty sandy gravelly CLAY		82.83		
	3.00												N = 19 (2, 3, 3, 4, 5, 7)
3		0	0	0						3.70			
									SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown silty clayey sandy GRAVEL	4.10	81.33		
4									SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown clayey sandy GRAVEL		80.93		
	4.50												N = 30 (2, 2, 5, 7, 8, 10)
		0	0	0						5.00			
5	5.00								End of Borehole at 5.00 m		80.03		N = 56 (4, 7, 13, 14, 14, 15)

REMARKS

Rock and soil descriptions are based on examination of drilling returns. These samples can be heavily disturbed and fragmented, with a loss of fines. Typical fragments of 2 to 3 mm are recovered. Accurate descriptions are not, therefore, possible. Similarly, it is not possible to accurately assess soil stratification or rock condition/structure.

Hole cased 0.00-5.00m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
04-05-23	5.00	5.00	Dry	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
04-05-23	5.00	1.00	5.00	50mm SP

IGSL RC OPEN HOLE 24330.GPJ IGSL.GDT 3/7/23

OPEN HOLE DRILLING RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**DRILLHOLE NO**	**TPRO-07**
		SHEET	Sheet 1 of 1
CO-ORDINATES	686,613.61 E 719,733.59 N	**DATE DRILLED**	05/05/2023
GROUND LEVEL (mOD)	82.86	**DATE LOGGED**	05/05/2023
RIG TYPE	GEO-205		
CLIENT		**INCLINATION (deg)**	-90
ENGINEER	DOBA	**HOLE DIAMETER (mm)**	78
		DRILLED BY	IGSL -DH

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Zones (m)	Fracture Spacing Min Avg Max (mm)	Fracture Spacing Log (mm) 0 250 500	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0		0	0	0					SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy gravelly CLAY	1.30	81.56		N = 11 (1, 1, 2, 3, 3, 3)
1	1.50	0	0	0					SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown silty sandy gravelly CLAY	2.70	80.16		N = 25 (2, 4, 3, 5, 7, 10)
2		0	0	0					SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy gravelly CLAY	4.60	78.26		N = 34 (3, 5, 5, 8, 9, 12)
3	3.00	0	0	0					SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown silty clayey sandy GRAVEL	5.10	77.76		N = 56 (6, 7, 10, 13, 16, 17)
4	4.50	0	0	0					End of Borehole at 5.10 m				
5	5.10												

REMARKS

Rock and soil descriptions are based on examination of drilling returns. These samples can be heavily disturbed and fragmented, with a loss of fines. Typical fragments of 2 to 3 mm are recovered. Accurate descriptions are not, therefore, possible. Similarly, it is not possible to accurately assess soil stratification or rock condition/structure.

Hole cased 0.00-5.10m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
05-05-23	5.10	1.00	5.10	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
05-05-23	5.10	5.10	Dry	Water level recorded 5 mins after end of drilling.

IGSL RC OPEN HOLE 24330.GPJ IGSL.GDT 3/7/23

OPEN HOLE DRILLING RECORD

REPORT NUMBER 24330

CONTRACT Halverstown

DRILLHOLE NO TPRO-08
SHEET Sheet 1 of 1

CO-ORDINATES 686,443.99 E
719,589.92 N
GROUND LEVEL (mOD) 81.40

RIG TYPE GEO-205
INCLINATION (deg) -90
HOLE DIAMETER (mm) 78

DATE DRILLED 08/05/2023
DATE LOGGED 08/05/2023

CLIENT
ENGINEER DOBA

DRILLED BY IGSL -DH

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Zones (m)	Fracture Spacing Min Avg Max (mm)	Fracture Spacing Log (mm) 0 250 500	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0									SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy gravelly CLAY				
1		0	0	0						1.20	80.20		
	1.50								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown silty sandy gravelly CLAY				N = 13 (1, 1, 2, 3, 3, 5)
2		0	0	0						2.40	79.00		
	3.00								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy gravelly CLAY				N = 51 (2, 4, 7, 13, 15, 16)
3										3.20	78.20		
		0	0	0					SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey black gravelly CLAY				
4	4.50												N = 59 (3, 7, 10, 12, 18, 19)
		0	0	0									
5	5.20									5.20	76.20		N = 34/40 mm (6, 15, 34)
									End of Borehole at 5.20 m				

REMARKS

Rock and soil descriptions are based on examination of drilling returns. These samples can be heavily disturbed and fragmented, with a loss of fines. Typical fragments of 2 to 3 mm are recovered. Accurate descriptions are not, therefore, possible. Similarly, it is not possible to accurately assess soil stratification or rock condition/structure.

Hole cased 0.00-5.20m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
08-05-23	5.20	5.20	Dry	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
08-05-23	5.20	1.00	5.20	50mm SP

IGSL RC OPEN HOLE 24330.GPJ IGSL.GDT 3/7/23

OPEN HOLE DRILLING RECORD

REPORT NUMBER 24330

CONTRACT Halverstown

DRILLHOLE NO TPRO-09
SHEET Sheet 1 of 1

CO-ORDINATES 686,263.95 E
719,467.48 N
GROUND LEVEL (mOD) 77.31

RIG TYPE GEO-205
INCLINATION (deg) -90
HOLE DIAMETER (mm) 78

DATE DRILLED 03/05/2023
DATE LOGGED 03/05/2023

CLIENT
ENGINEER DOBA

DRILLED BY IGSL -DH

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Zones (m)	Fracture Spacing Min Avg Max (mm)	Fracture Spacing Log (mm) 0 250 500	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0									SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown PEAT				
1		0	0	0						1.20			
	1.50								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey silty SAND (Blowing)		76.11		N = 7 (1, 0, 1, 1, 2, 3)
2		0	0	0									
	3.00									3.40			
3									SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey silty gravelly SAND (Blowing)		73.91		N = 7 (0, 1, 0, 1, 2, 4)
		0	0	0						4.20			
4	4.50								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey silty sandy GRAVEL		73.11		N = 41 (2, 3, 6, 11, 12, 12)
		0	0	0									
5	5.20									5.20			
									End of Borehole at 5.20 m		72.11		N = 39 (5, 6, 9, 8, 9, 13)

REMARKS

Rock and soil descriptions are based on examination of drilling returns. These samples can be heavily disturbed and fragmented, with a loss of fines. Typical fragments of 2 to 3 mm are recovered. Accurate descriptions are not, therefore, possible. Similarly, it is not possible to accurately assess soil stratification or rock condition/structure.

Hole cased 0.00-5.20m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
4.00	4.00	N/S			Seepage

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
03-05-23	5.20	1.00	5.20	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
03-05-23	5.20	5.20	4.80	Water level recorded 5 mins after end of drilling.

IGSL RC OPEN HOLE 24330.GPJ IGSL.GDT 3/7/23

OPEN HOLE DRILLING RECORD

REPORT NUMBER 24330

CONTRACT Halverstown

DRILLHOLE NO TPRO-10
SHEET Sheet 1 of 1

CO-ORDINATES 686,489.99 E
719,460.74 N
GROUND LEVEL (mOD) 79.60

RIG TYPE GEO-205
INCLINATION (deg) -90
HOLE DIAMETER (mm) 78

DATE DRILLED 08/05/2023
DATE LOGGED 08/05/2023

CLIENT
ENGINEER DOBA

DRILLED BY IGSL -DH

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Zones (m)	Fracture Spacing Min Avg Max (mm)	Fracture Spacing Log (mm) 0 250 500	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0									SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy gravelly CLAY				
1		0	0	0									
	1.50												N = 16 (2, 3, 4, 4, 3, 5)
2		0	0	0						2.30	77.30		
									SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey silty sandy CLAY	2.70			
	3.00								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey black gravelly CLAY		76.90		N = 48 (4, 5, 8, 9, 14, 17)
3		0	0	0									
4													
	4.50	0	0	0									N = 50/105 mm (6, 8, 22, 28)
5	5.10									5.10			
									End of Borehole at 5.10 m		74.50		N = 25/25 mm (12, 25, 25)

REMARKS

Rock and soil descriptions are based on examination of drilling returns. These samples can be heavily disturbed and fragmented, with a loss of fines. Typical fragments of 2 to 3 mm are recovered. Accurate descriptions are not, therefore, possible. Similarly, it is not possible to accurately assess soil stratification or rock condition/structure.

Hole cased 0.00-5.10m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
08-05-23	5.10	5.10	Dry	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
08-05-23	5.10	1.00	5.10	50mm SP

IGSL RC OPEN HOLE 24330.GPJ IGSL.GDT 3/7/23

Appendix 9

Groundwater Monitoring

Groundwater Monitoring

Site Location	Halverstown
Project No.	24330
Engineer	DOBA

		Date of Reading							
		02/12/2022		19/12/2022		10/07/2023			
	Ground Elevation (m OD)	m bgl	m OD	m bgl	m OD	m bgl	m OD	m bgl	m OD
BH03	78.62	1.30	77.32	1.80	76.82	2.05	76.57		
BH10	84.79	Dry	-	Dry	-	Dry	-		
BH12	80.50	0.98	79.52	1.0	79.50	1.54	78.96		
BH13	82.80	2.20	80.6	2.38	80.42	Dry	-		
BH05	77.88	-	-	-	-	0.87	77.01		
RC01A	85.33	-	-	-	-	Dry*	-		
RC02	82.92	-	-	-	-	2.85	80.07		
RC03	79.37	-	-	-	-	3.33	76.04		
RC04	78.32	-	-	-	-	1.12	77.20		
TPRO-01	84.06	-	-	-	-	3.63	80.43		
TPRO-02	82.52	-	-	-	-	3.16	79.36		
TPRO-03	81.63	-	-	-	-	1.49	80.14		
TPRO-04	80.28	-	-	-	-	2.27	78.01		
TPRO-05	84.64	-	-	-	-	3.79	80.85		
TPRO-06	85.03	-	-	-	-	3.76	81.27		
TPRO-07	82.86	-	-	-	-	2.43	80.43		
TPRO-08	81.40	-	-	-	-	1.22	80.18		
TPRO-09	77.31	-	-	-	-	0.64	76.67		
TPRO-10	79.60	-	-	-	-	1.4	78.20		

COMMENTS: *RC01A found to be silted up to 5.0m bgl (10-07-23)

Appendix 10

Gas Monitoring

Gas & Groundwater Monitoring

Site Location	Halverstown				
Project No.	24330				
Date	19-Dec-22				
Engineer	DOBA				
Equipment	Geotech GA5000				
	Peak / Steady State Readings				
Location ID	**BH10**				
Time (sec)	**10**	**30**	**60**	**90**	**Peak**
Water Level (mbgl)	Dry				
Gas Flow (l/hr)	0.0	0.1	0.1	0.1	0.1
CH4 (%)	0.0	0.0	0.0	0.0	0
CO2 (%)	2.3	2.3	2.3	2.3	2.3
O2 (%)	15.9	15.5	15.5	15.4	15.9
CO (ppm)	0	0	0	0	0
H2S (ppm)	0	0	0	0	0
Balance (%)	82.1	82.2	82.3	81.8	82.3
Barometric Pressure (mba	978				
Weather/Temp.	Wet, Windy, Rain/ 12º				
Location ID	**BH12**				
Time (sec)	**10**	**30**	**60**	**90**	**Peak**
Water Level (mbgl)	1.0m				
Gas Flow (l/hr)	0.0	0.1	0.1	0.1	0.1
CH4 (%)	0.0	0.0	0.0	0.0	0.0
CO2 (%)	1.1	1.1	1.1	1.1	1.1
O2 (%)	15.9	15.4	15.3	15.3	15.9
CO (ppm)	0.0	0.0	0.0	0.0	0.0
H2S (ppm)	0.0	0.0	0.0	0.0	0.0
Balance (%)	83.0	83.5	83.6	83.6	83.6
Barometric Pressure (mba	978				
Weather/Temp.	Wet, Windy, Rain/ 12º				
Location ID	**BH03**				
Time (sec)	**10**	**30**	**60**	**90**	**Peak**
Water Level (mbgl)	1.80m				
Gas Flow (l/hr)	0.0	0.1	0.1	0.1	0.1
CH4 (%)	0.0	0.0	0.0	0.0	0.0
CO2 (%)	0.6	0.6	0.6	0.6	0.6
O2 (%)	20.6	15.9	15.6	15.6	20.6
CO (ppm)	0	0	0	0	0
H2S (ppm)	0	0	0	0	0
Balance (%)	78.8	83.4	83.8	83.8	83.8
Barometric Pressure (mba	978				
Weather/Temp.	Wet, Windy, Rain/ 12º				
Comments					

Gas & Groundwater Monitoring

Site Location	Halverstown					
Project No.	24330					
Date	19-Dec-22					
Engineer	DOBA					
Equipment	Geotech GA5000					
	Peak / Steady State Readings					
Location ID	**BH13**					
Time (sec)	**30**	**60**	**90**	**120**	**180**	**Peak**
Water Level (mbgl)	2.38m					
Gas Flow (l/hr)	0.1	0.1	0.1	0.1	0.1	0.1
CH4 (%)	0.0	0.0	0.0	0.0	0.0	0.0
CO2 (%)	0.6	0.8	0.8	0.8	0.8	0.8
O2 (%)	16.3	18.8	18.9	18.9	18.9	18.9
CO (ppm)	0.0	0.0	0.0	0.0	0.0	0.0
H2S (ppm)	0.0	0.0	0.0	0.0	0.0	0.0
Balance (%)	83.1	80.4	80.2	80.2	80.2	83.1
Barometric Pressure (mbar	978					
Weather/Temp.	Wet, Windy, Rain/ 12º					
Location ID						
Time (sec)	**30**	**60**	**90**	**120**	**180**	**Peak**
Water Level (mbgl)						
Gas Flow (l/hr)						
CH4 (%)						
CO2 (%)						
O2 (%)						
CO (ppm)						
H2S (ppm)						
Balance (%)						
Barometric Pressure (mbar						
Weather/Temp.						
Location ID						
Time (sec)	**30**	**60**	**90**	**120**	**180**	**Peak**
Water Level (mbgl)						
Gas Flow (l/hr)						
CH4 (%)						
CO2 (%)						
O2 (%)						
CO (ppm)						
H2S (ppm)						
Balance (%)						
Barometric Pressure (mbar						
Weather/Temp.						
Comments						

Appendix 11

Geotechnical Laboratory Results (Soil)

IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
Co. Kildare
045 846176

Test Report

Determination of Moisture Content, Liquid & Plastic Limits

Tested in accordance with BS1377:Part 2:1990, clauses 3.2, 4.3, 4.4 & 5.3**

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. **R142005** Contract No. 24330 Contract Name: Halverstown , Naas - Proposed Data Centres

Customer DOBA

Samples Received: 24/01/23 Date Tested: 24/01/23

BH/TP*	Sample No.	Depth* (m)	Lab. Ref	Sample Type*	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425µm	Preparation	Liquid Limit Clause	Classification (BS5930)	Description
BH01	AA184687	1.0	A22/7546	B	19	25	15	10	55	WS	4.4	C L	Brown sandy gravelly CLAY
BH01	AA184688	2.0	A22/7547	B	8.6	22	NP	NP	58	WS	4.4		Brown slightly sandy, gravelly, SILT with some cobbles
BH03	AA184690	1.0	A22/7548	B	13	27	NP	NP	69	WS	4.4		Brown sandy gravelly SILT
BH03	AA184692	3.0	A22/7549	B	6.5	19	NP	NP	45	WS	4.4		Brown silty, sandy, GRAVEL with many cobbles
BH04	AA184694	2.0	A22/7550	B	16	28	NP	NP	49	WS	4.4		Brown sandy gravelly SILT
BH05	AA184670	1.0	A22/7551	B	11	23	NP	NP	44	WS	4.4		Brown sandy gravelly SILT
BH05	AA184672	3.0	A22/7552	B	7.0	24	14	10	39	WS	4.4	C L	Grey/brown clayey, sandy, GRAVEL with many cobble
BH07	AA184673	1.0	A22/7553	B	51	36	NP	NP	89	WS	4.4		Brown sandy gravelly SILT
BH07	AA184674	2.0	A22/7554	B	17	37	20	17	70	WS	4.4	C I	Brown slightly sandy, slightly gravelly, CLAY
BH09	AA184679	1.0	A22/7555	B	14	29	16	13	66	WS	4.4	C L	Brown sandy gravelly CLAY
BH11	AA184677	1.0	A22/7557	B	24	29	14	15	60	WS	4.4	C L	Brown sandy gravelly CLAY
BH11	AA184679	3.0	A22/7558	B	13	25	13	12	64	WS	4.4	C L	Brown slightly sandy, gravelly, CLAY
BH12	AA184675	1.0	A22/7559	B	18	29	16	13	59	WS	4.4	C L	Brown sandy gravelly CLAY
BH13	AA184685	1.0	A22/7560	B	15	27	15	12	55	WS	4.4	C L	Brown sandy gravelly CLAY

Preparation: WS - Wet sieved
AR - As received
NP - Non plastic

Liquid Limit Clause: 4.3 Cone Penetrometer definitive method
4.4 Cone Penetrometer one point method

Sample Type: B - Bulk Disturbed
U - Undisturbed

Remarks:
Results relate only to the specimen tested,in as received condition unless otherwise noted.
NOTE: **These clauses have been superceded by EN 17892-1 and EN17892-12.
Opinions and interpretations are outside the scope of accreditation. * denotes Customer supplied information.

IGSL Ltd Materials Laboratory

Persons authorized to approve reports
H Byrne (Laboratory Manager)

Approved by: H Byrne

Date: 20/02/23

IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
Co. Kildare
045 846176

Test Report

Determination of Moisture Content, Liquid & Plastic Limits

Tested in accordance with BS1377:Part 2:1990, clauses 3.2, 4.3, 4.4 & 5.3**

Report No. **R142006** Contract No. 24330 Contract Name: Halverstown , Naas - Proposed Data Centres

Customer DOBA

Samples Received: 24/01/23 Date Tested: 24/01/23

BH/TP*	Sample No.	Depth* (m)	Lab. Ref	Sample Type*	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425µm	Preparation	Liquid Limit Clause	Classification (BS5930)	Description
TP04	AA186982	0.6	A22/7562	B	12	24	14	10	79	WS	4.4	C L	Brown slightly sandy, slightly gravelly, CLAY
TP12	AA185482	0.8	A22/7563	B	13	36	18	18	70	WS	4.4	C I	Brown slightly sandy, slightly gravelly, CLAY
TP15	AA185479	1.5	A22/7565	B	13	27	16	11	69	WS	4.4	C L	Brown slightly sandy, slightly gravelly, CLAY
TP16	AA185461	1.0	A22/7566	B	19	23	13	10	71	WS	4.4	C L	Mottled brown slightly sandy, slightly gravelly, CLAY
TP19	AA185468	0.5	A22/7568	B	12	22	13	9	73	WS	4.4	C L	Mottled brown slightly sandy, slightly gravelly, CLAY
TP22	AA185497	0.6	A22/7571	B	19	28	NP	NP	70	WS	4.4		Brown sandy gravelly SILT
TP24	AA181961	1.5	A22/7574	B	17	31	17	14	77	WS	4.4	C L	Brown slightly sandy, slightly gravelly, CLAY
TP26	AA181975	0.5	A22/7575	B	18	35	19	16	61	WS	4.4	C L	Brown slightly sandy, slightly gravelly, CLAY
TP28	AA181969	0.6	A22/7576	B	25	35	18	17	78	WS	4.4	C L	Mottled brown slightly sandy, slightly gravelly, CLAY
TP31	AA181992	0.5	A22/7578	B	17	31	17	14	74	WS	4.4	C L	Brown slightly sandy, slightly gravelly, CLAY
TP33	AA181989	0.5	A22/7579	B	20	37	18	19	55	WS	4.4	C I	Brown slightly sandy, slightly gravelly, CLAY
TP34	AA181986	0.5	A22/7580	B	19	34	18	16	62	WS	4.4	C L	Brown sandy gravelly CLAY

Preparation: WS - Wet sieved
AR - As received
NP - Non plastic

Liquid Limit Clause: 4.3 Cone Penetrometer definitive method
4.4 Cone Penetrometer one point method

Sample Type: B - Bulk Disturbed
U - Undisturbed

Remarks:
Results relate only to the specimen tested,in as received condition unless otherwise noted.
NOTE: **These clauses have been superceded by EN 17892-1 and EN17892-12.
Opinions and interpretations are outside the scope of accreditation. * denotes Customer supplied information.

IGSL Ltd Materials Laboratory

Persons authorized to approve reports
H Byrne (Laboratory Manager)

Approved by | Date: 20/02/23 | Page: 1 of 1

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

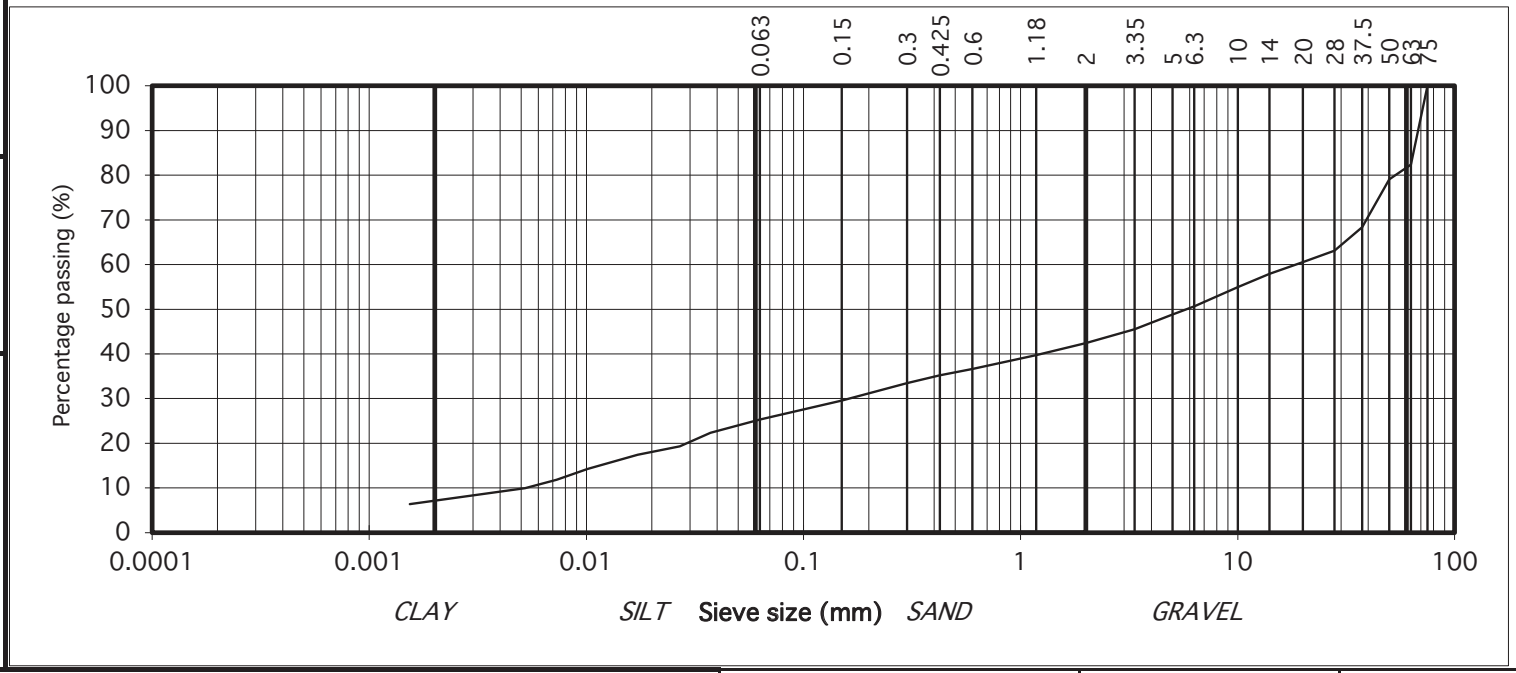
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	82	
50	79	GRAVEL
37.5	68	
28	63	
20	61	
14	58	
10	55	
6.3	51	
5	49	
3.35	46	
2	42	
1.18	40	SAND
0.6	37	
0.425	35	
0.3	33	
0.15	30	
0.063	25	SILT/CLAY
0.037	22	
0.027	19	
0.017	17	
0.010	14	
0.007	12	
0.005	10	
0.002	6	

Contract No.	24330	Report No.	R142643
Contract Name :	Halverstown , Naas , Proposed Data Centre Sites		
BH/TP No.	BH01		
Sample No.*	AA184688	Lab. Sample No.	A22/7547
Sample Type:	B		
Depth* (m)	2.00	Customer:	DOBA
Date Received	24/01/2023	Date Testing started	26/01/2023
Description:	Brown slightly sandy, gravelly, SILT with some cobbles		

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2 Sample size did not meet the requirements of BS1377



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
H Byrne	15/02/23	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	77	COBBLES
63	70	
50	64	GRAVEL
37.5	64	
28	59	
20	54	
14	51	
10	48	
6.3	44	
5	42	
3.35	40	
2	37	
1.18	34	SAND
0.6	30	
0.425	29	
0.3	27	
0.15	23	
0.063	18	SILT/CLAY

Contract No. 24330 Report No. R142644
Contract Name : Halverstown , Naas 0 Proposed Data Centre Sites
BH/TP No. BH03
Sample No.* AA184692 Lab. Sample No. A22/7549
Sample Type: B
Depth* (m) 3.00 Customer: DOBA
Date Received 24/01/2023 Date Testing started 26/01/2023
Description: Brown silty, sandy, GRAVEL with many cobbles

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2 Sample size did not meet the requirements of BS1377

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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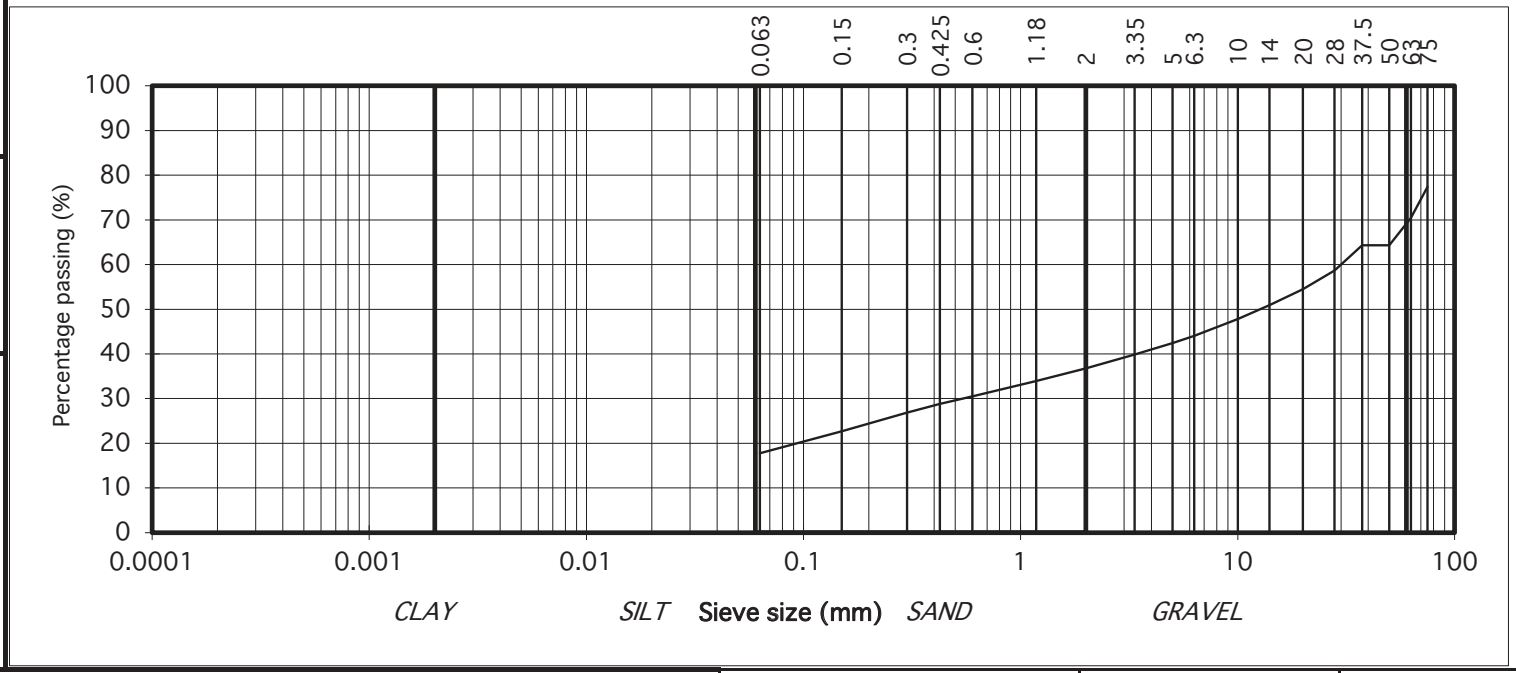


IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
H Byrne	15/02/23	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

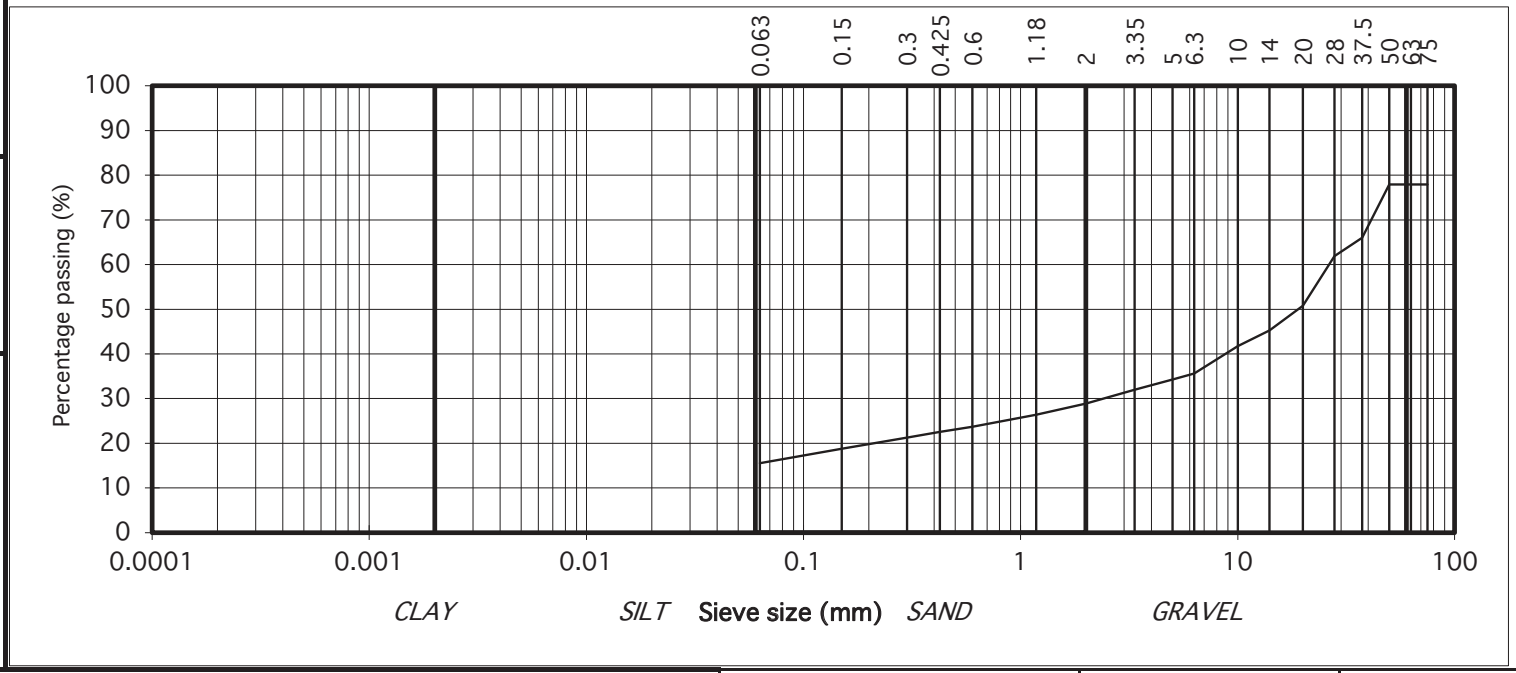
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	78	COBBLES
63	78	
50	78	GRAVEL
37.5	66	
28	62	
20	51	
14	45	
10	42	
6.3	36	
5	34	
3.35	32	
2	29	
1.18	26	SAND
0.6	24	
0.425	23	
0.3	21	
0.15	19	
0.063	16	SILT/CLAY

Contract No. 24330 Report No. R142645
Contract Name : Halverstown , Naas , Proposed Data Centre Sites
BH/TP No. BH05
Sample No.* AA184672 Lab. Sample No. A22/7552
Sample Type: B
Depth* (m) 3.00 Customer: DOBA
Date Received 24/01/2023 Date Testing started 24/01/2023
Description: Grey/brown clayey, sandy, GRAVEL with many cobbles

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2 Sample size did not meet the requirements of BS1377

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.



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Approved by:	Date:	Page no:
H Byrne	15/02/23	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	94	
28	90	
20	85	
14	81	
10	79	
6.3	75	
5	73	
3.35	71	
2	67	
1.18	64	SAND
0.6	60	
0.425	57	
0.3	53	
0.15	46	
0.063	37	SILT/CLAY
0.037	32	
0.027	28	
0.017	26	
0.010	22	
0.007	19	
0.005	17	
0.002	12	

Contract No. 24330 Report No. R142646
Contract Name : Halverstown , Naas , Proposed Data Centre Sites
BH/TP No. BH07
Sample No.* AA184674 Lab. Sample No. A22/7554
Sample Type: B
Depth* (m) 2.00 Customer: DOBA
Date Received 24/01/2023 Date Testing started 26/01/2023
Description: Brown slightly sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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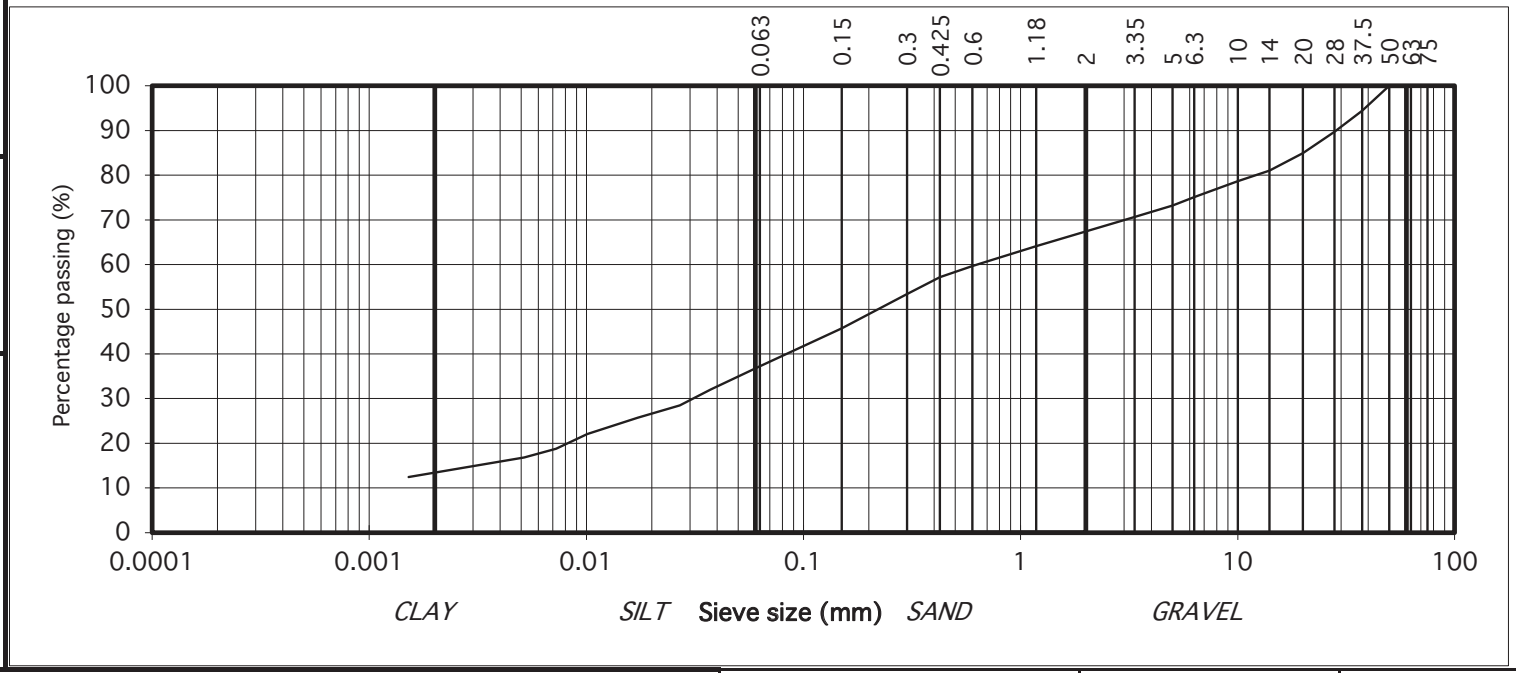

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	90	
20	84	
14	75	
10	70	
6.3	64	
5	62	
3.35	58	
2	54	
1.18	50	SAND
0.6	46	
0.425	44	
0.3	42	
0.15	37	
0.063	29	SILT/CLAY
0.038	25	
0.027	22	
0.018	19	
0.010	15	
0.007	14	
0.005	12	
0.002	8	

Contract No.	24330	Report No.	R142647
Contract Name :	Halverstown , Naas , Proposed Data Centre Sites		
BH/TP No.	BH09		
Sample No.*	AA184681	Lab. Sample No.	A22/7556
Sample Type:	B		
Depth* (m)	3.00	Customer:	DOBA
Date Received	24/01/2023	Date Testing started	24/01/2023
Description:	Brown slightly sandy, gravelly, SILT/CLAY		

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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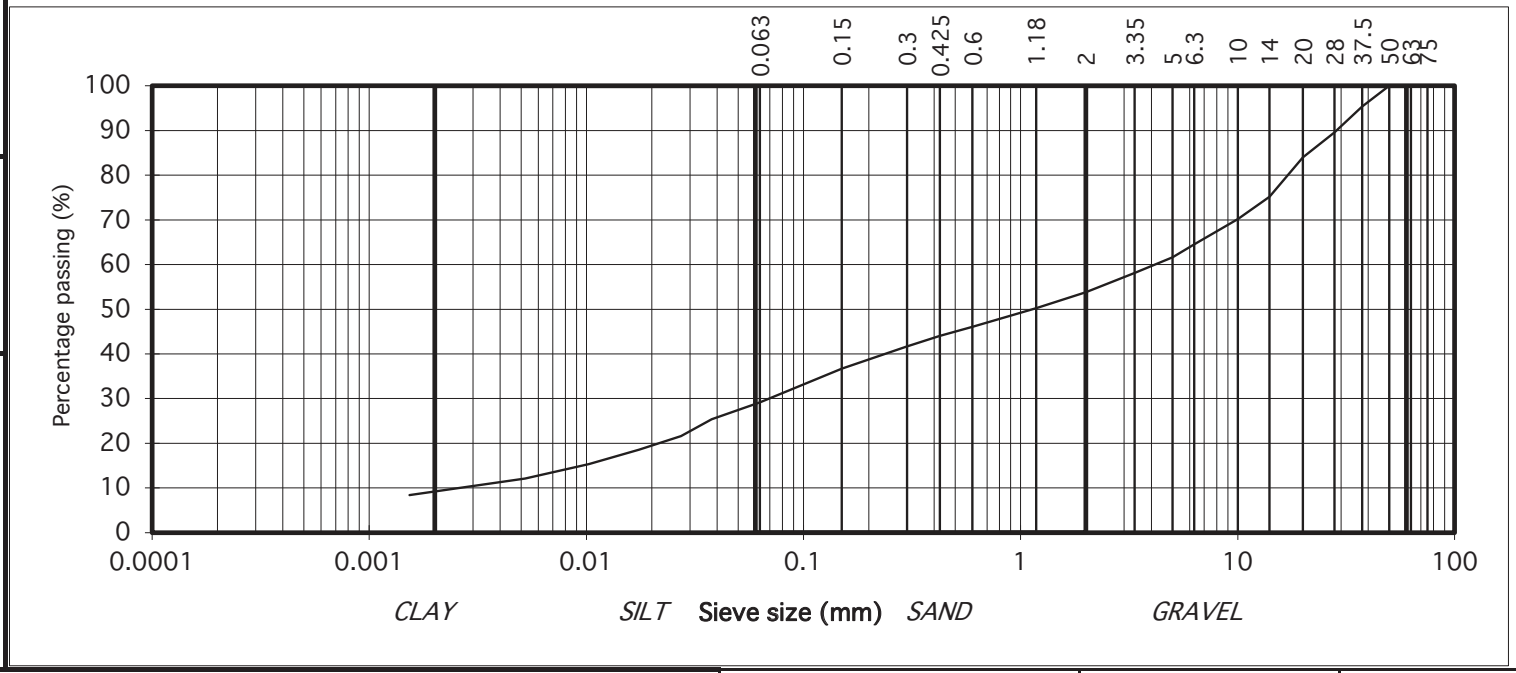

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	94	GRAVEL
37.5	92	
28	88	
20	81	
14	76	
10	72	
6.3	69	
5	67	
3.35	65	
2	63	
1.18	61	SAND
0.6	58	
0.425	56	
0.3	54	
0.15	49	
0.063	42	SILT/CLAY
0.037	36	
0.027	32	
0.017	29	
0.010	25	
0.007	20	
0.005	18	
0.002	11	

Contract No.	24330	Report No.	R142648
Contract Name :	Halverstown , Naas , Proposed Data Centre Sites		
BH/TP No.	BH11		
Sample No.*	AA184673	Lab. Sample No.	A22/7558
Sample Type:	B		
Depth* (m)	3.00	Customer:	DOBA
Date Received	24/01/2023	Date Testing started	26/01/2023
Description:	Brown slightly sandy, gravelly, CLAY		

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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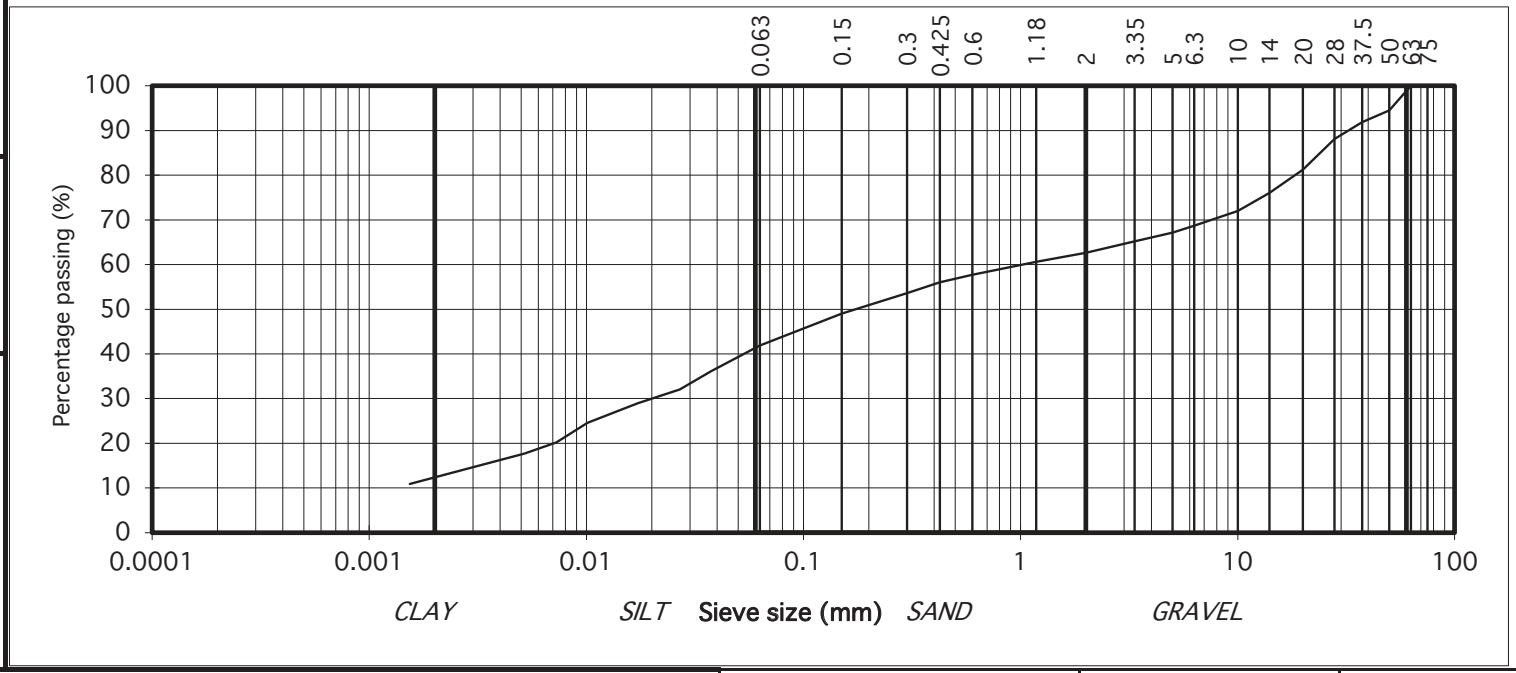

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	92	
20	92	
14	90	
10	88	
6.3	85	
5	83	
3.35	81	
2	78	
1.18	75	SAND
0.6	72	
0.425	70	
0.3	68	
0.15	62	
0.063	53	SILT/CLAY
0.037	46	
0.027	41	
0.017	37	
0.010	31	
0.007	27	
0.005	23	
0.002	16	

Contract No.	24330	Report No.	R142649
Contract Name :	Halverstown , Naas , Proposed Data Centre Sites		
BH/TP No.	BH13		
Sample No.*	AA184686	Lab. Sample No.	A22/7561
Sample Type:	B		
Depth* (m)	2.00	Customer:	DOBA
Date Received	24/01/2023	Date Testing started	26/01/2023
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY		

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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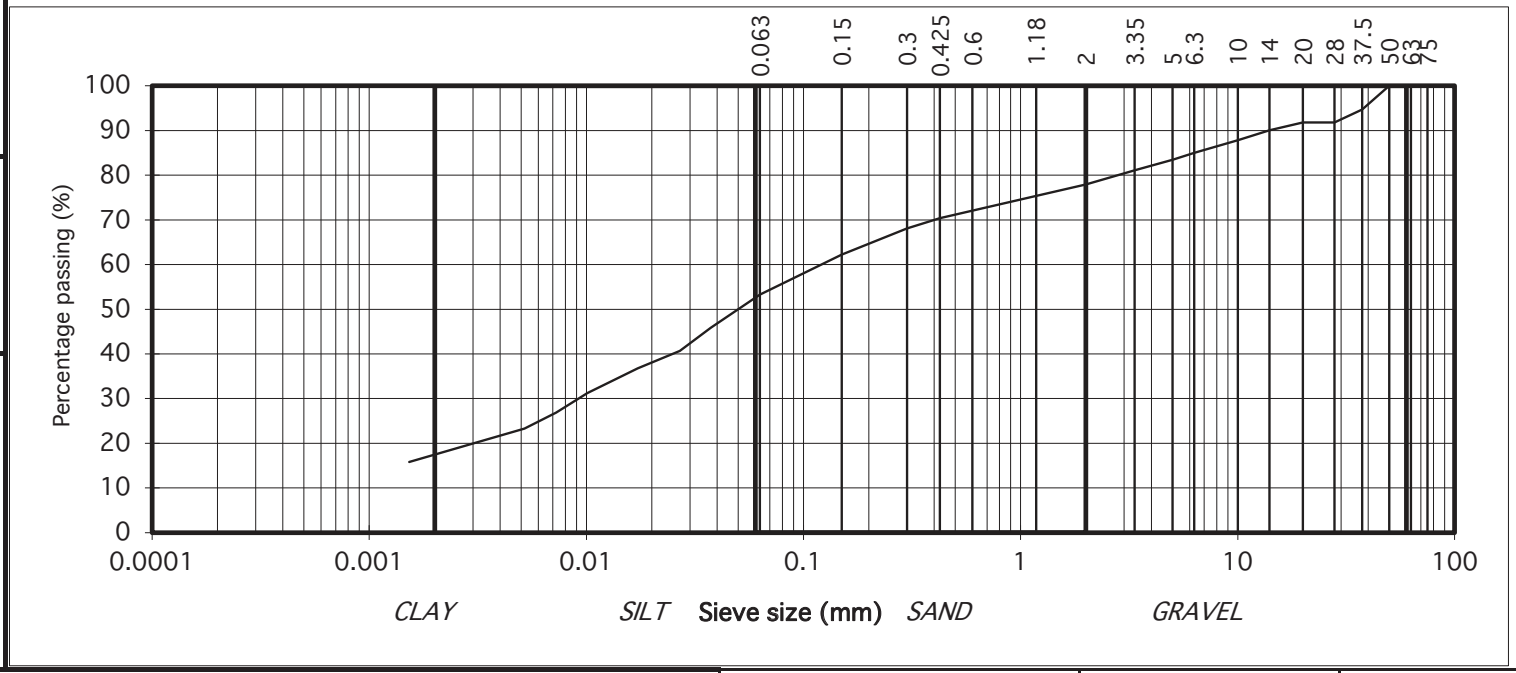

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	94	
14	91	
10	87	
6.3	83	
5	81	
3.35	79	
2	76	
1.18	73	SAND
0.6	70	
0.425	68	
0.3	67	
0.15	62	
0.063	54	SILT/CLAY
0.037	47	
0.027	41	
0.017	37	
0.010	33	
0.007	28	
0.005	25	
0.002	16	

Contract No. 24330 Report No. R142650
Contract Name : Halverstown , Naas , Proposed Data Centre Sites
BH/TP No. TP04
Sample No.* AA186982 Lab. Sample No. A22/7562
Sample Type: B
Depth* (m) 0.60 Customer: DOBA
Date Received 24/01/2023 Date Testing started 24/01/2023
Description: Brown slightly sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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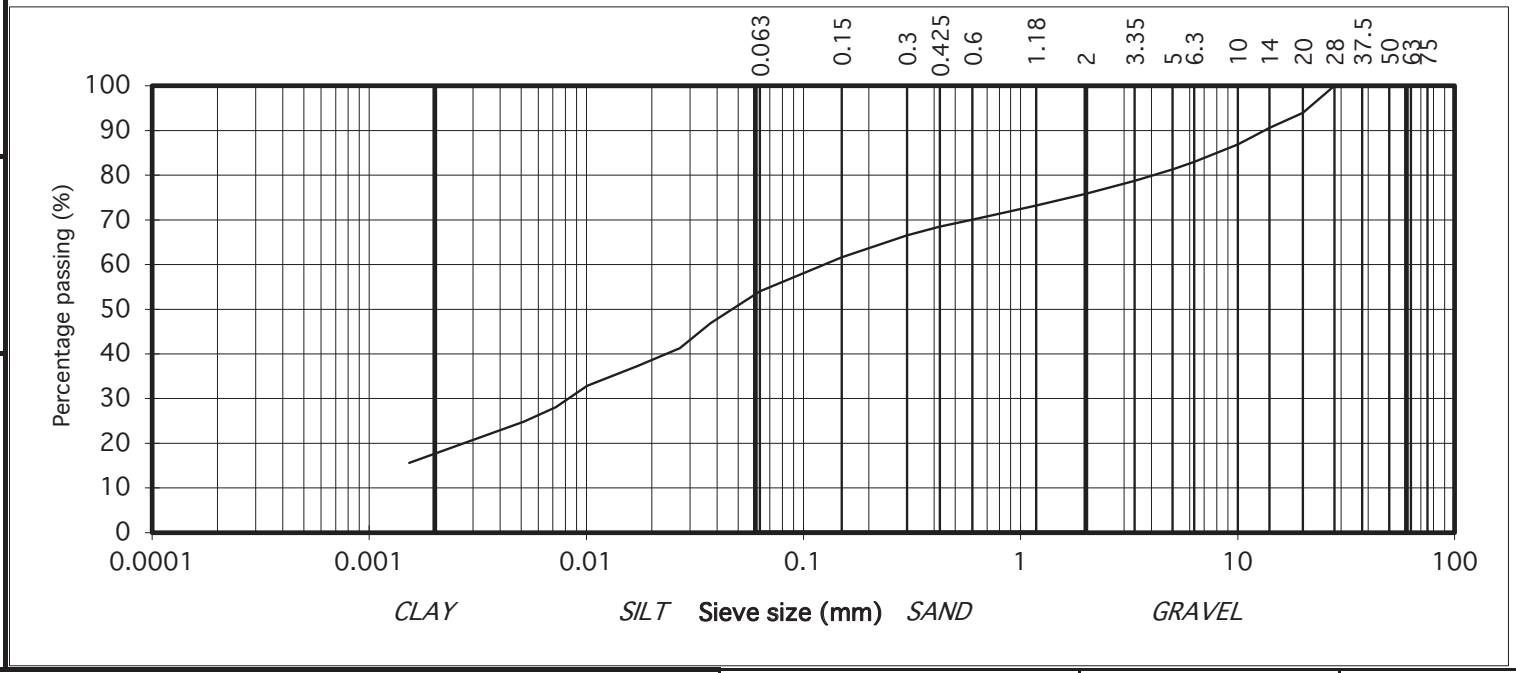

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	98	
20	96	
14	94	
10	92	
6.3	89	
5	88	
3.35	84	
2	80	
1.18	77	SAND
0.6	74	
0.425	73	
0.3	71	
0.15	65	
0.063	56	SILT/CLAY
0.037	47	
0.027	42	
0.017	38	
0.010	32	
0.007	28	
0.005	23	
0.002	14	

Contract No. 24330 Report No. R142651
Contract Name : Halverstown , Naas , Proposed Data Centre Sites
BH/TP No. TP12
Sample No.* AA185481 Lab. Sample No. A22/7563
Sample Type: B
Depth* (m) 0.50 Customer: DOBA
Date Received 24/01/2023 Date Testing started 24/01/2023
Description: Brown slightly sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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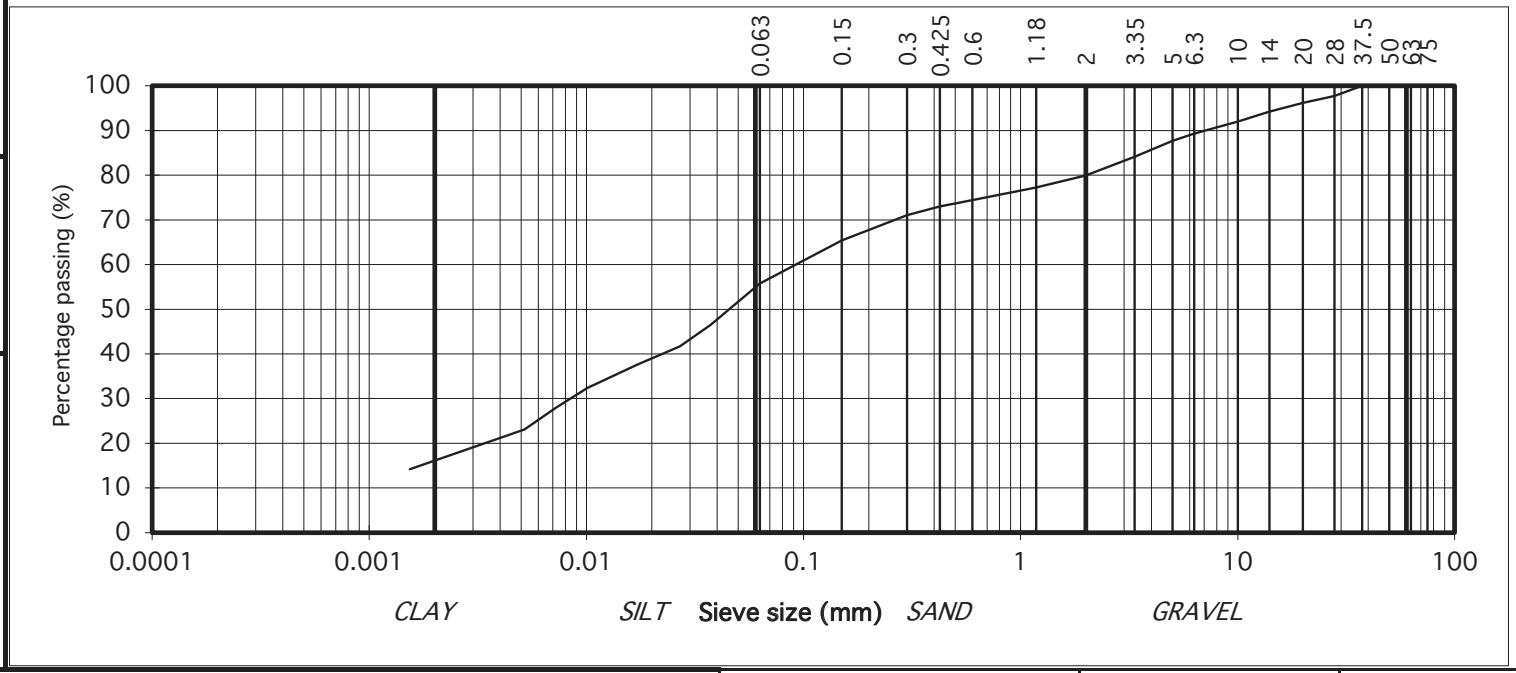

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	99	
20	98	
14	96	
10	94	
6.3	90	
5	88	
3.35	85	
2	80	
1.18	77	SAND
0.6	72	
0.425	70	
0.3	67	
0.15	61	
0.063	52	SILT/CLAY

Contract No. 24330 Report No. R142652
Contract Name : Halverstown , Naas , Proposed Data Centre Sites
AA185479 TP15
Sample No.* AA186982 Lab. Sample No. A22/7565
Sample Type: B
Depth* (m) 1.50 Customer: DOBA
Date Received 24/01/2023 Date Testing started 24/01/2023
Description: Brown slightly sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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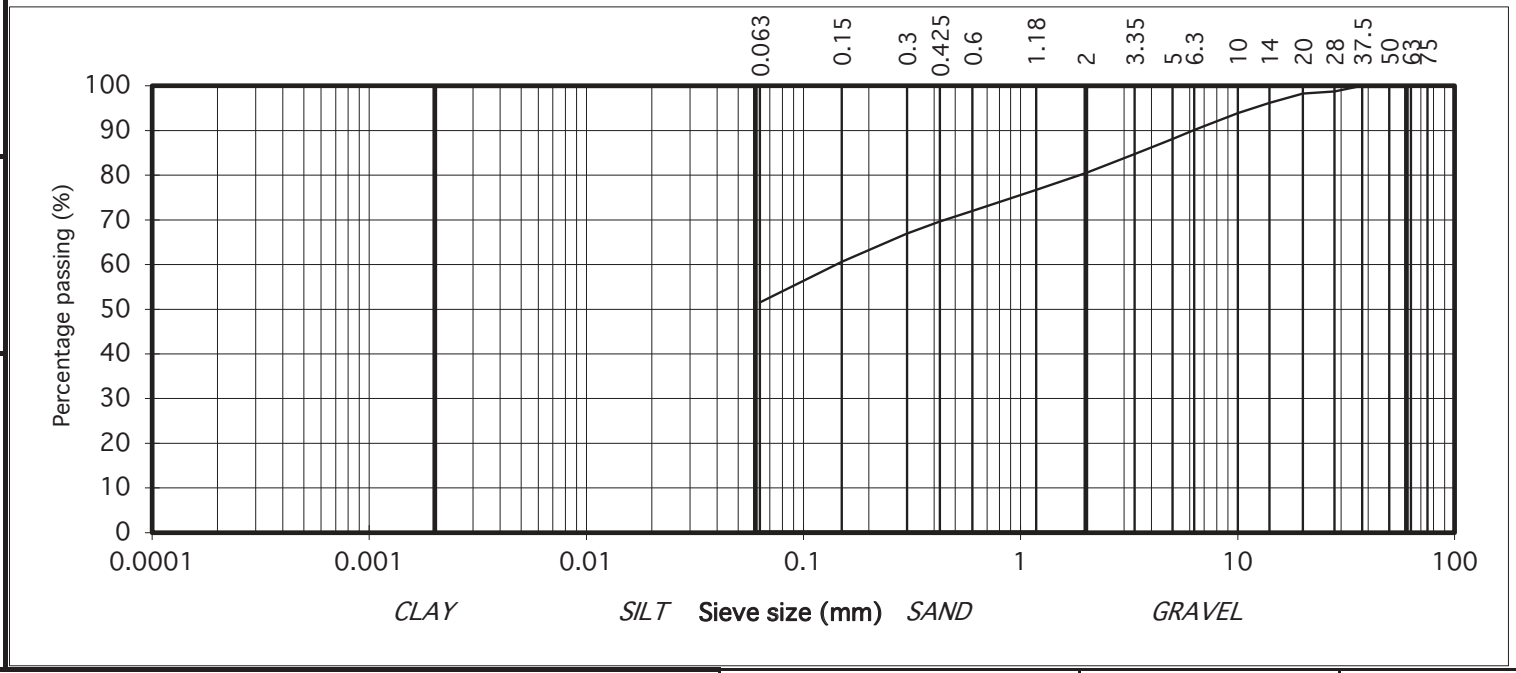

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	99	
10	97	
6.3	95	
5	94	
3.35	93	
2	90	
1.18	88	SAND
0.6	84	
0.425	82	
0.3	80	
0.15	73	
0.063	63	SILT/CLAY

Contract No. 24330 Report No. R142653
Contract Name : Halverstown , Naas , Proposed Data Centre Sites
AA185479 TP16
Sample No.* AA185481 Lab. Sample No. A22/7566
Sample Type: B
Depth* (m) 1.00 Customer: DOBA
Date Received 24/01/2023 Date Testing started 24/01/2023
Description: Mottled brown slightly sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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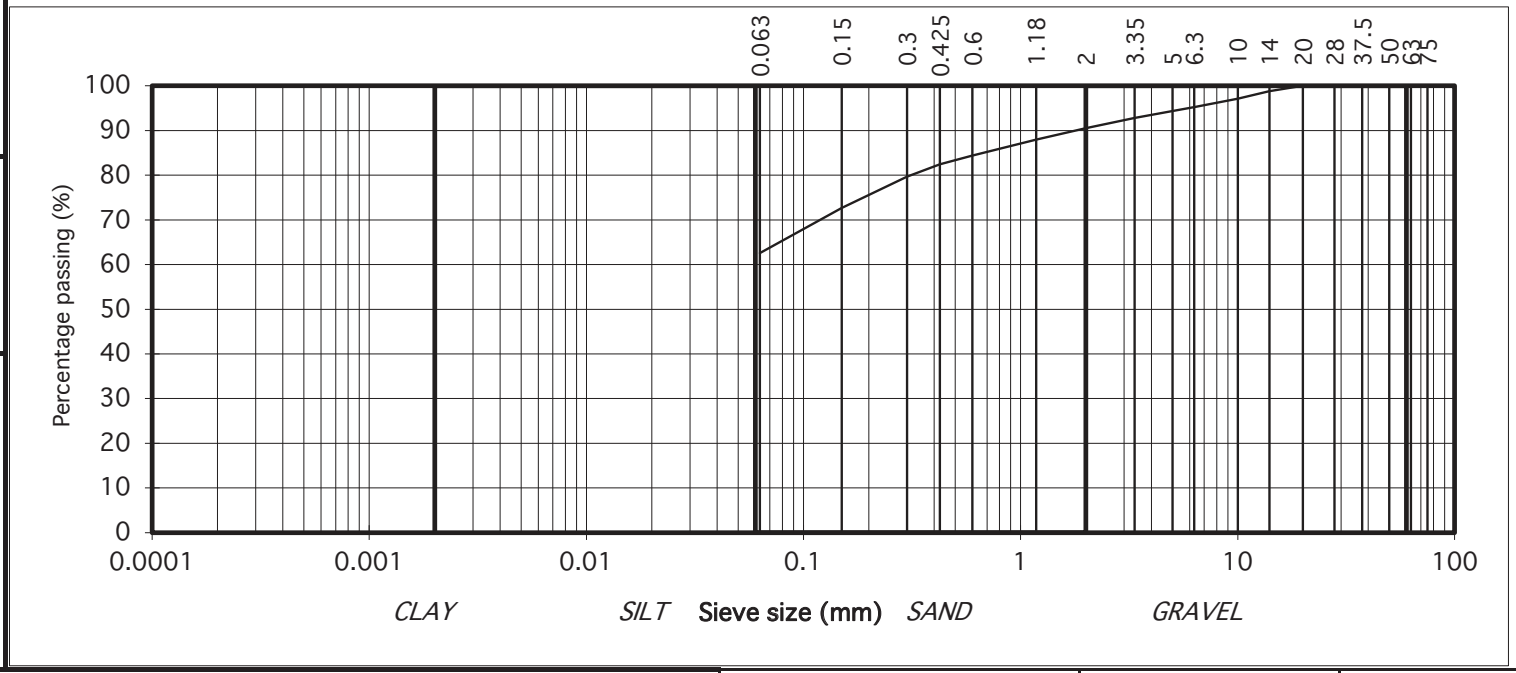

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	97	
20	97	
14	95	
10	93	
6.3	90	
5	88	
3.35	86	
2	82	
1.18	80	SAND
0.6	77	
0.425	75	
0.3	73	
0.15	64	
0.063	54	SILT/CLAY
0.037	46	
0.027	41	
0.017	37	
0.010	32	
0.007	26	
0.005	21	
0.002	11	

Contract No. 24330 Report No. R142654
Contract Name : Halverstown , Naas , Proposed Data Centre Sites
AA185479 TP19
Sample No.* AA185468 Lab. Sample No. A22/7568
Sample Type: B
Depth* (m) 0.50 Customer: DOBA
Date Received 24/01/2023 Date Testing started 24/01/2023
Description: Mottled brown slightly sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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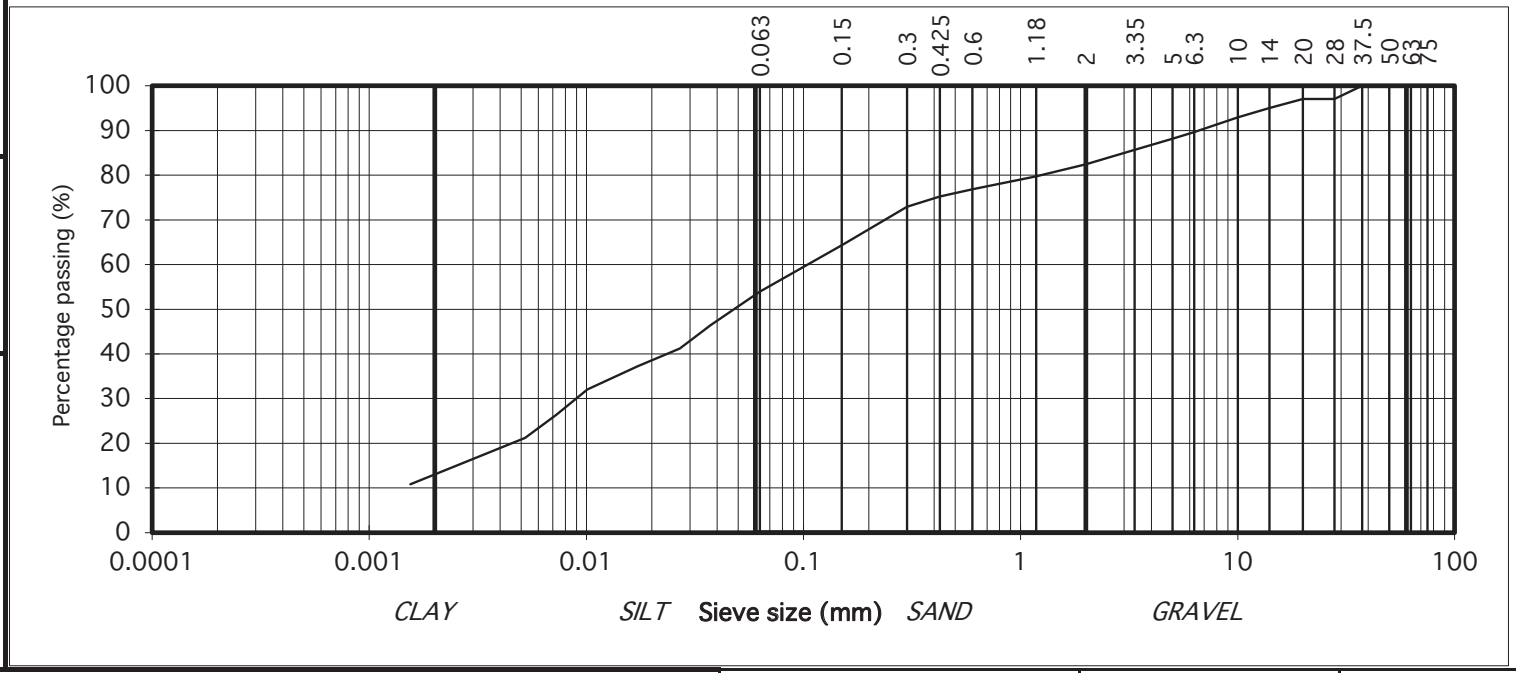

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	96	GRAVEL
37.5	94	
28	91	
20	82	
14	79	
10	76	
6.3	71	
5	68	
3.35	64	
2	58	
1.18	53	SAND
0.6	47	
0.425	45	
0.3	42	
0.15	37	
0.063	31	SILT/CLAY
0.037	27	
0.027	24	
0.017	21	
0.010	18	
0.007	16	
0.005	14	
0.002	10	

Contract No. 24330 Report No. R142655
Contract Name : Halverstown , Naas , Proposed Data Centre Sites
AA185479 TP22
Sample No.* AA185500 Lab. Sample No. A22/7572
Sample Type: B
Depth* (m) 2.40 Customer: DOBA
Date Received 24/01/2023 Date Testing started 24/01/2023
Description: Brown slightly sandy, gravelly, SILT/CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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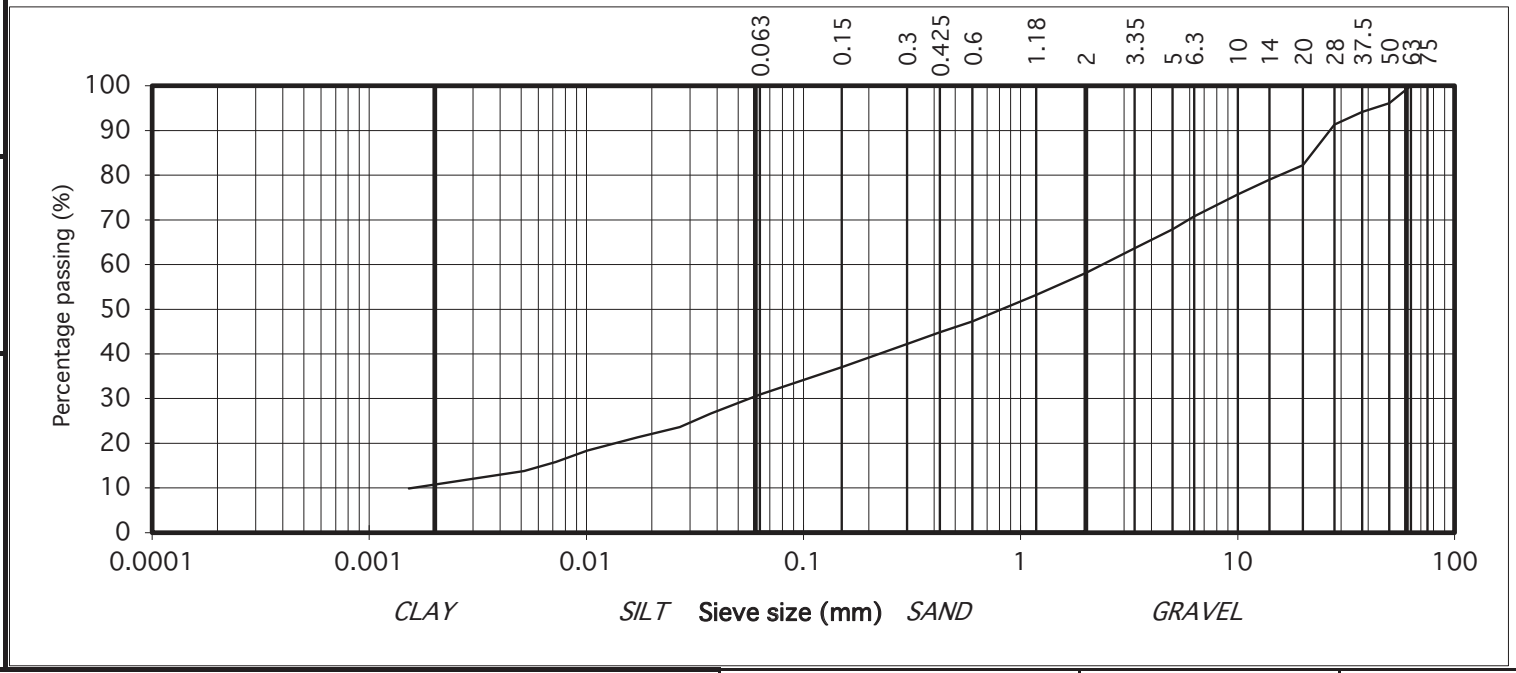

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	99	
10	98	
6.3	95	
5	93	
3.35	91	
2	88	
1.18	86	SAND
0.6	83	
0.425	81	
0.3	79	
0.15	72	
0.063	64	SILT/CLAY
0.037	56	
0.027	48	
0.018	39	
0.010	32	
0.007	26	
0.005	23	
0.002	12	

Contract No.	24330	Report No.	R142656
Contract Name :	Halverstown , Naas , Proposed Data Centre Sites		
AA185479	TP24		
Sample No.*	AA181981	Lab. Sample No.	A22/7574
Sample Type:	B		
Depth* (m)	1.50	Customer:	DOBA
Date Received	24/01/2023	Date Testing started	24/01/2023
Description:	Brown slightly sandy, slightly gravelly, CLAY		

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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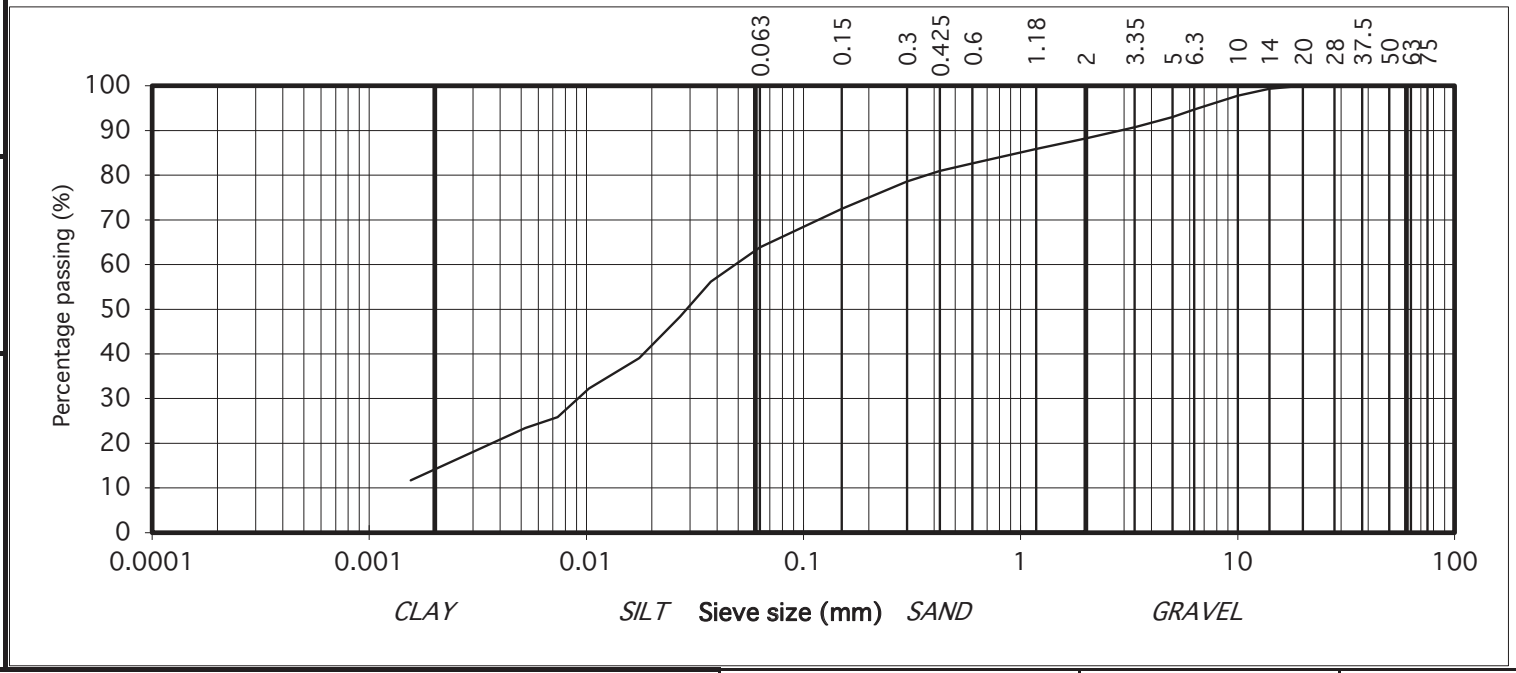

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	94	
20	91	
14	88	
10	85	
6.3	81	
5	79	
3.35	75	
2	72	
1.18	69	SAND
0.6	65	
0.425	63	
0.3	60	
0.15	53	
0.063	44	SILT/CLAY
0.038	37	
0.027	33	
0.017	27	
0.010	22	
0.007	17	
0.005	15	
0.002	10	

Contract No. 24330 Report No. R142657
Contract Name : Halverstown , Naas , Proposed Data Centre Sites
AA185479 TP26
Sample No.* AA181975 Lab. Sample No. A22/7575
Sample Type: B
Depth* (m) 0.50 Customer: DOBA
Date Received 24/01/2023 Date Testing started 24/01/2023
Description: Brown slightly sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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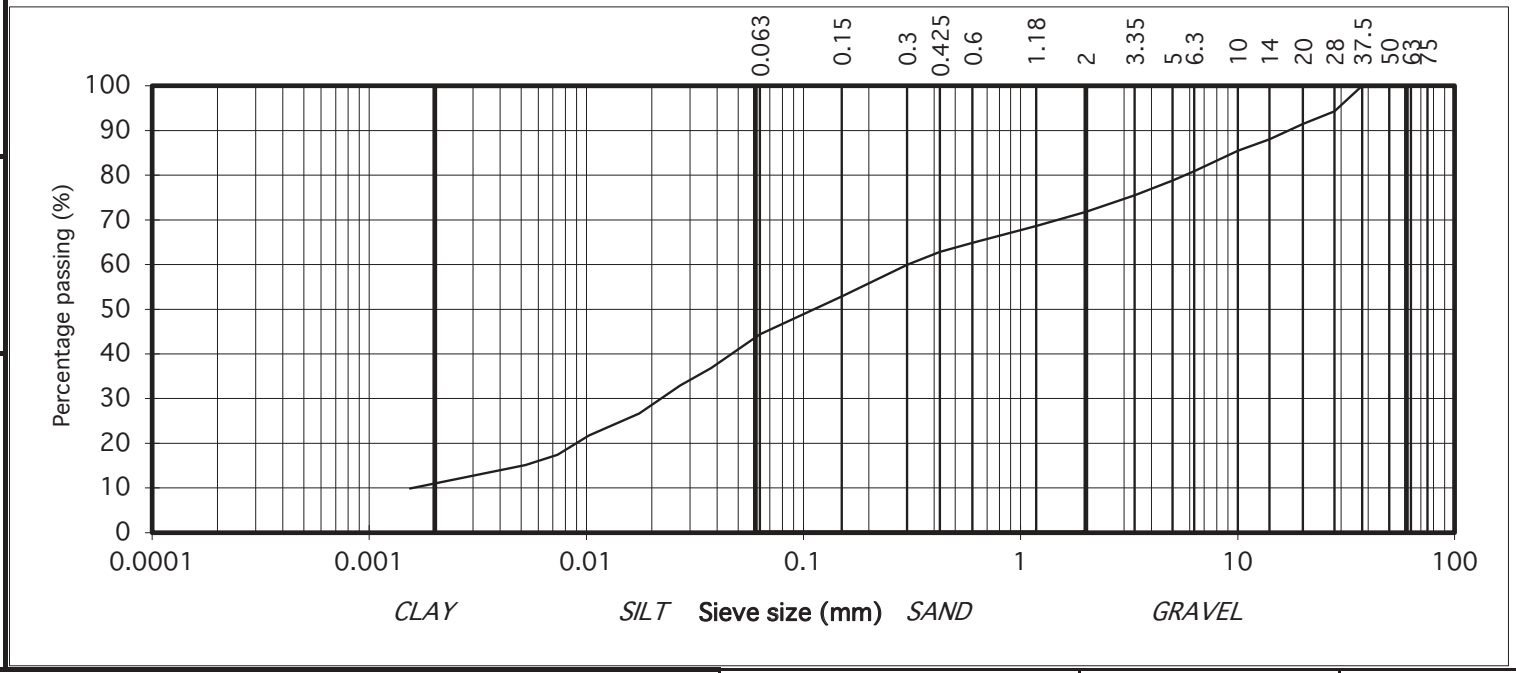

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	97	
20	97	
14	95	
10	94	
6.3	93	
5	92	
3.35	88	
2	84	
1.18	81	SAND
0.6	78	
0.425	76	
0.3	73	
0.15	65	
0.063	55	SILT/CLAY

Contract No. 24330 Report No. R142658
Contract Name : Halverstown , Naas , Proposed Data Centre Sites
AA185479 TP28
Sample No.* AA181969 Lab. Sample No. A22/7576
Sample Type: B
Depth* (m) 0.60 Customer: DOBA
Date Received 24/01/2023 Date Testing started 24/01/2023
Description: Mottled brown slightly sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

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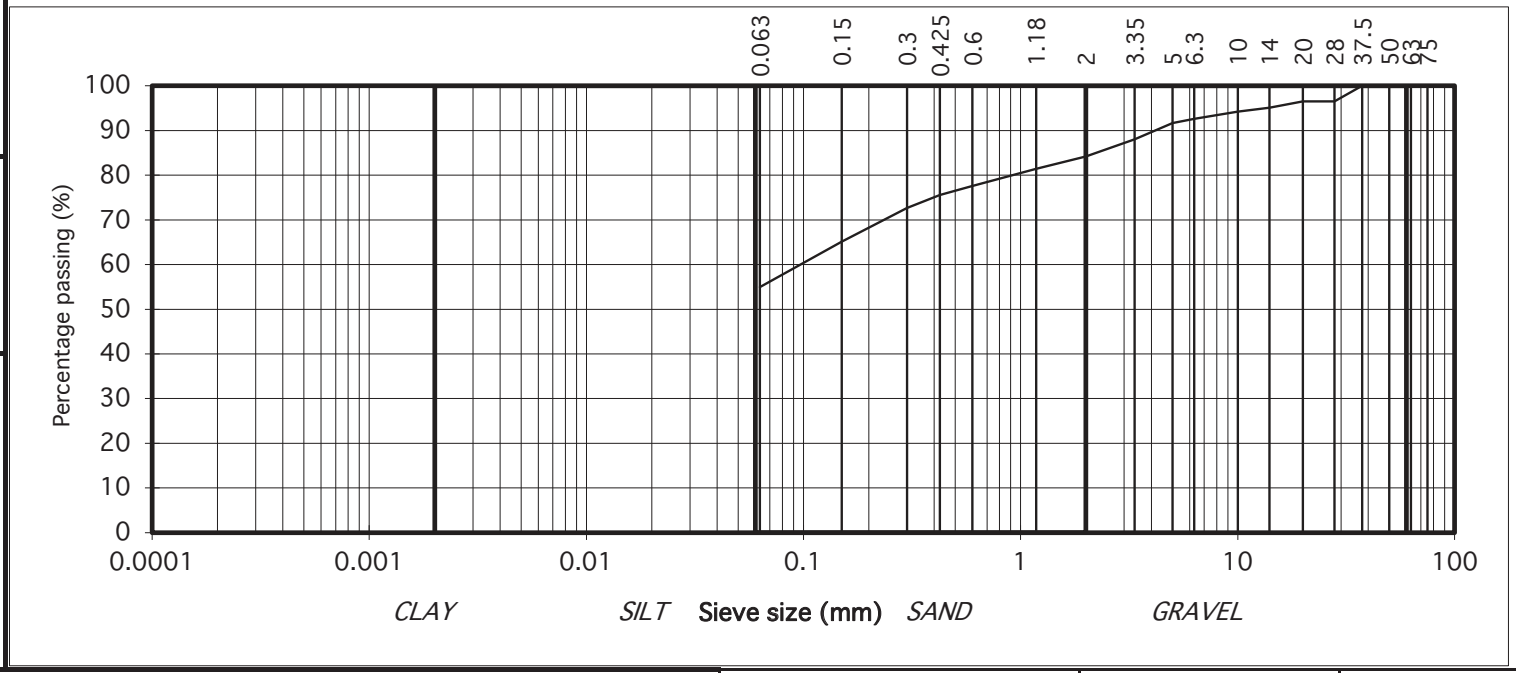

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TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	98	
14	98	
10	96	
6.3	93	
5	92	
3.35	90	
2	87	
1.18	84	SAND
0.6	81	
0.425	79	
0.3	76	
0.15	68	
0.063	57	SILT/CLAY
0.038	48	
0.027	43	
0.017	38	
0.010	32	
0.007	29	
0.005	26	
0.002	14	

Contract No. 24330 Report No. R142751
Contract Name : Halverstown , Naas , Proposed Data Centre Sites
AA185479 TP31
Sample No.* AA181992 Lab. Sample No. A22/7578
Sample Type: B
Depth* (m) 0.50 Customer: DOBA
Date Received 24/01/2023 Date Testing started 24/01/2023
Description: Brown slightly sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

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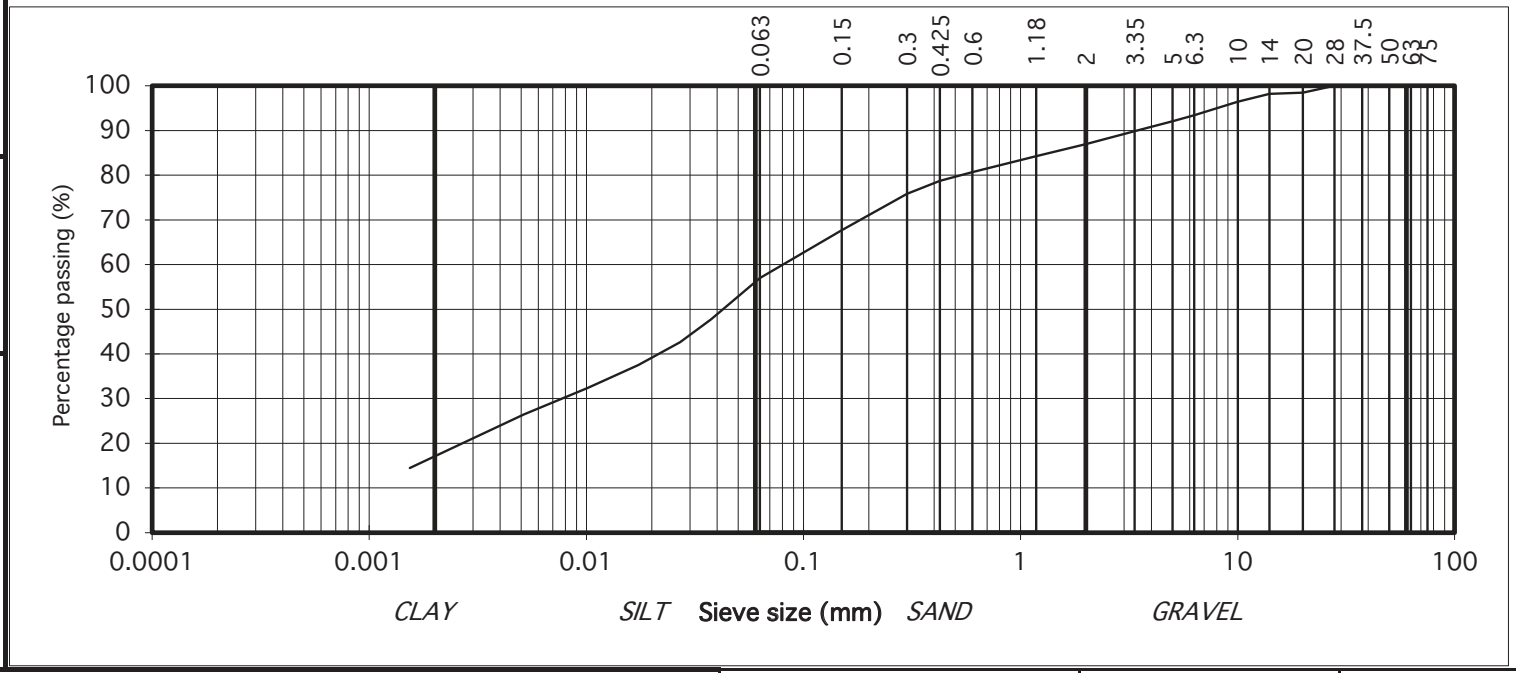

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TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	99	
14	98	
10	95	
6.3	93	
5	92	
3.35	89	
2	86	
1.18	83	SAND
0.6	80	
0.425	78	
0.3	76	
0.15	69	
0.063	60	SILT/CLAY

Contract No. 24330 Report No. R142659
Contract Name : Halverstown , Naas , Proposed Data Centre Sites
AA185479 TP33
Sample No.* AA181989 Lab. Sample No. A22/7579
Sample Type: B
Depth* (m) 0.50 Customer: DOBA
Date Received 24/01/2023 Date Testing started 24/01/2023
Description: Brown slightly sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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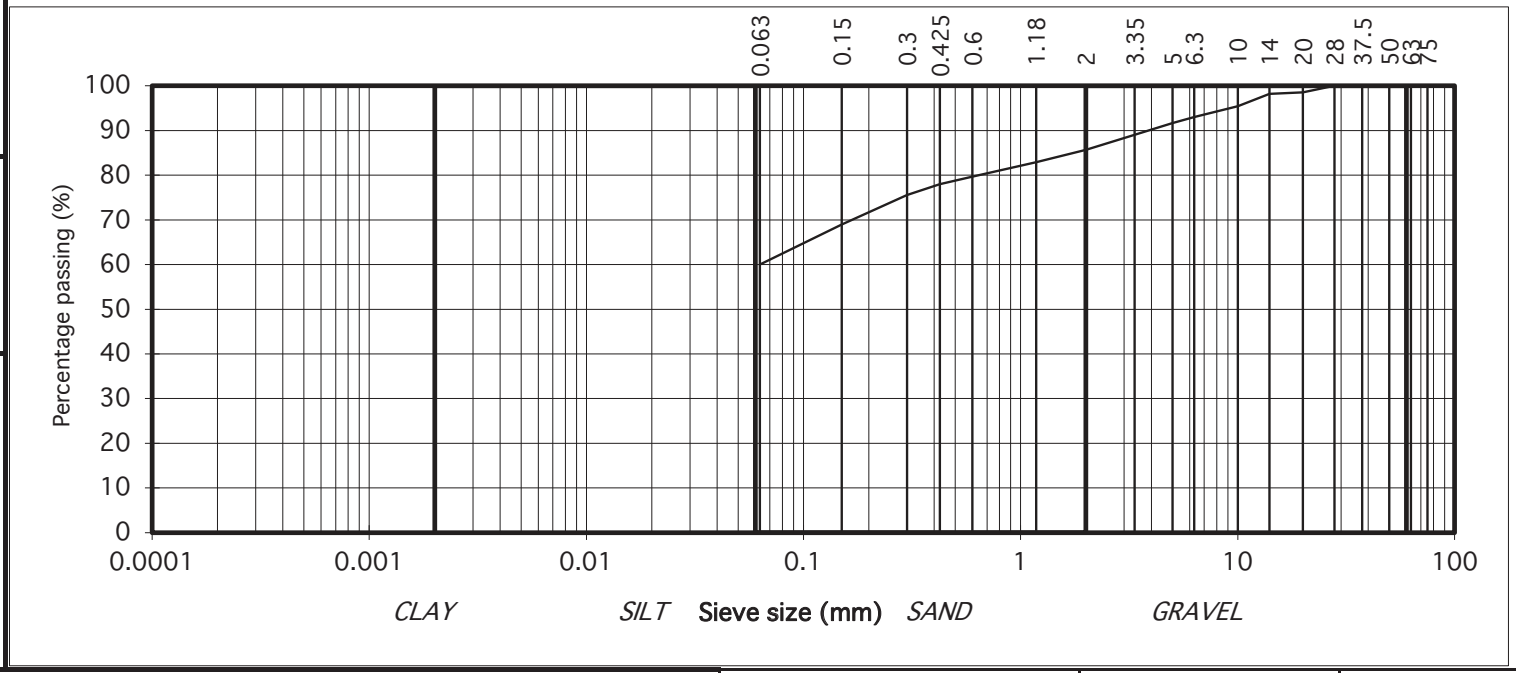

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Test Report

Determination of Moisture Condition Value at Natural Moisture Content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	**R142007**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP04
Sample No.*	AA186982
Depth* (m)	0.60
Sample Type:	B
Lab Sample No.	A22/7562
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	25/01/23
Sample Cert:	Not Provided
Moisture Content (%):	13
% Particles > 20mm (By dry mass):	14
MCV:	4.6
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy slightly gravelly CLAY

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Test Report

Determination of Moisture Condition Value at Natural Moisture Content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

Report No.	**R142008**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP04
Sample No.*	AA186982
Depth* (m)	0.60
Sample Type:	B
Lab Sample No.	A22/7562
Source* (if applicable)	0
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	25/01/23
Sample Cert:	Not Provided
Moisture Content (%):	10
% Particles > 20mm (By dry mass):	14
MCV:	7.2
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy slightly gravelly CLAY - 1% Lime Added

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Test Report

Determination of Moisture Condition Value at Natural Moisture Content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	**R142685**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP04
Sample No.*	AA186982
Depth* (m)	0.60
Sample Type:	B
Lab Sample No.	A22/7562
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	08/02/23
Sample Cert:	Not Provided
Moisture Content (%):	14
% Particles > 20mm (By dry mass):	14
MCV:	8.6
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy slightly gravelly CLAY - 1% Lime/2% Cement

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Test Report

Determination of Moisture Condition Value at Natural Moisture Content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

Report No.	**R142009**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP04
Sample No.*	AA186982
Depth* (m)	0.60
Sample Type:	B
Lab Sample No.	A22/7562
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	25/01/23
Sample Cert:	Not Provided
Moisture Content (%):	11
% Particles > 20mm (By dry mass):	14
MCV:	13.6
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy slightly gravelly CLAY - 3% Lime Added

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Test Report

Determination of Moisture Condition Value at Natural Moisture Content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

Report No.	**R142010**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP12
Sample No.*	AA185481
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7563
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	25/01/23
Sample Cert:	Not Provided
Moisture Content (%):	13
% Particles > 20mm (By dry mass):	6.4
MCV:	6.0
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy slightly gravelly CLAY

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Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	**R142011**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP12
Sample No.*	AA185481
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7563
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	25/01/23
Sample Cert:	Not Provided
Moisture Content (%):	13
% Particles > 20mm (By dry mass):	6.4
MCV:	8.0
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy slightly gravelly CLAY - 1% Lime Added

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Test Report

Determination of Moisture Condition Value at Natural Moisture Content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1337

Report No.	**R142686**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP12
Sample No.*	AA185481
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7563
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	25/01/23
Sample Cert:	Not Provided
Moisture Content (%):	14
% Particles > 20mm (By dry mass):	6.4
MCV:	8.9
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy slightly gravelly CLAY - 1%Lime / 2% Cement

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Determination of Moisture Condition Value at Natural Moisture Content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.133T

Report No.	**R142012**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP12
Sample No.*	AA185481
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7563
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	25/01/23
Sample Cert:	Not Provided
Moisture Content (%):	12
% Particles > 20mm (By dry mass):	6.4
MCV:	11.7
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy slightly gravelly CLAY - 3% Lime Added

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Determination of Moisture Condition Value at Natural Moisture Content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1337

Report No.	**R142013**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP13
Sample No.*	AA185455
Depth* (m)	1.00
Sample Type:	B
Lab Sample No.	A22/7560
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	26/01/23
Sample Cert:	Not Provided
Moisture Content (%):	12
% Particles > 20mm (By dry mass):	9.3
MCV:	8.8
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Grey/brown sandy gravelly SILT/CLAY

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Determination of Moisture Condition Value at Natural Moisture Content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	**R142014**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP15
Sample No.*	AA185479
Depth* (m)	1.50
Sample Type:	B
Lab Sample No.	A22/7565
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	26/01/23
Sample Cert:	Not Provided
Moisture Content (%):	13
% Particles > 20mm (By dry mass):	3.3
MCV:	7.1
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy, slightly gravelly, CLAY

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Test Report

Determination of Moisture Condition Value at Natural Moisture Content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	**R142015**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP16
Sample No.*	AA185461
Depth* (m)	1.00
Sample Type:	B
Lab Sample No.	A22/7566
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	24/01/23
Sample Cert:	Not Provided
Moisture Content (%):	14
% Particles > 20mm (By dry mass):	12
MCV:	0.2
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Mottled brown slightly sandy, slightly gravelly, CLAY

Results relate only to the specimen tested, in as received condition unless otherwise noted.
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Test Report

Determination of Moisture Condition Value at Natural Moisture Content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	**R142687**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP18
Sample No.*	AA185468
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7567
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	25/01/23
Sample Cert:	Not Provided
Moisture Content (%):	9.2
% Particles > 20mm (By dry mass):	14
MCV:	12.3
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Mottled brown sandy gravelly SILT/CLAY

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Test Report

Determination of Moisture Condition Value at Natural Moisture Content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1337

Report No.	**R142016**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP19
Sample No.*	AA185468
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7568
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	25/01/23
Sample Cert:	Not Provided
Moisture Content (%):	13
% Particles > 20mm (By dry mass):	8.9
MCV:	8.2
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly SILT/CLAY

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Test Report

Determination of Moisture Condition Value at Natural Moisture Content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	**R142017**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP19
Sample No.*	AA185468
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7568
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	25/01/23
Sample Cert:	Not Provided
Moisture Content (%):	13
% Particles > 20mm (By dry mass):	8.9
MCV:	11.2
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Mottled brown slightly sandy slightly gravelly CLAY - 1% Lime Added

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Determination of Moisture Condition Value at Natural Moisture Content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	**R142688**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP19
Sample No.*	AA185468
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7568
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	08/02/23
Sample Cert:	Not Provided
Moisture Content (%):	12
% Particles > 20mm (By dry mass):	8.8
MCV:	11.5
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Mottled brown slightly sandy slightly gravelly CLAY - 1% Lime / 2% Cement

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Report No.	**R142018**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP19
Sample No.*	AA185468
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7568
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	25/01/23
Sample Cert:	Not Provided
Moisture Content (%):	12
% Particles > 20mm (By dry mass):	8.9
MCV:	12.9
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Mottled brown slightly sandy slightly gravelly CLAY - 3% Lime Added

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Report No.	**R142019**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP20
Sample No.*	AA185488
Depth* (m)	0.60
Sample Type:	B
Lab Sample No.	A22/7569
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	26/01/23
Sample Cert:	Not Provided
Moisture Content (%):	18
% Particles > 20mm (By dry mass):	10
MCV:	2.4
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Grey/brown sandy gravelly SILT/CLAY

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Report No.	**R142020**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP21
Sample No.*	AA181983
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7570
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	26/01/23
Sample Cert:	Not Provided
Moisture Content (%):	20
% Particles > 20mm (By dry mass):	3.5
MCV:	7.6
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly SILT/CLAY

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Report No.	**R142021**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP22
Sample No.*	AA185497
Depth* (m)	0.60
Sample Type:	B
Lab Sample No.	A22/7571
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	26/01/23
Sample Cert:	Not Provided
Moisture Content (%):	20
% Particles > 20mm (By dry mass):	7.0
MCV:	5.7
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly SILT/CLAY

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Report No.	**R143243**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP24
Sample No.*	AA181960
Depth* (m)	0.60
Sample Type:	B
Lab Sample No.	A22/7573
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	15/02/23
Sample Cert:	Not Provided
Moisture Content (%):	14
% Particles > 20mm (By dry mass):	8.6
MCV:	11.2
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly SILT/CLAY

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Report No.	**R142022**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP26
Sample No.*	AA181975
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7575
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	26/01/23
Sample Cert:	Not Provided
Moisture Content (%):	14
% Particles > 20mm (By dry mass):	7.6
MCV:	6.4
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy, slightly gravelly, CLAY

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Report No.	**R142023**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP26
Sample No.*	AA181975
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7575
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	26/01/23
Sample Cert:	Not Provided
Moisture Content (%):	11
% Particles > 20mm (By dry mass):	7.6
MCV:	8.4
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy slightly gravelly CLAY - 1% Lime Added

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Report No.	**R142689**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP26
Sample No.*	AA181975
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7575
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	10/02/23
Sample Cert:	Not Provided
Moisture Content (%):	12
% Particles > 20mm (By dry mass):	7.6
MCV:	9.8
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy, slightly gravelly CLAY - 1% Lime / 2% Cement

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Report No.	**R142024**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP26
Sample No.*	AA181975
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7575
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	26/01/23
Sample Cert:	Not Provided
Moisture Content (%):	12
% Particles > 20mm (By dry mass):	7.6
MCV:	11.9
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy slightly gravelly CLAY - 3% Lime Added

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Report No.	**R142025**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP28
Sample No.*	AA181969
Depth* (m)	0.70
Sample Type:	B
Lab Sample No.	A22/7576
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	26/01/23
Sample Cert:	Not Provided
Moisture Content (%):	25
% Particles > 20mm (By dry mass):	3.4
MCV:	2.8
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Mottled brown slightly sandy, slightly gravelly, CLAY

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Report No.	**R142494**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP29
Sample No.*	AA181986
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7577
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	26/01/23
Sample Cert:	Not Provided
Moisture Content (%):	9.9
% Particles > 20mm (By dry mass):	12
MCV:	16
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly SILT/CLAY

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Report No.	**R142495**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP31
Sample No.*	AA181992
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7578
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	26/01/23
Sample Cert:	Not Provided
Moisture Content (%):	11
% Particles > 20mm (By dry mass):	7.2
MCV:	12.7
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy slightly gravelly CLAY

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Report No.	**R142496**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP31
Sample No.*	AA181992
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7578
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	26/01/23
Sample Cert:	Not Provided
Moisture Content (%):	9.5
% Particles > 20mm (By dry mass):	7.2
MCV:	15.4
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy slightly gravelly SILT/CLAY - 1% Lime Added

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ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	**R142690**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP31
Sample No.*	AA181992
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7578
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	08/02/23
Sample Cert:	Not Provided
Moisture Content (%):	10
% Particles > 20mm (By dry mass):	7.2
MCV:	15.4
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy slightly gravelly SILT/CLAY - 1% Lime / 2% Cement

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Report No.	**R142497**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP31
Sample No.*	AA181992
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/7578
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	26/01/23
Sample Cert:	Not Provided
Moisture Content (%):	9.2
% Particles > 20mm (By dry mass):	7.2
MCV:	16.1
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy slightly gravelly SILT/CLAY - 3% Lime Added

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Report No.	**R142498**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP33
Sample No.*	AA181989
Depth* (m)	0.60
Sample Type:	B
Lab Sample No.	A22/7579
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	24/01/22
Sample Cert:	Not Provided
Moisture Content (%):	21
% Particles > 20mm (By dry mass):	2.7
MCV:	6.9
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown slightly sandy, slightly gravelly, CLAY

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Report No.	**R142499**
Contract No.	24330
Contract Name:	Halverstown , Naas - Proposed Data Centres
Customer:	DOBA
BH/TP*	TP34
Sample No.*	AA181986
Depth* (m)	0.60
Sample Type:	B
Lab Sample No.	A22/7580
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	24/01/23
Date Tested:	24/01/22
Sample Cert:	Not Provided
Moisture Content (%):	19
% Particles > 20mm (By dry mass):	5.0
MCV:	6.8
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly CLAY

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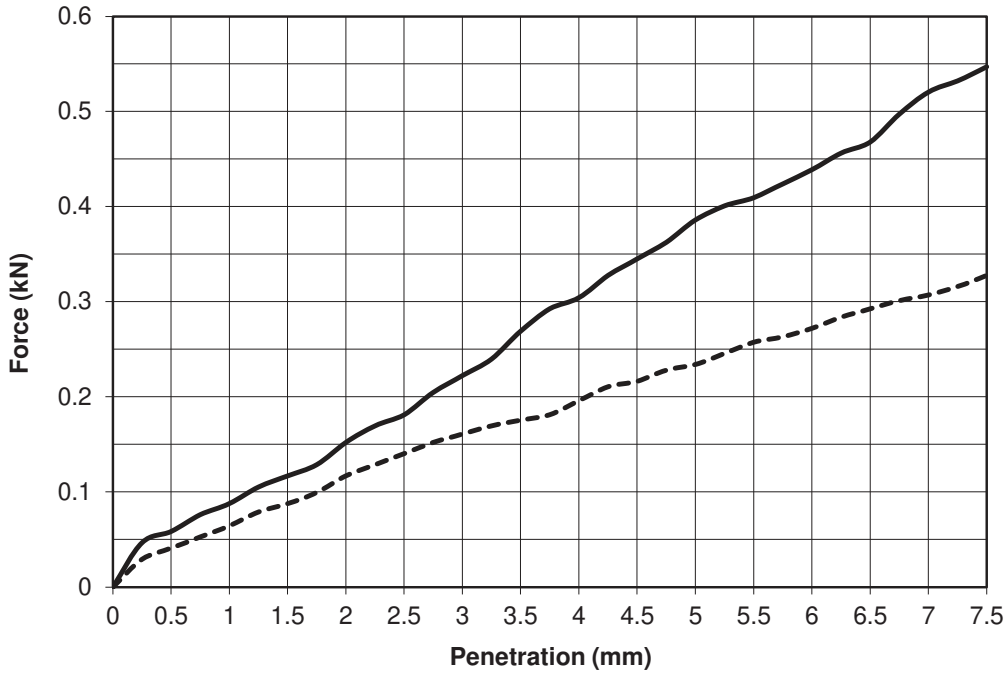
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142500	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	06/01/23
BH/TP No.*	TP04	Sample No.*	AA186982 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7562



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	15	Bulk Density (Mg/m^3):	2.13
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.85
% Material >20mm:	14		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**1.9**	**1.2**
Moisture Content %	15	15

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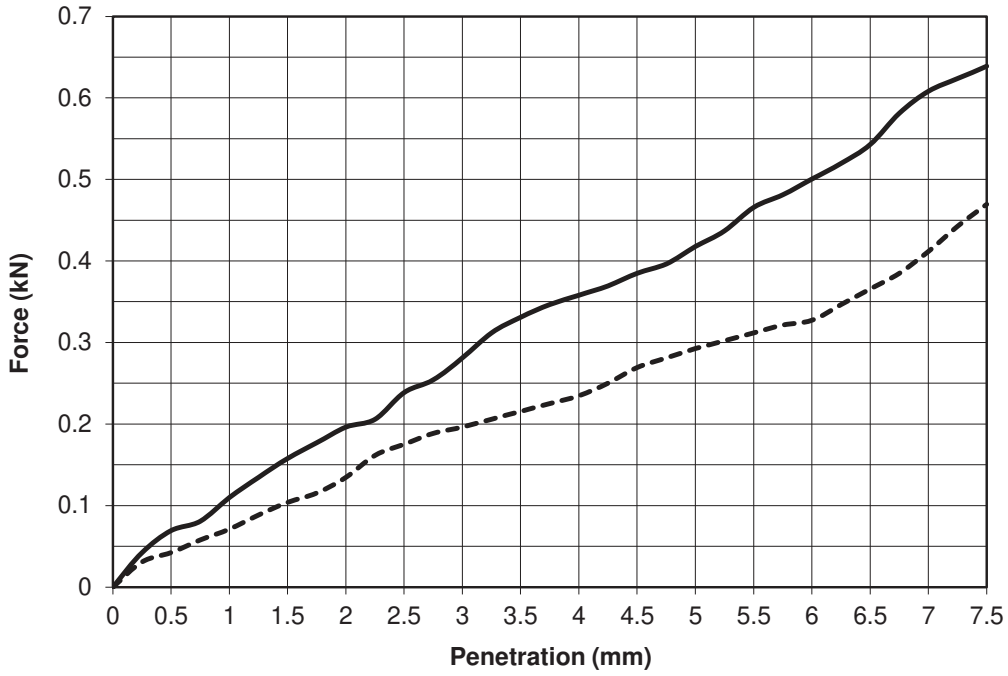
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R145770	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	01/02/23
BH/TP No.*	TP12	Sample No.*	AA195481 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7563



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	17	Bulk Density (Mg/m^3):	2.15
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.84
% Material >20mm:	3.9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**2.1**	**1.7**
Moisture Content %	17	17

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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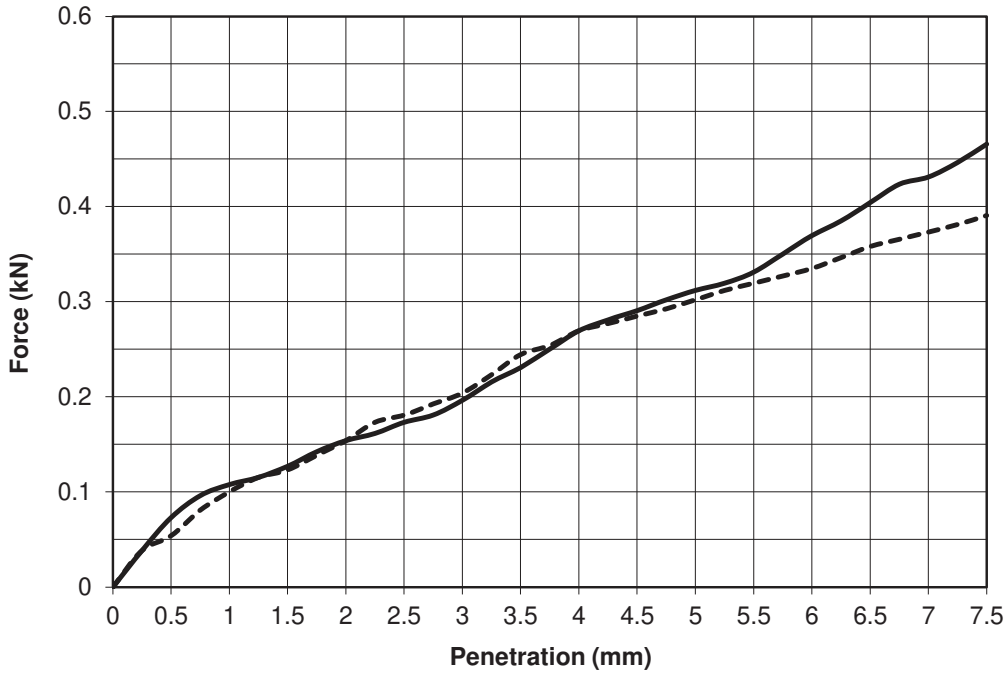
IGSL Ltd
Materials Laboratory
Unit J5,M7 Business Park
Naas Co.Kildare
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142501	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	25/01/23
BH/TP No.*	TP13	Sample No.*	AA185455 Type: B
Depth* (m)	1.00	Lab sample No.	A22/7564



Key: ———— Top ---------- Base

Description:	Mottled brown sandy gravelly SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.20
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.95
% Material >20mm:	8.4		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**1.6**	**1.5**
Moisture Content %	13	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

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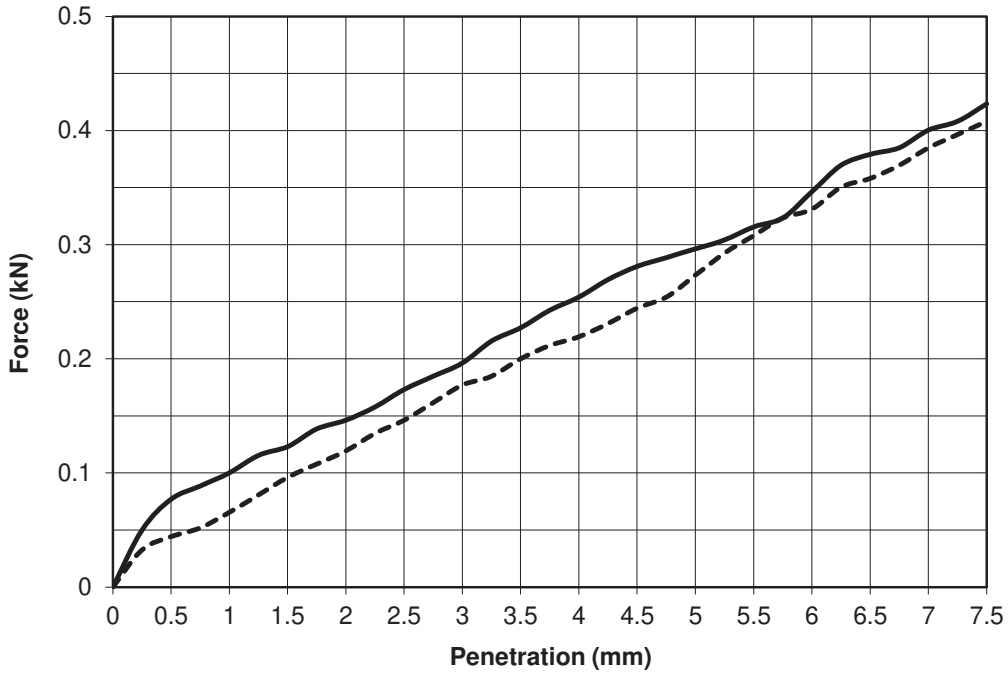
Naas Co.Kildare
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142502	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	26/01/23
BH/TP No.*	TP15	Sample No.*	AA185479 Type: B
Depth* (m)	1.50	Lab sample No.	A22/7565



Key: ———— Top ---------- Base

Description:	Brown slightly sandy, slightly gravelly, CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.20
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.95
% Material >20mm:	2.9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**1.5**	**1.4**
Moisture Content %	13	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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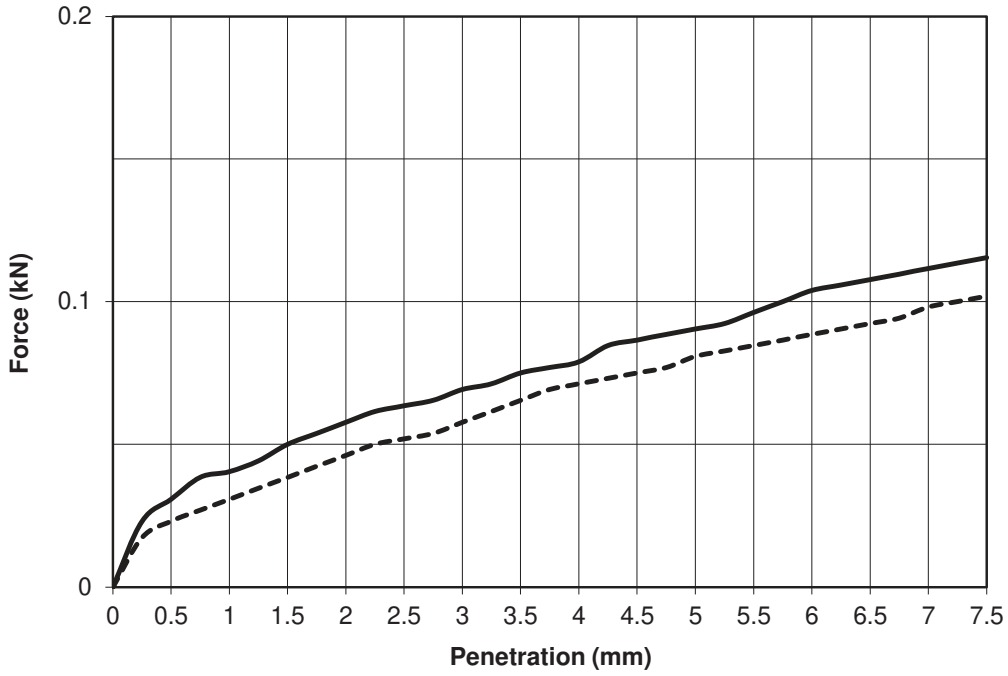
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142503	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	24/01/23
BH/TP No.*	TP16	Sample No.*	AA185461 Type: B
Depth* (m)	1.00	Lab sample No.	A22/7566



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy, slightly gravelly, CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	14	Bulk Density (Mg/m^3):	2.20
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.92
% Material >20mm:	11		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**0.5**	**0.4**
Moisture Content %	14	14

Results relate only to the specimen tested, in as received condition unless otherwise noted

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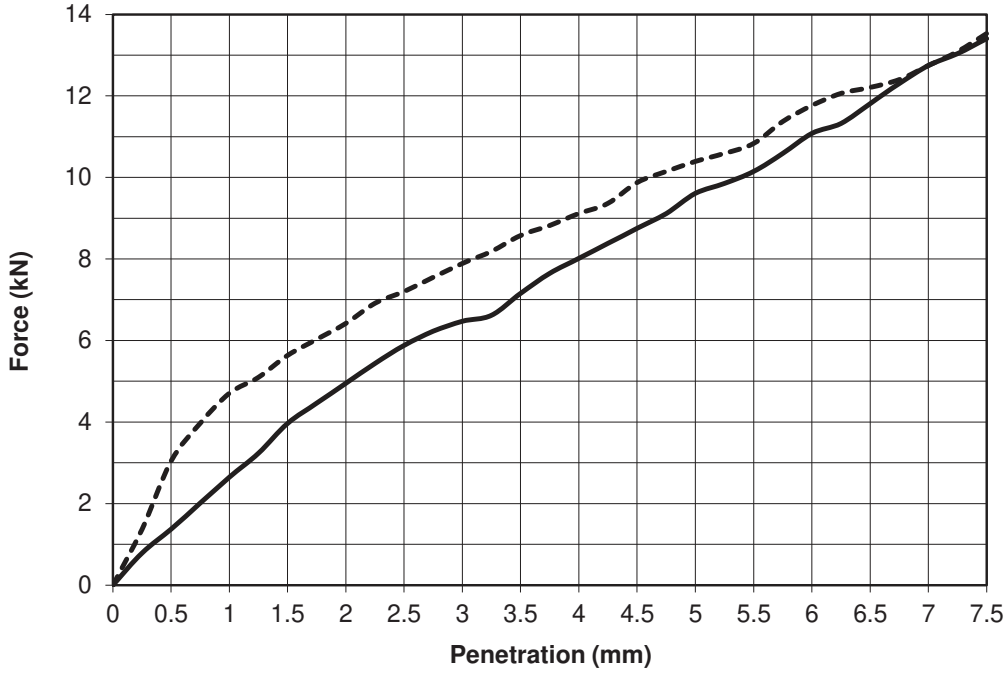
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142504	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	24/01/23
BH/TP No.*	TP18	Sample No.*	AA185484 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7567



Key: ———— Top ---------- Base

Description:	Mottled brown sandy gravelly SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	10	Bulk Density (Mg/m^3):	2.10
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.92
% Material >20mm:	13		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**48**	**54**
Moisture Content %	10	9.3

Results relate only to the specimen tested, in as received condition unless otherwise noted

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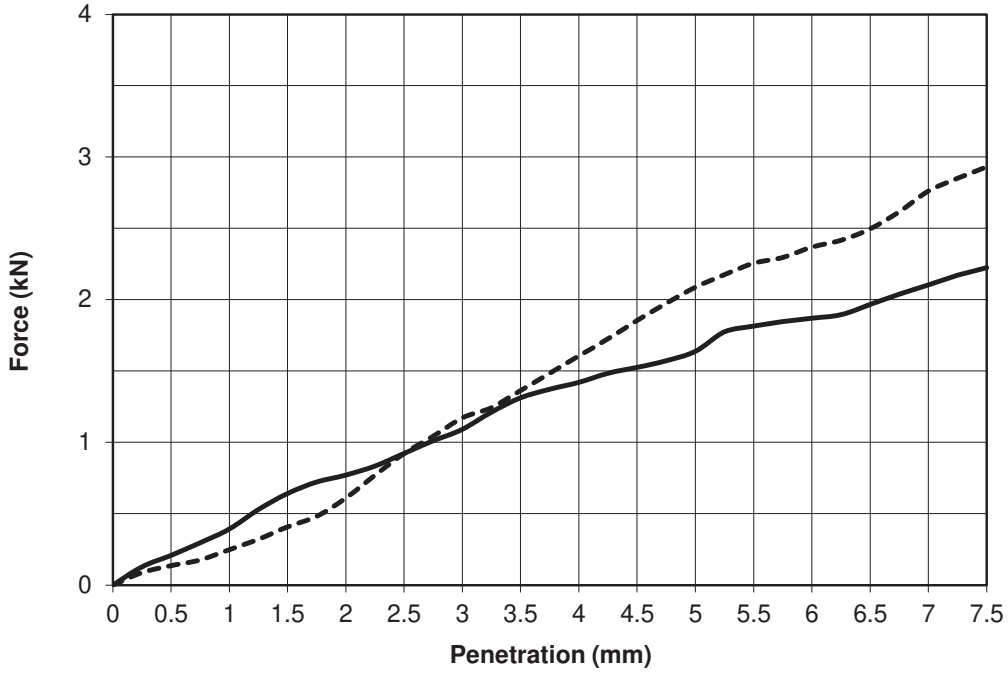
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R145760	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	18/02/23
BH/TP No.*	TP19	Sample No.*	AA185468 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7568



Key: ———— Top ---------- Base

Description:	Brown sandy gravelly SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.17
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.92
% Material >20mm:	6.4		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**8**	**10**
Moisture Content %	13	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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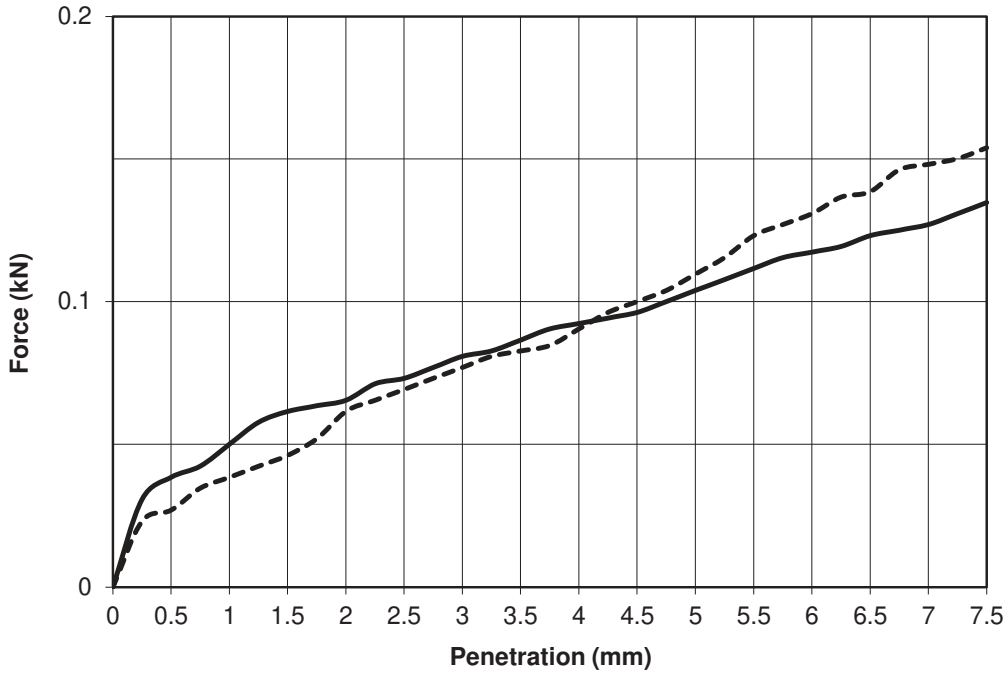
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142505	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	26/01/23
BH/TP No.*	TP20	Sample No.*	AA185488 Type: B
Depth* (m)	1.00	Lab sample No.	A22/7569



Key: ———— Top ---------- Base

Description: Mottled brown sandy slightly gravelly SILT/CLAY

Initial Condition:	Unsoaked		
Moisture Content (%):	19	Bulk Density (Mg/m^3):	2.08
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.75
% Material >20mm:	12		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**0.6**	**0.6**
Moisture Content %	19	18

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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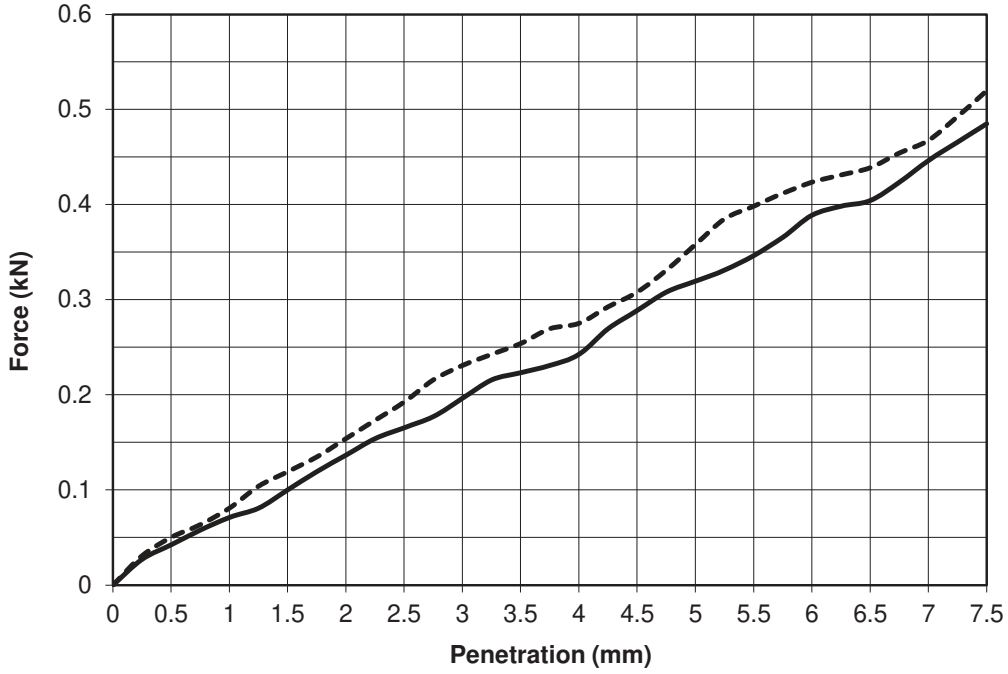
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142506	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	26/01/23
BH/TP No.*	TP21	Sample No.*	AA181983 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7570



Key: ———— Top ---------- Base

Description:	Orange/brown slightly sandy slightly gravelly SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	20	Bulk Density (Mg/m^3):	2.02
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.69
% Material >20mm:	36		
Method of compaction:	Static Compaction Method 2		

Test Result	**Top**	**Base**
CBR %	**1.6**	**1.8**
Moisture Content %	20	20

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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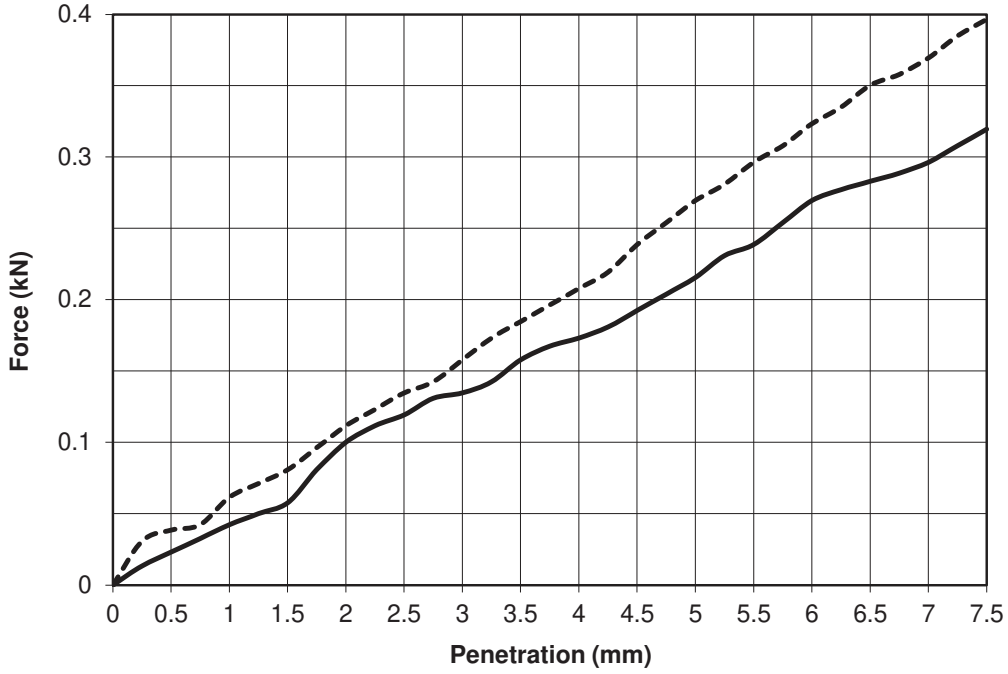
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	R142507	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	26/01/23
BH/TP No.*	TP22	Sample No.*	AA185497 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7571



Key: ———— Top ---------- Base

Description:	Brown sandy gravelly SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	20	Bulk Density (Mg/m^3):	1.99
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.65
% Material >20mm:	5.9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**1.1**	**1.4**
Moisture Content %	20	20

Results relate only to the specimen tested, in as received condition unless otherwise noted

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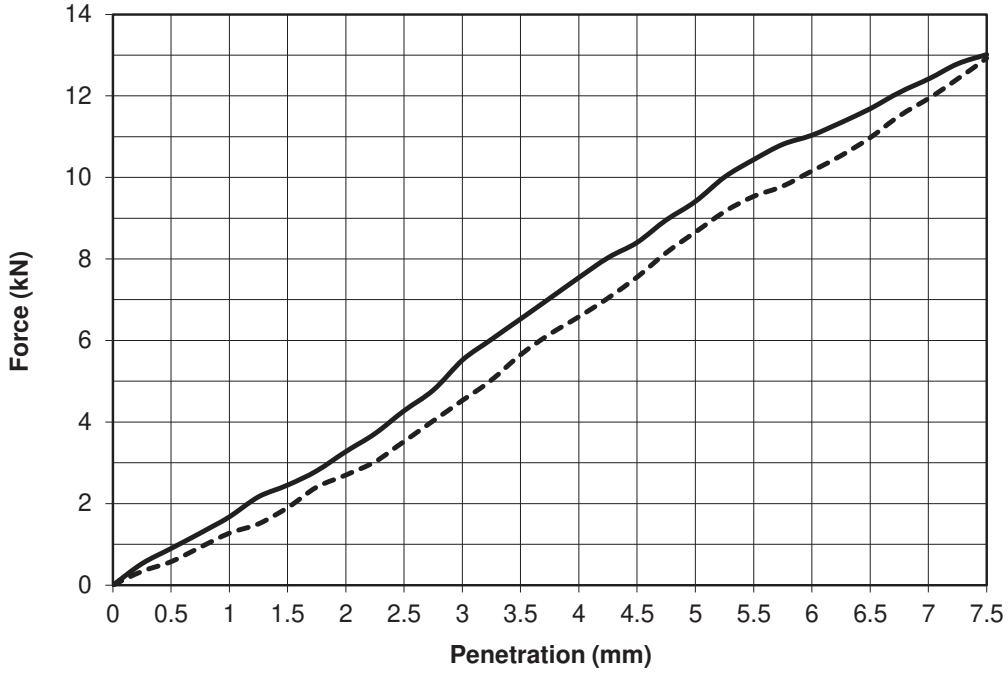
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143188	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	15/02/23
BH/TP No.*	TP24	Sample No.*	AA181960 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7573



Key: ———— Top ---------- Base

Description:	Brown sandy gravelly SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.21
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.95
% Material >20mm:	7.6		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**47**	**43**
Moisture Content %	13	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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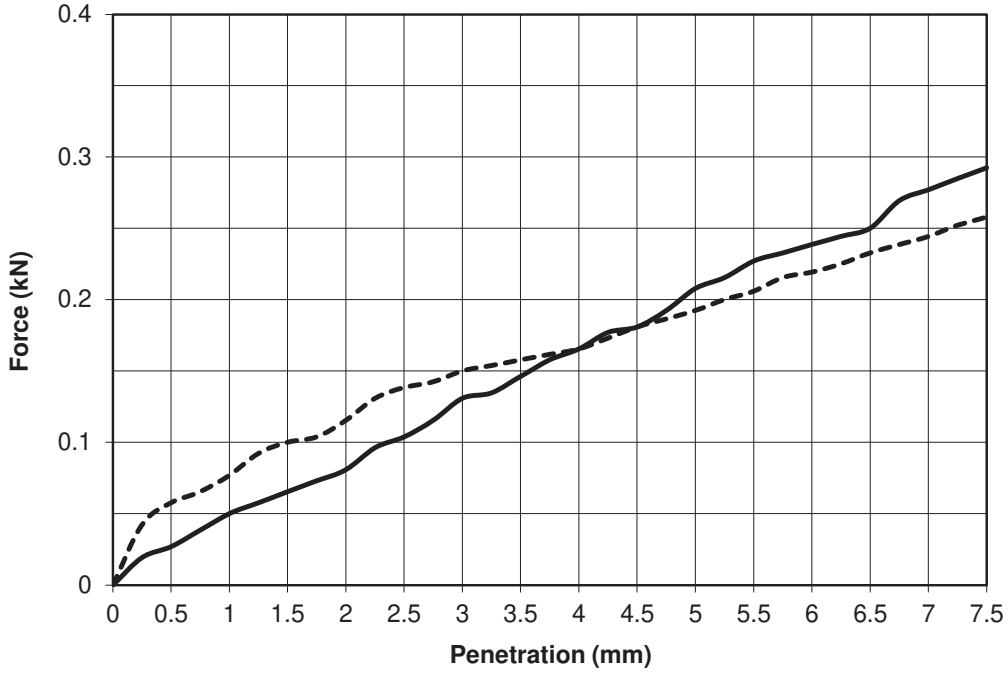
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142508	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	26/01/23
BH/TP No.*	TP26	Sample No.*	AA181975 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7575



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.19
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.93
% Material >20mm:	7.6		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**1.0**	**1.1**
Moisture Content %	13	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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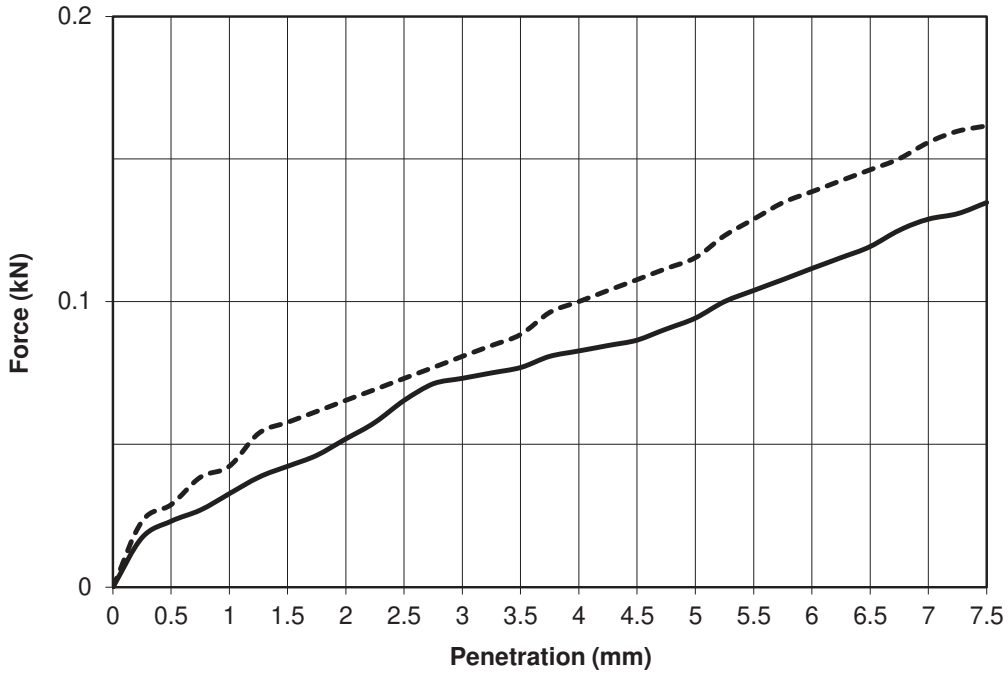
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142509	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	24/01/24
BH/TP No.*	TP28	Sample No.*	AA181969 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7576



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy, slightly gravelly, CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	26	Bulk Density (Mg/m^3):	1.95
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.55
% Material >20mm:	2.8		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**0.5**	**0.6**
Moisture Content %	26	26

Results relate only to the specimen tested, in as received condition unless otherwise noted

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J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

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TEST REPORT
Determination of California Bearing Ratio (CBR)

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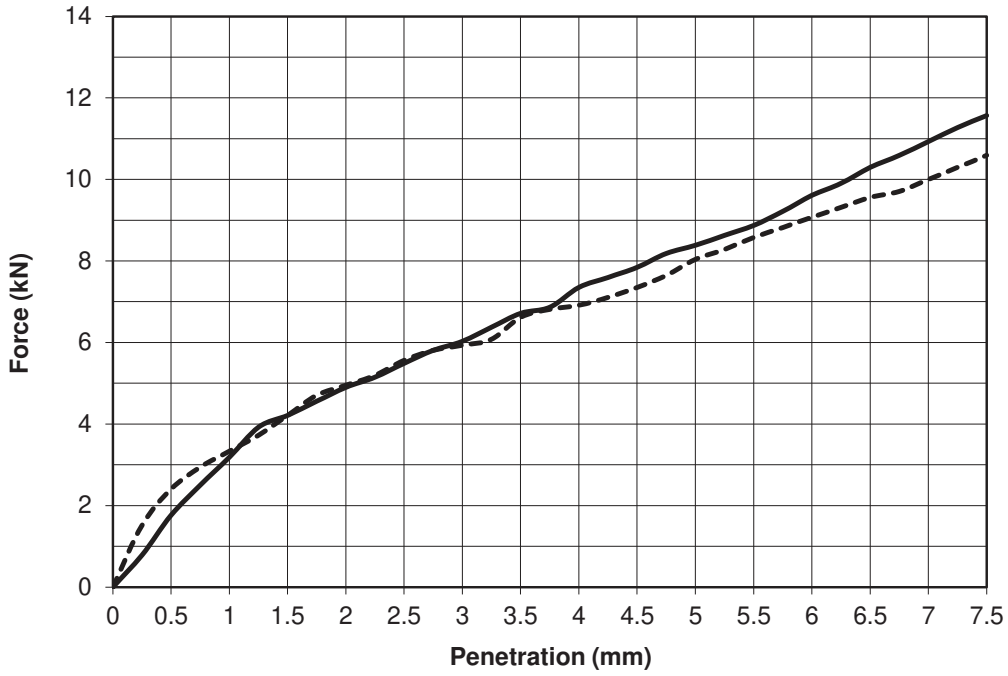
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142510	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	26/01/23
BH/TP No.*	TP29	Sample No.*	AA181986 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7577



Key: ———— Top ---------- Base

Description:	Brown sandy gravelly SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	9	Bulk Density (Mg/m^3):	2.07
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.89
% Material >20mm:	11		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**42**	**42**
Moisture Content %	9.2	9.3

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

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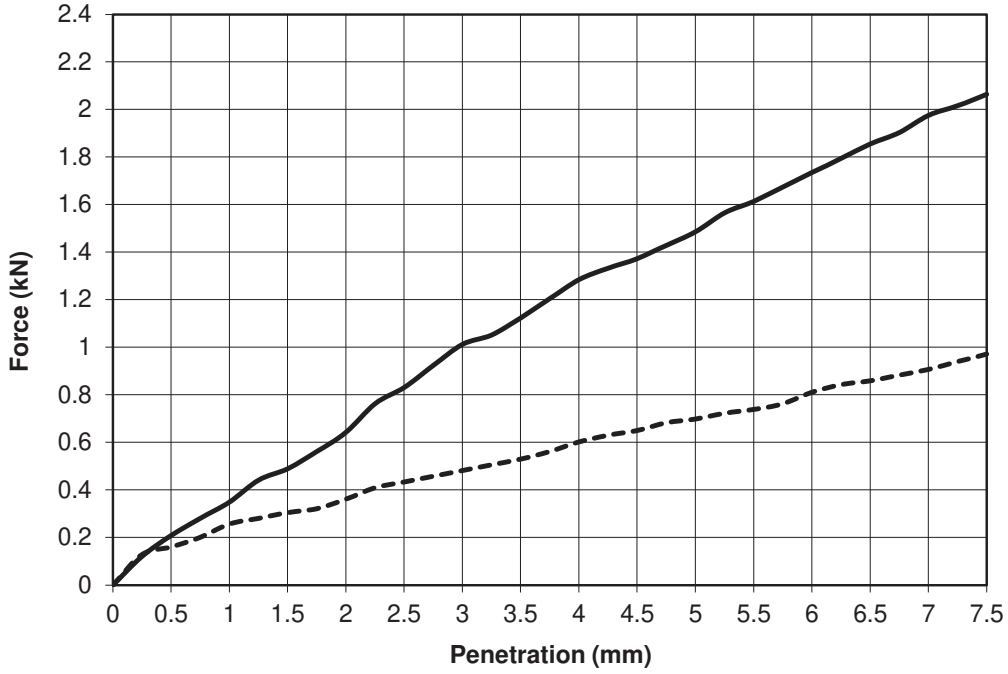
Report No.	R145766	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	18/02/23
BH/TP No.*	TP31	Sample No.*	AA181992 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7578



Key: ———— Top ---------- Base

Description:	Brown slightly sandy, slightly gravelly, CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.17
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.92
% Material >20mm:	6.9		
Method of compaction:	Static Compaction Method 2		

Test Result	**Top**	**Base**
CBR %	**7.4**	**3.5**
Moisture Content %	13	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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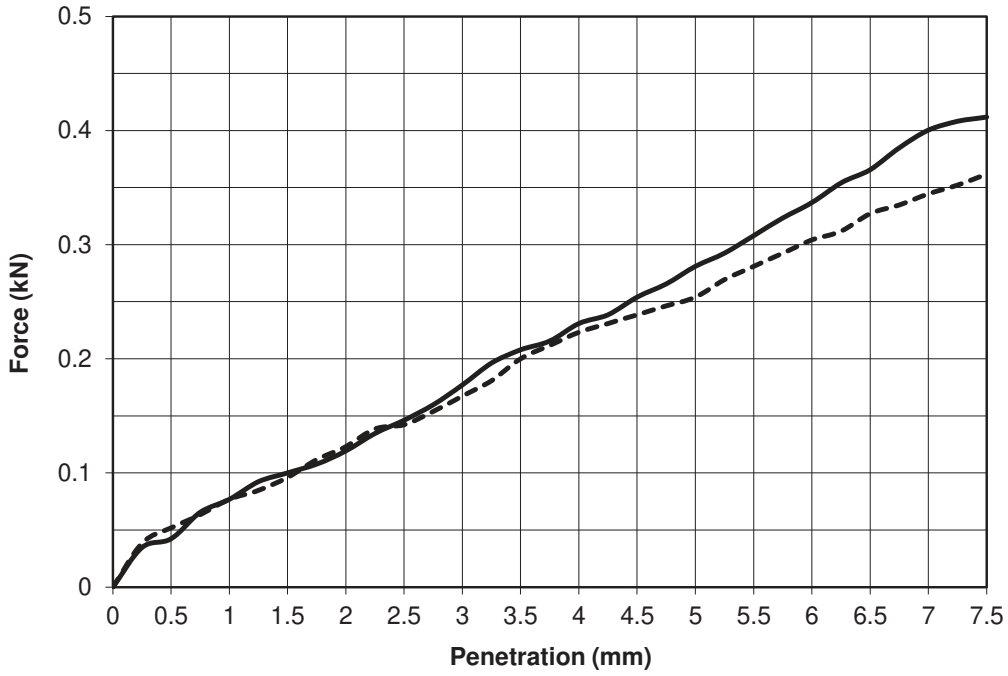
Report No.	R142511	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	24/01/23
BH/TP No.*	TP33	Sample No.*	AA181989 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7579



Key: ———— Top ---------- Base

Description:	Brown slightly sandy, slightly gravelly, CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	21	Bulk Density (Mg/m^3):	2.02
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.67
% Material >20mm:	2.2		
Method of compaction:	Static Compaction Method 2		

Test Result	**Top**	**Base**
CBR %	**1.4**	**1.3**
Moisture Content %	21	21

Results relate only to the specimen tested, in as received condition unless otherwise noted

Opinions and interpretations are outside the scope of accreditation.

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J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

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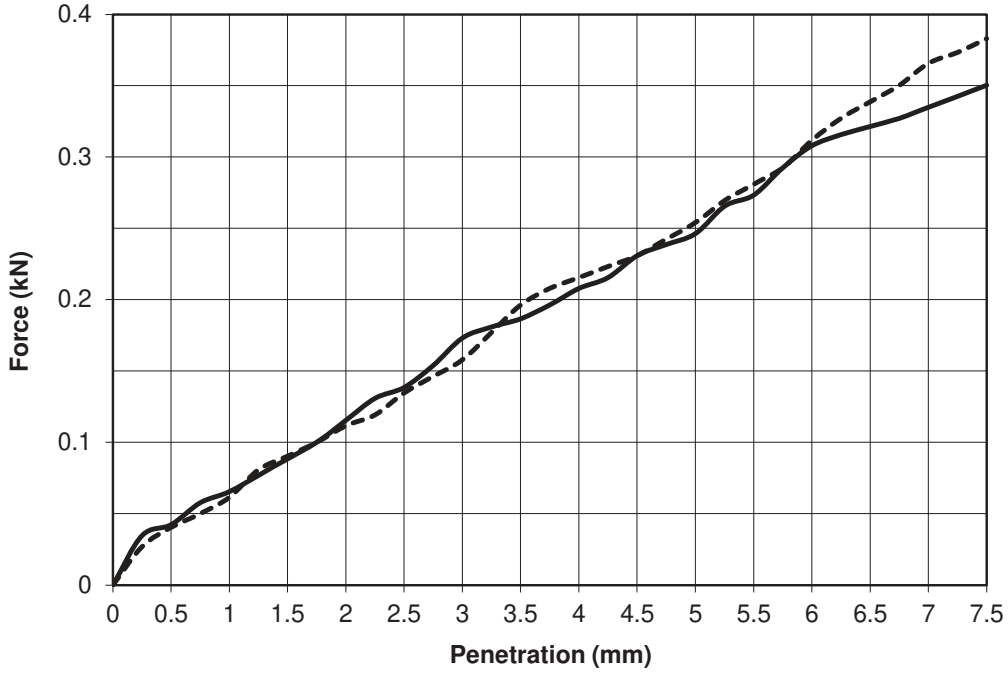
IGSL Ltd
Materials Laboratory
Unit J5,M7 Business Park
Naas Co.Kildare
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142512	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	24/01/23
BH/TP No.*	TP34	Sample No.*	AA181986 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7580



Key: ———— Top ---------- Base

Description:	Brown sandy slightly gravelly SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	20	Bulk Density (Mg/m^3):	2.04
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.70
% Material >20mm:	4.2		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**1.2**	**1.3**
Moisture Content %	20	20

Results relate only to the specimen tested, in as received condition unless otherwise noted

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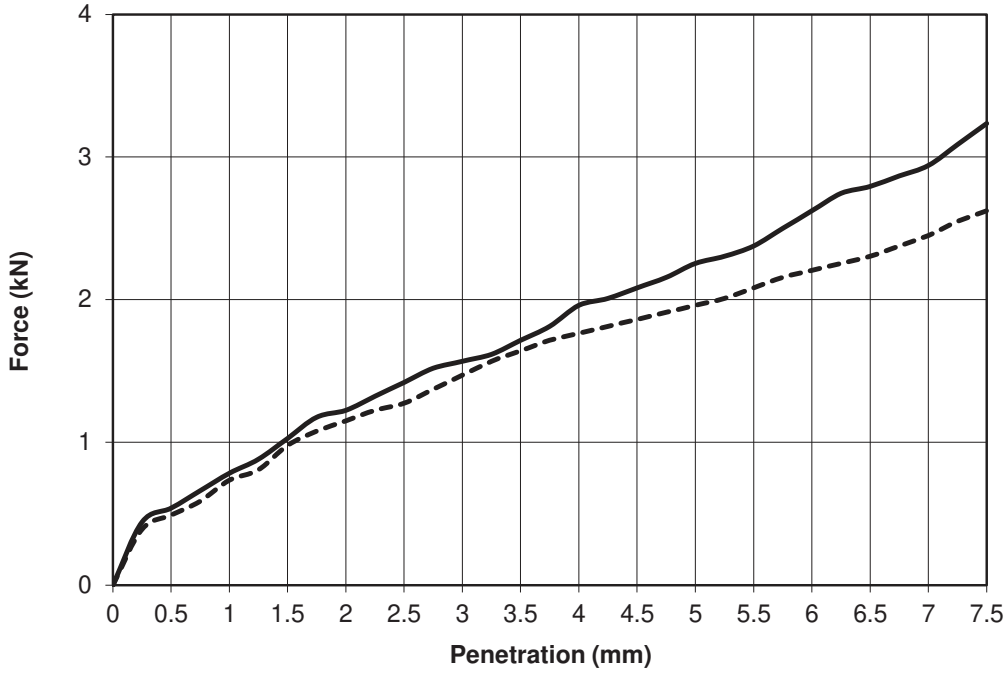
IGSL Ltd Materials Laboratory Unit J5,M7 Business Park Naas Co.Kildare 045 899324	TEST REPORT Determination of California Bearing Ratio (CBR) Tested in accordance with BS1377:Part 4:1990, clause 7	ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	R145768	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	18/02/23
BH/TP No.*	TP04	Sample No.*	AA186982 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7562



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime/ 3 Days Soaked		
Moisture Content (%):	14	Bulk Density (Mg/m^3):	2.19
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.91
% Material >20mm:	14		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**11**	**10**
Moisture Content %	14	15

Results relate only to the specimen tested, in as received condition unless otherwise noted

Opinions and interpretations are outside the scope of accreditation.

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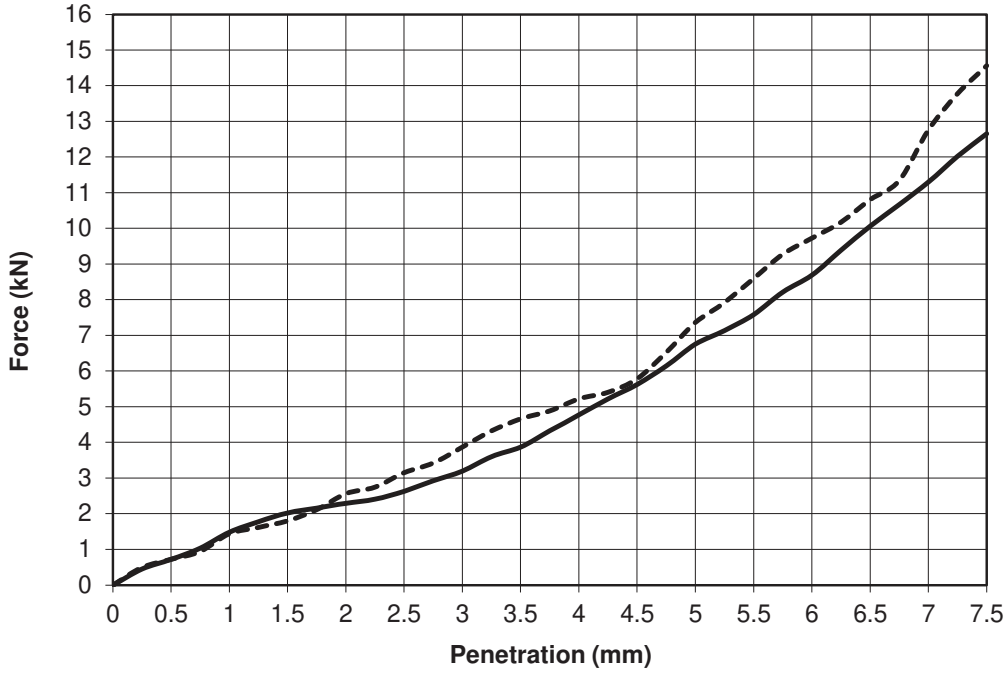
IGSL Ltd Materials Laboratory Unit J5,M7 Business Park Naas Co.Kildare 045 899324	TEST REPORT Determination of California Bearing Ratio (CBR) Tested in accordance with BS1377:Part 4:1990, clause 7	ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R145769	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	18/02/23
BH/TP No.*	TP04	Sample No.*	AA186982 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7562



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime/ 5 Days Soaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.16
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.93
% Material >20mm:	14		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**34**	**37**
Moisture Content %	12	12

Results relate only to the specimen tested, in as received condition unless otherwise noted

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IGSL Ltd
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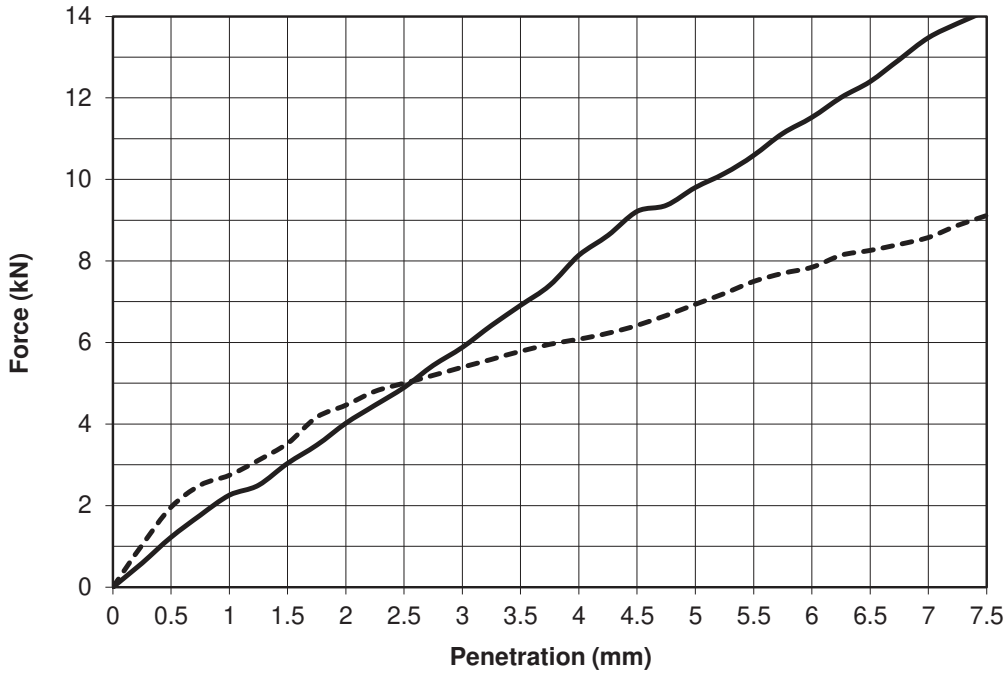
Unit J5,M7 Business Park
Naas Co.Kildare
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143174	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	18/02/23
BH/TP No.*	TP04	Sample No.*	AA186982 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7562



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime/ 7 Days Soaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.17
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.94
% Material >20mm:	14		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**49**	**38**
Moisture Content %	12	12

Results relate only to the specimen tested, in as received condition unless otherwise noted

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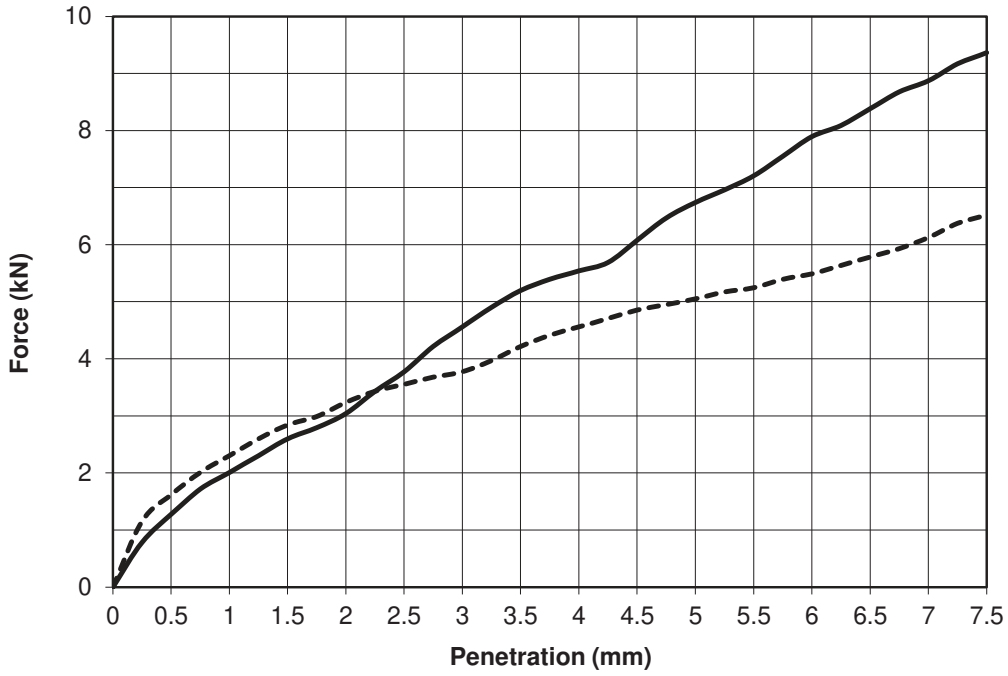
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142662	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	01/02/23
BH/TP No.*	TP04	Sample No.*	AA186982 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7562



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	2% Lime/3 Days Soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.16
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.92
% Material >20mm:	14		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**34**	**27**
Moisture Content %	13	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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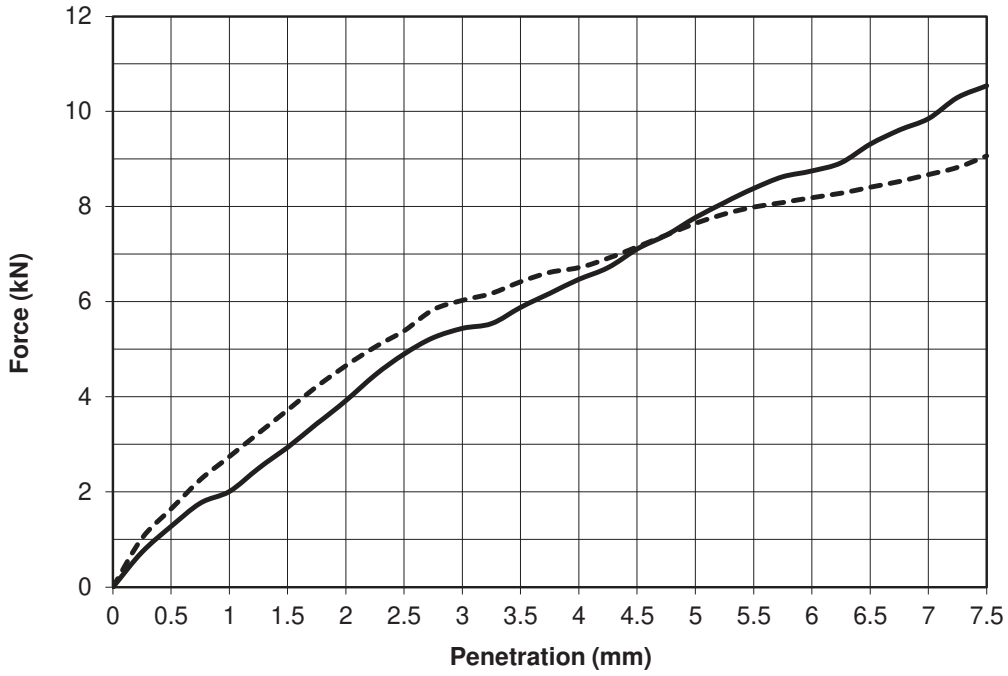
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142752	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	16/02/23
BH/TP No.*	TP04	Sample No.*	AA186982 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7562



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	2% Lime/5 Day Soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.16
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.90
% Material >20mm:	14		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**41**	**39**
Moisture Content %	13	14

Results relate only to the specimen tested, in as received condition unless otherwise noted

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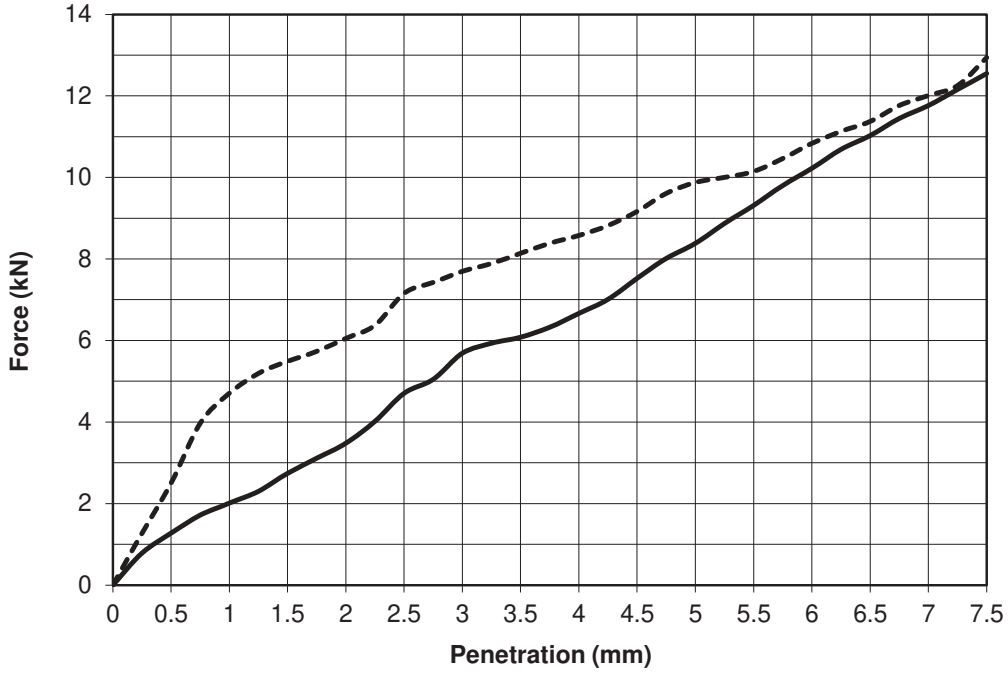
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142661	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	13/02/23
BH/TP No.*	TP04	Sample No.*	AA186982 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7562



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	2% Lime/ Soaked 7 Days		
Moisture Content (%):	14	Bulk Density (Mg/m^3):	2.15
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.89
% Material >20mm:	14		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**42**	**54**
Moisture Content %	14	14

Results relate only to the specimen tested, in as received condition unless otherwise noted

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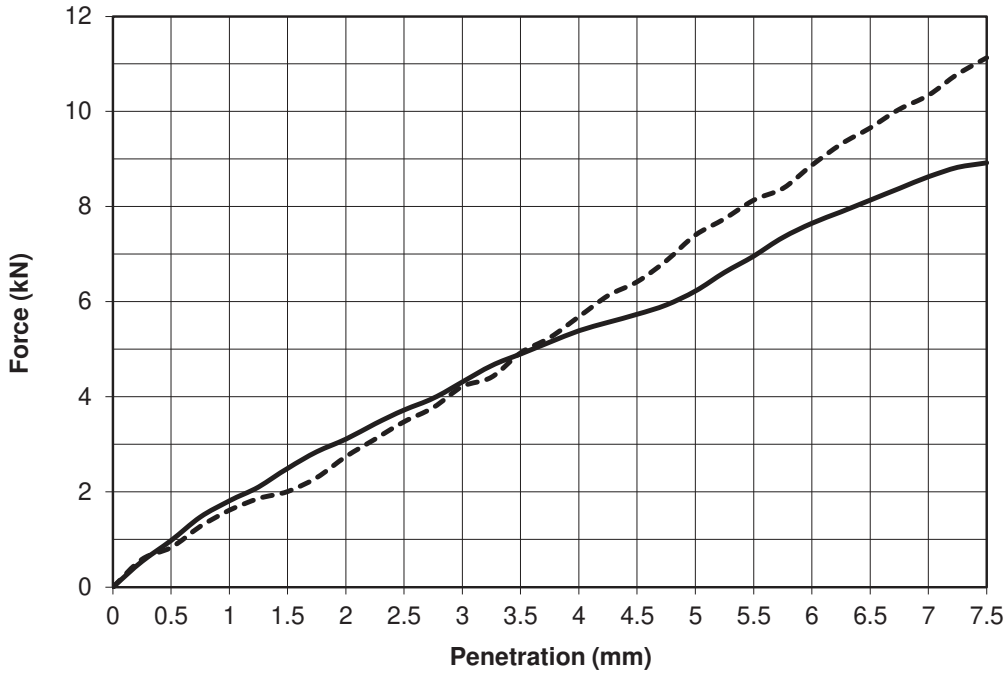
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142663	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	01/02/23
BH/TP No.*	TP04	Sample No.*	AA186982 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7562



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	3% Lime/ 3 Days Soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.20
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.94
% Material >20mm:	14		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**31**	**37**
Moisture Content %	14	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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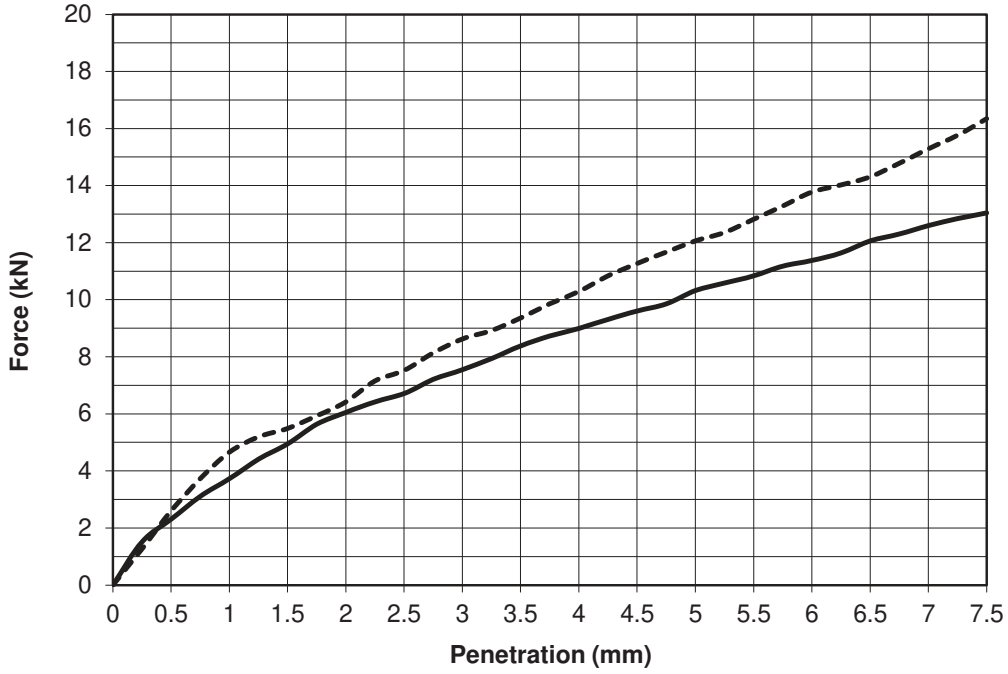
Unit J5,M7 Business Park
Naas Co.Kildare
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143176	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	13/02/23
BH/TP No.*	TP04	Sample No.*	AA186982 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7562



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	14	Bulk Density (Mg/m^3):	2.16
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.90
% Material >20mm:	14		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**52**	**60**
Moisture Content %	14	14

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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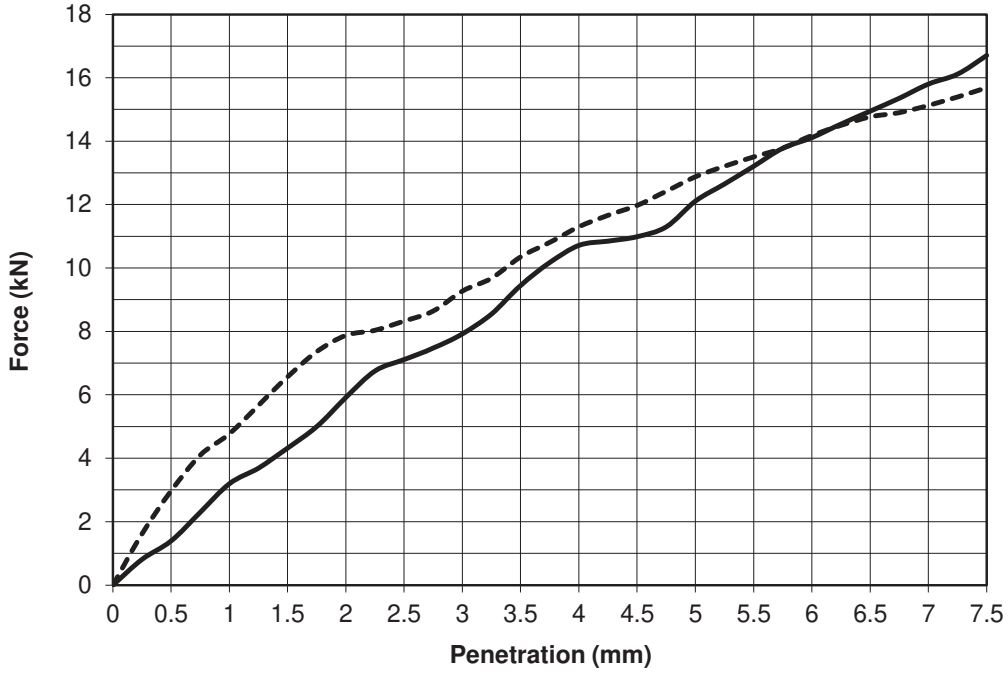
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142753	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	16/02/23
BH/TP No.*	TP04	Sample No.*	AA186982 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7562



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	3 % Lime/ 7 Days Soaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.18
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.95
% Material >20mm:	14		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**61**	**65**
Moisture Content %	12	12

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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Unit J5,M7 Business Park
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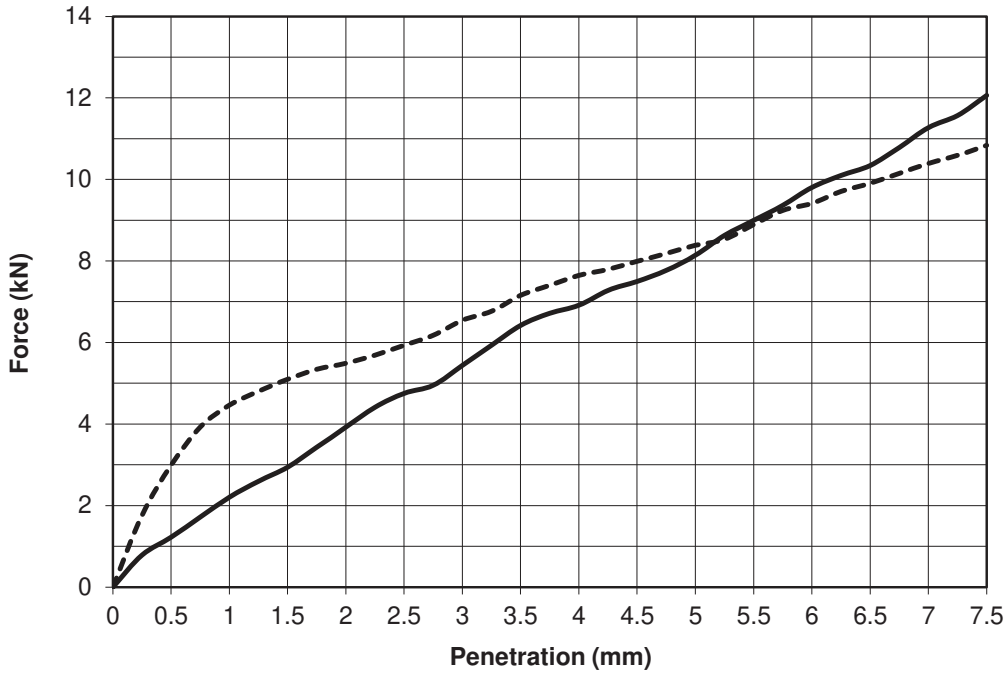
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	R142660	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	13/02/23
BH/TP No.*	TP04	Sample No.*	AA186982 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7562



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime 2% Cement/ 3 Days Soaked		
Moisture Content (%):	14	Bulk Density (Mg/m^3):	2.16
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.90
% Material >20mm:	14		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**41**	**45**
Moisture Content %	14	14

Results relate only to the specimen tested, in as received condition unless otherwise noted

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J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

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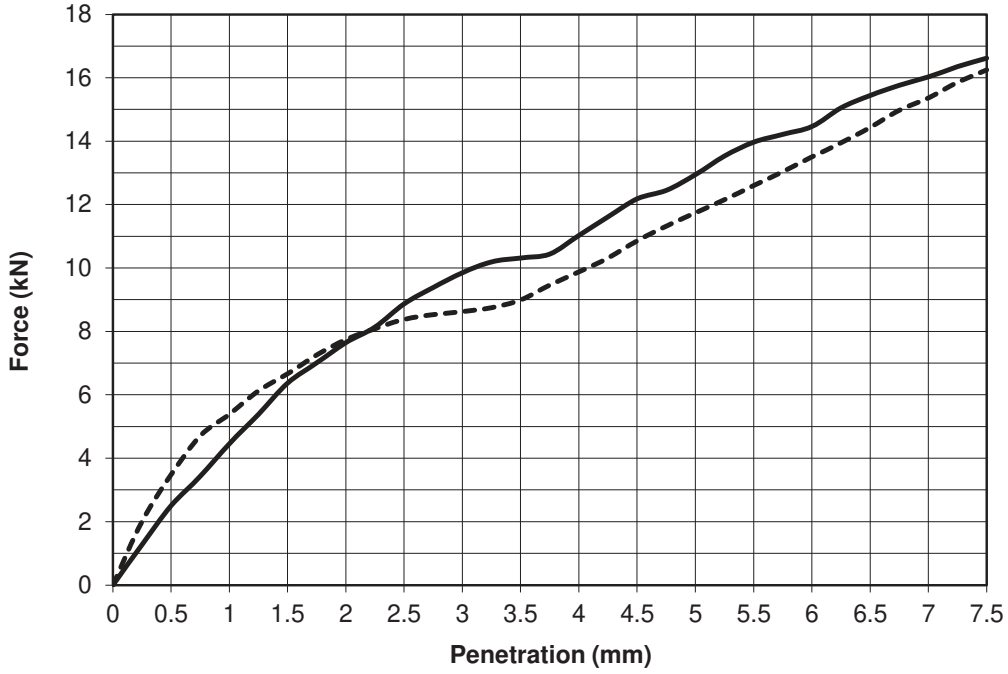
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142664	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	01/02/23
BH/TP No.*	TP04	Sample No.*	AA186982 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7562



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime 2% Cement/ 5 Days Soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.23
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.98
% Material >20mm:	14		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**67**	**63**
Moisture Content %	13	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

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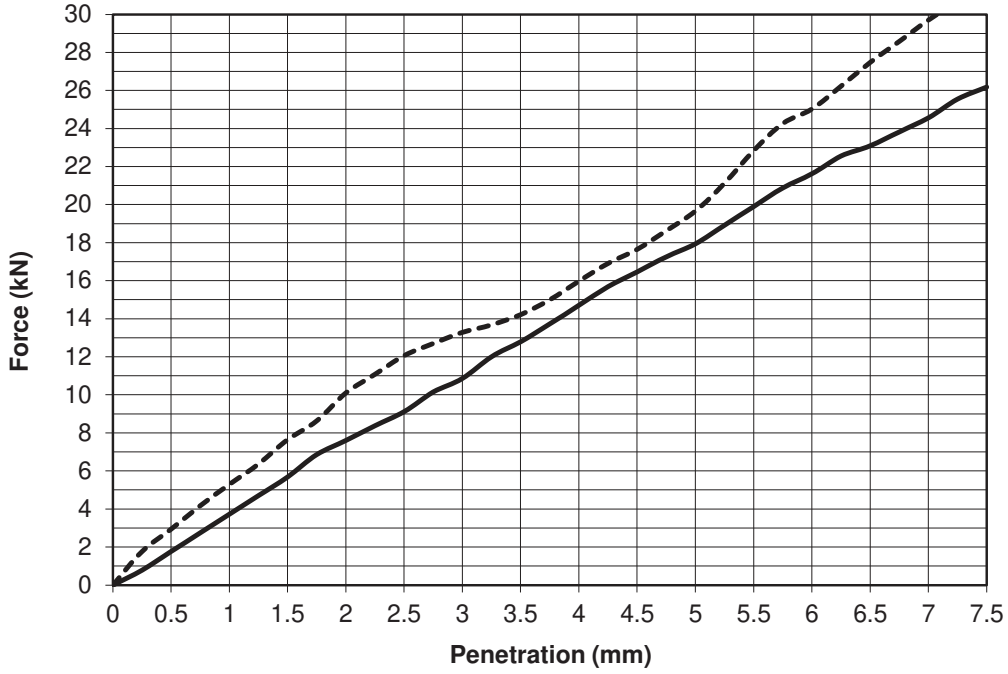
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	R143175	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	16/02/23
BH/TP No.*	TP04	Sample No.*	AA186982 Type: B
Depth* (m)	0.60	Lab sample No.	A22/7562



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime 2% Cement/7 Days Soaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.14
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.91
% Material >20mm:	14		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**90**	**99**
Moisture Content %	12	12

Results relate only to the specimen tested, in as received condition unless otherwise noted

Opinions and interpretations are outside the scope of accreditation.

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H Byrne (Laboratory Manager)

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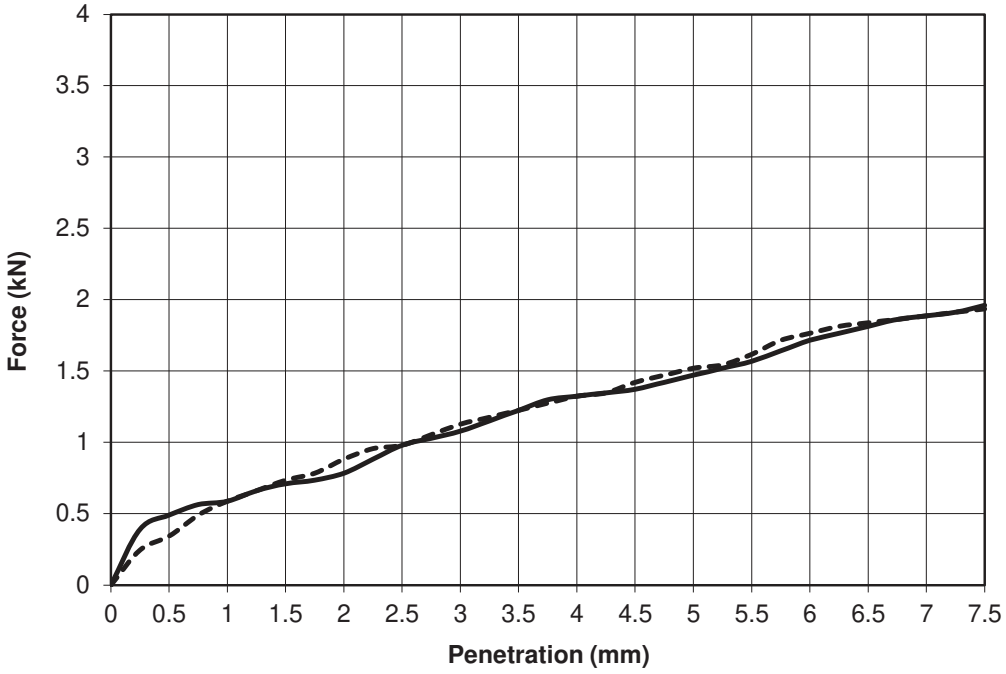
Report No.	R145771	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	21/02/23
BH/TP No.*	TP12	Sample No.*	AA195481 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7563



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime/ 3 Days soaked		
Moisture Content (%):	18	Bulk Density (Mg/m^3):	2.08
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.77
% Material >20mm:	6.4		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**7.4**	**7.6**
Moisture Content %	18	18

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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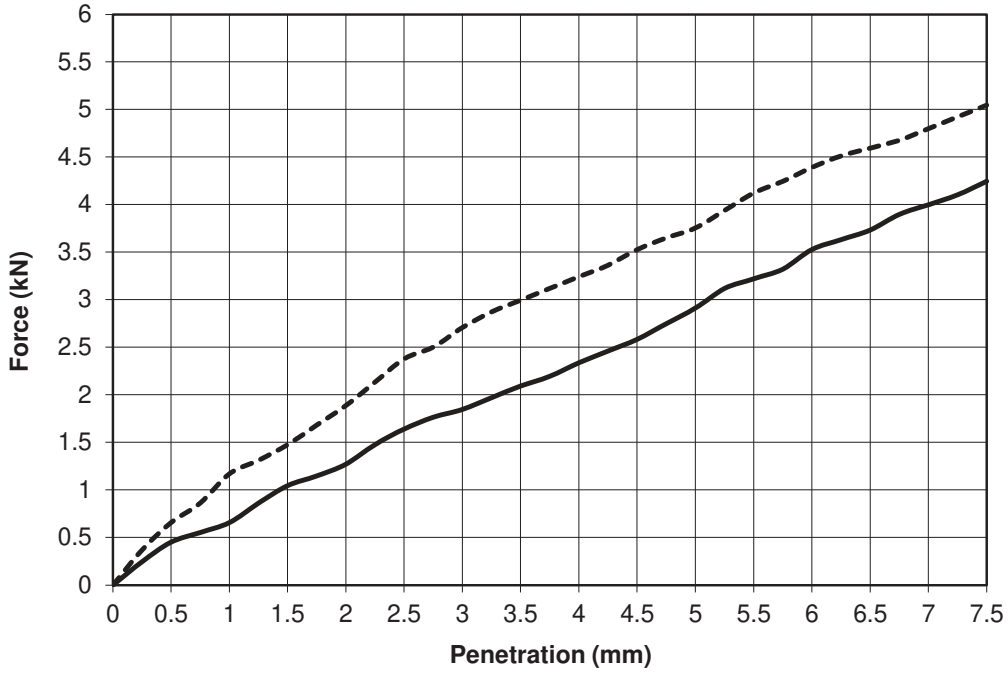
IGSL Ltd
Materials Laboratory
Unit J5,M7 Business Park
Naas Co.Kildare
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R145772	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	21/02/23
BH/TP No.*	TP12	Sample No.*	AA195481 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7563



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime/ 5 Days soaked		
Moisture Content (%):	17	Bulk Density (Mg/m^3):	2.11
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.81
% Material >20mm:	6.4		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**14.6**	**18.8**
Moisture Content %	17	17

Results relate only to the specimen tested, in as received condition unless otherwise noted

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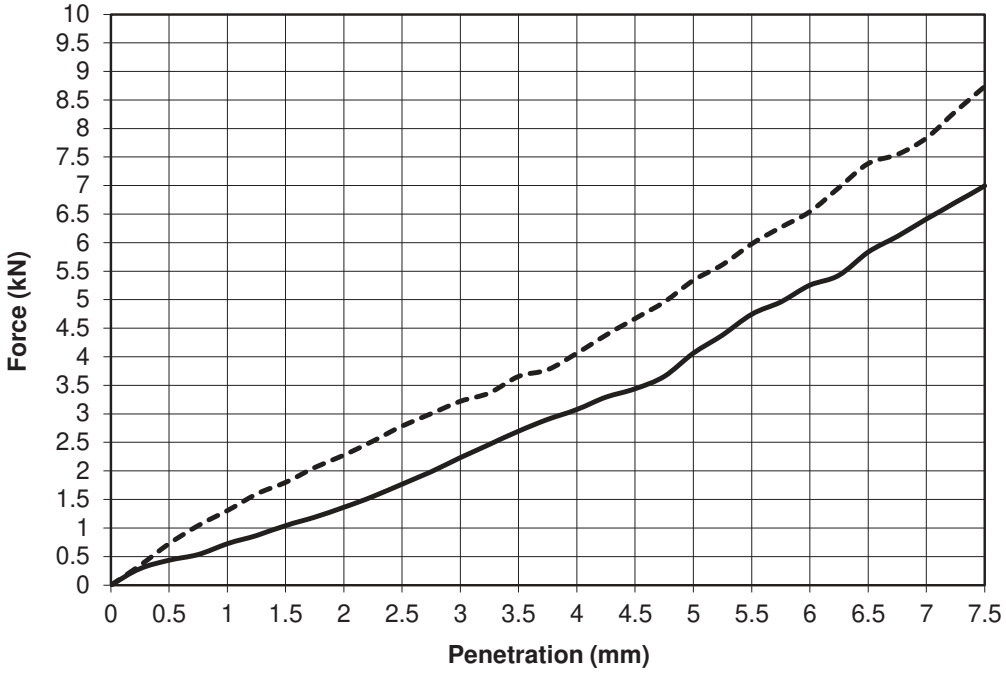
IGSL Ltd Materials Laboratory Unit J5,M7 Business Park Naas Co.Kildare 045 899324	TEST REPORT Determination of California Bearing Ratio (CBR) Tested in accordance with BS1377:Part 4:1990, clause 7	ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R145773	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	21/02/23
BH/TP No.*	TP12	Sample No.*	AA195481 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7563



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime/ 7 Days soaked		
Moisture Content (%):	14	Bulk Density (Mg/m^3):	2.13
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.86
% Material >20mm:	6.4		
Method of compaction:	Static Compaction Method 2		

Test Result	**Top**	**Base**
CBR %	**20.4**	**26.7**
Moisture Content %	14	14

Results relate only to the specimen tested, in as received condition unless otherwise noted

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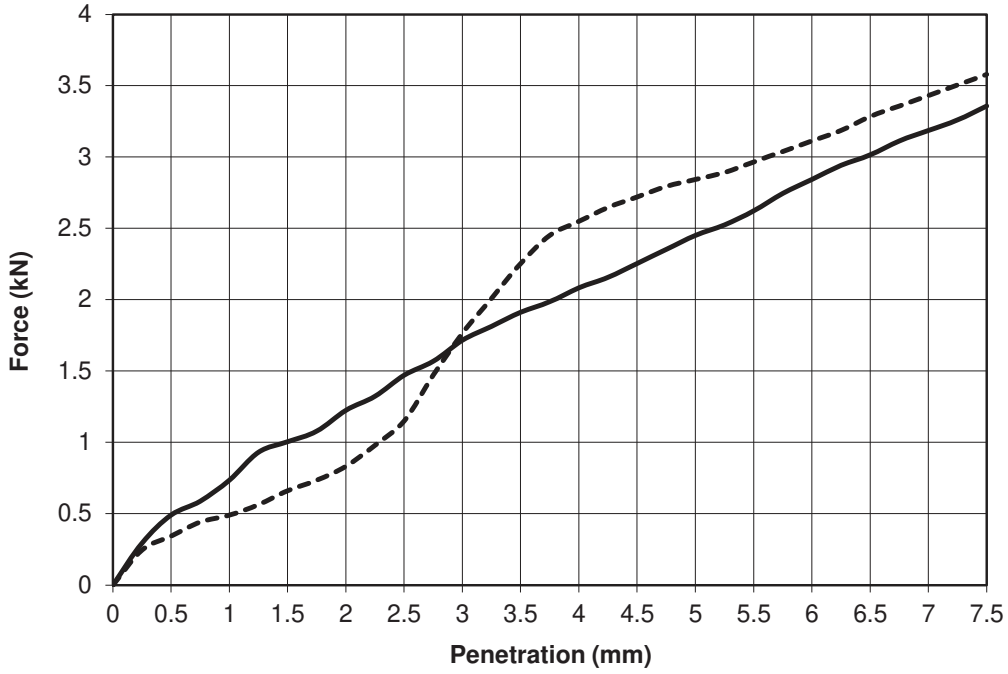
IGSL Ltd Materials Laboratory Unit J5,M7 Business Park Naas Co.Kildare 045 899324	TEST REPORT Determination of California Bearing Ratio (CBR) Tested in accordance with BS1377:Part 4:1990, clause 7	ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	R142668	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	21/02/23
BH/TP No.*	TP12	Sample No.*	AA195481 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7563



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	2% Lime/ 3 Days soaked		
Moisture Content (%):	18	Bulk Density (Mg/m^3):	2.07
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.76
% Material >20mm:	6.4		
Method of compaction:	Static Compaction Method 2		

Test Result	**Top**	**Base**
CBR %	**12**	**14**
Moisture Content %	19	16

Results relate only to the specimen tested, in as received condition unless otherwise noted

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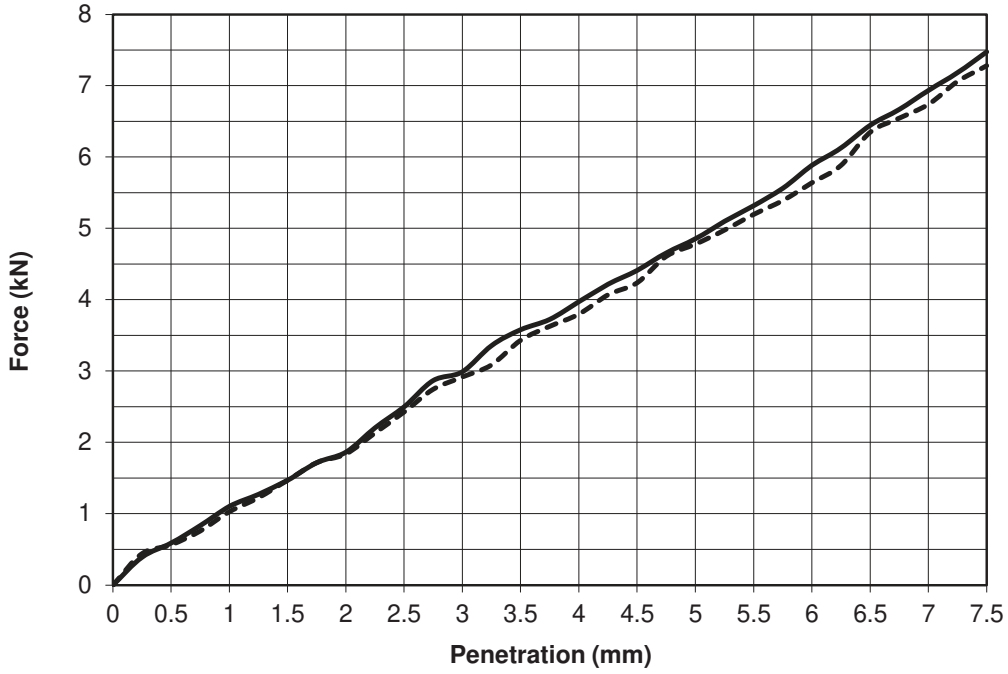
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142666	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	13/02/23
BH/TP No.*	TP12	Sample No.*	AA195481 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7563



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	2% Lime /5 Days Soaked		
Moisture Content (%):	15	Bulk Density (Mg/m^3):	2.40
Surcharge (kg):	4	Dry Density (Mg/m^3):	0.80
% Material >20mm:	6.4		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**24**	**24**
Moisture Content %	15	15

Results relate only to the specimen tested, in as received condition unless otherwise noted

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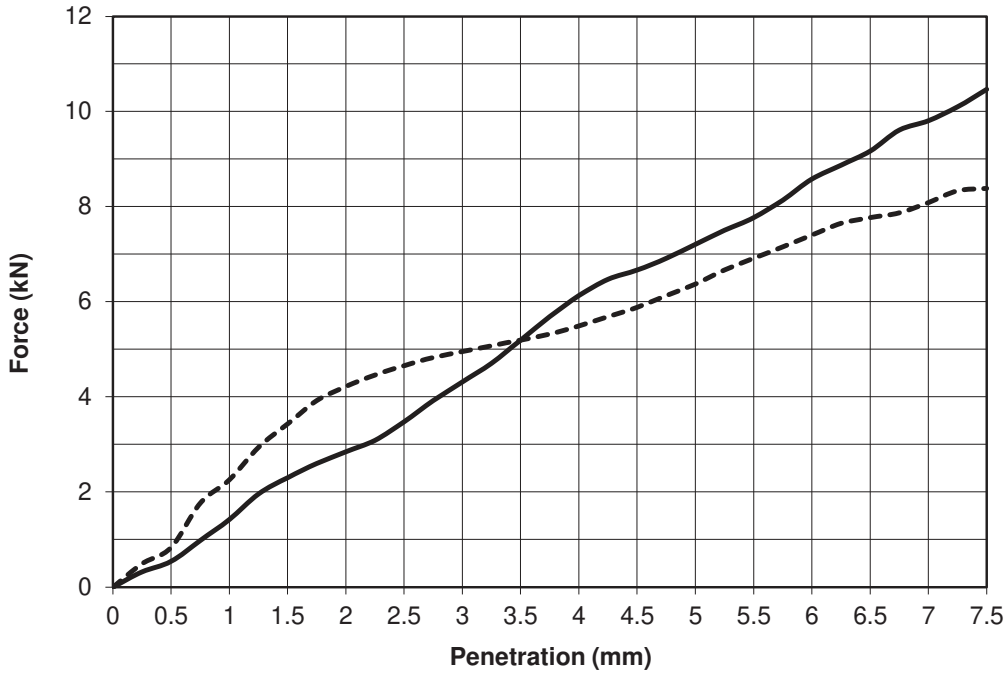
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143177	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	17/02/23
BH/TP No.*	TP12	Sample No.*	AA185481 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7563



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	2 % Lime/ 7 Days Soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.17
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.93
% Material >20mm:	6.4		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**36**	**35**
Moisture Content %	13	12

Results relate only to the specimen tested, in as received condition unless otherwise noted

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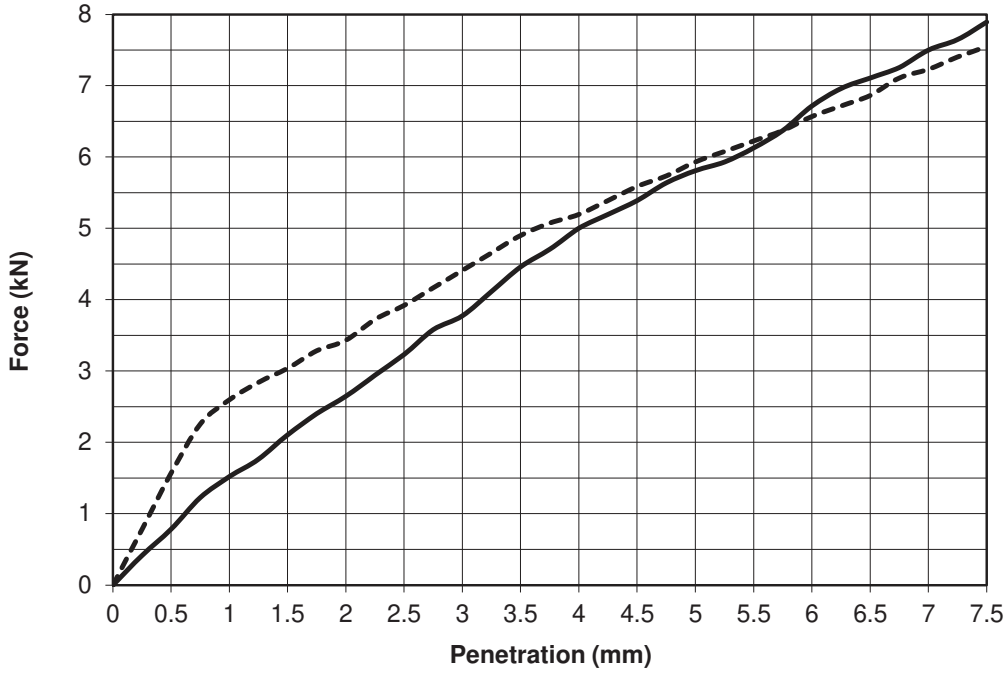
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142665	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	13/02/23
BH/TP No.*	TP12	Sample No.*	AA195481 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7563



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	2% Lime/Soaked 3 Days		
Moisture Content (%):	14	Bulk Density (Mg/m^3):	2.17
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.89
% Material >20mm:	6.4		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**29**	**30**
Moisture Content %	15	15

Results relate only to the specimen tested, in as received condition unless otherwise noted

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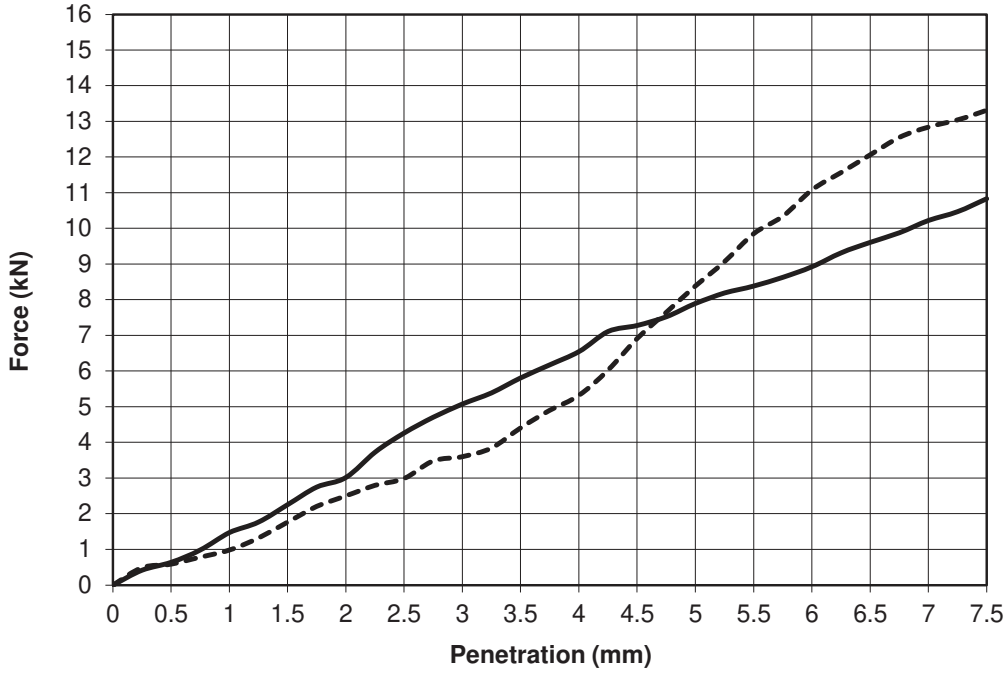
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142670	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	01/02/23
BH/TP No.*	TP12	Sample No.*	AA195481 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7563



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	2% Lime /5 Days Soaked		
Moisture Content (%):	16	Bulk Density (Mg/m^3):	2.15
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.86
% Material >20mm:	6.4		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**40**	**42**
Moisture Content %	16	16

Results relate only to the specimen tested, in as received condition unless otherwise noted

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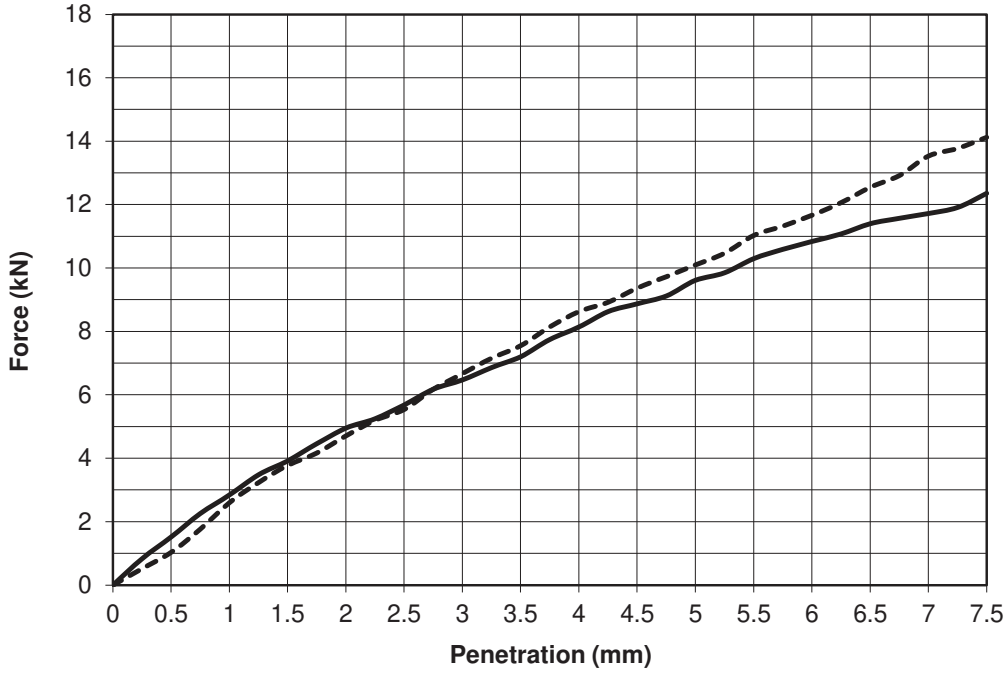
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143178	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	17/02/23
BH/TP No.*	TP12	Sample No.*	AA185481 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7563



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	3% Lime/ 7 Days Soaked		
Moisture Content (%):	15	Bulk Density (Mg/m^3):	2.17
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.90
% Material >20mm:	14		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**48**	**51**
Moisture Content %	15	14

Results relate only to the specimen tested, in as received condition unless otherwise noted

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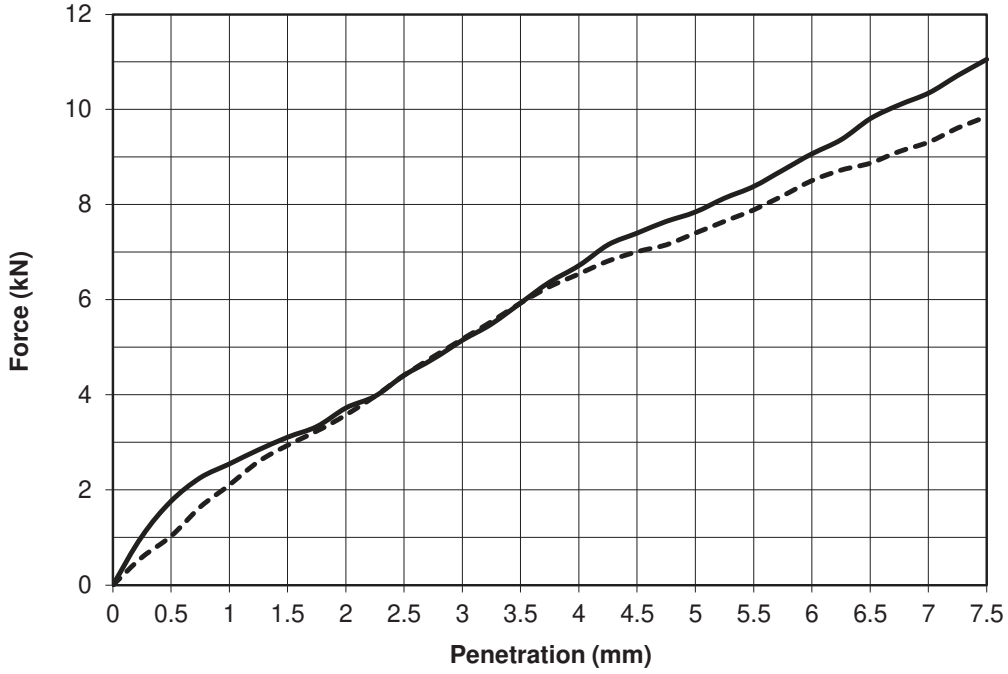
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142667	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	13/02/23
BH/TP No.*	TP12	Sample No.*	AA195481 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7563



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime 2% Cement 3 Days Soaked		
Moisture Content (%):	14	Bulk Density (Mg/m^3):	2.16
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.89
% Material >20mm:	6.4		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**39**	**37**
Moisture Content %	14	15

Results relate only to the specimen tested, in as received condition unless otherwise noted

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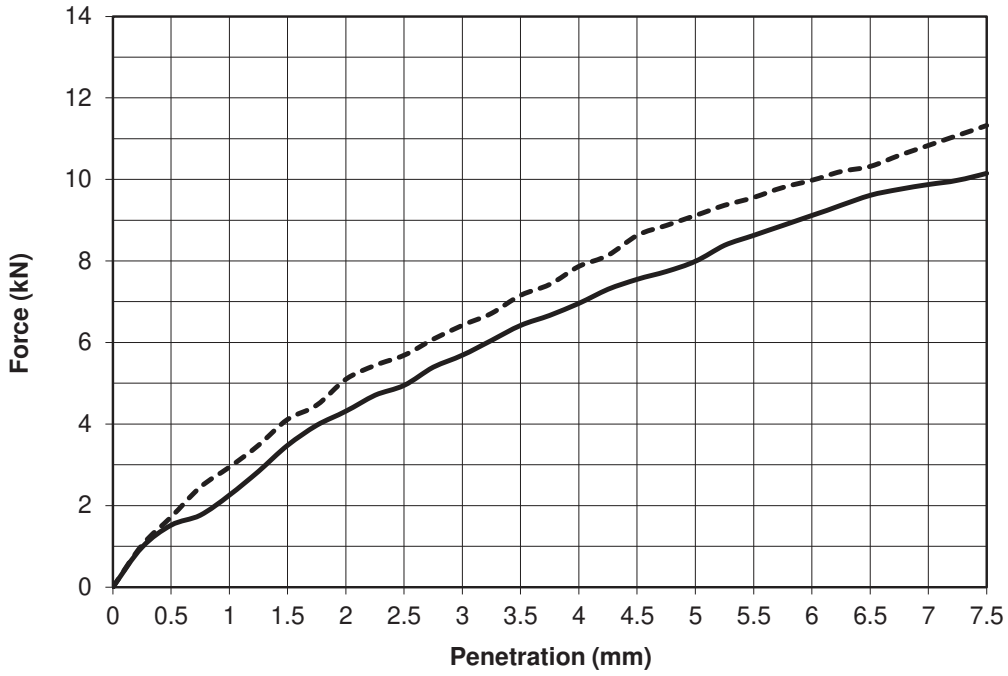
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143179	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	17/02/23
BH/TP No.*	TP12	Sample No.*	AA185481 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7563



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime 2% Cement/5 Days Soaked		
Moisture Content (%):	16	Bulk Density (Mg/m^3):	2.17
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.87
% Material >20mm:	14		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**40**	**46**
Moisture Content %	16	16

Results relate only to the specimen tested, in as received condition unless otherwise noted

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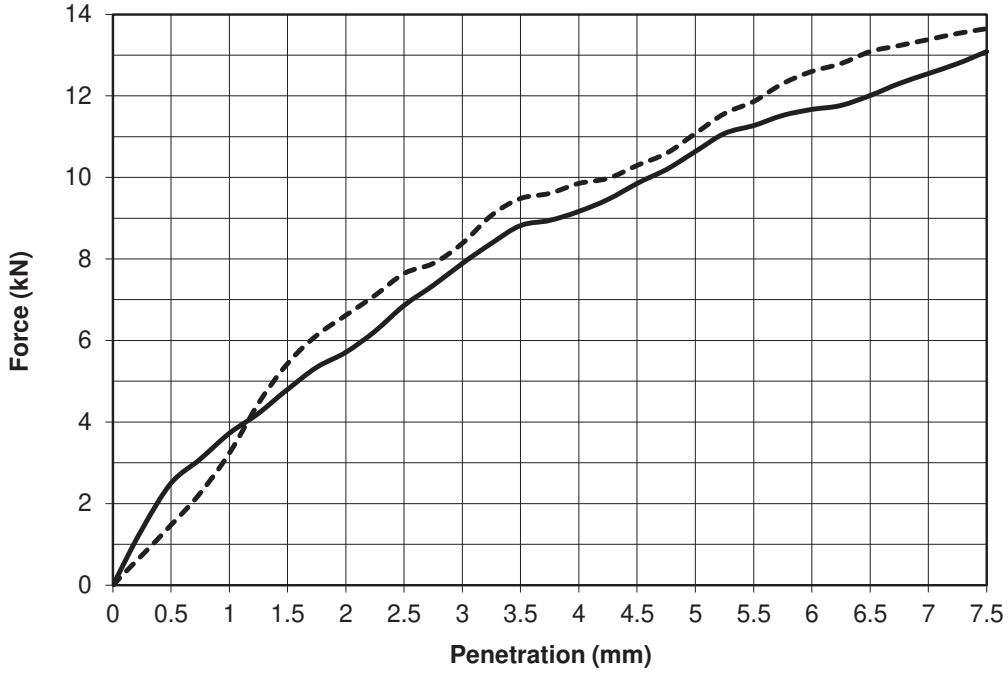
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142669	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	01/02/23
BH/TP No.*	TP12	Sample No.*	AA195481 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7563



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime 2% Cement/7 Days Soaked		
Moisture Content (%):	15	Bulk Density (Mg/m^3):	2.17
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.89
% Material >20mm:	6.4		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**53**	**58**
Moisture Content %	16	15

Results relate only to the specimen tested, in as received condition unless otherwise noted

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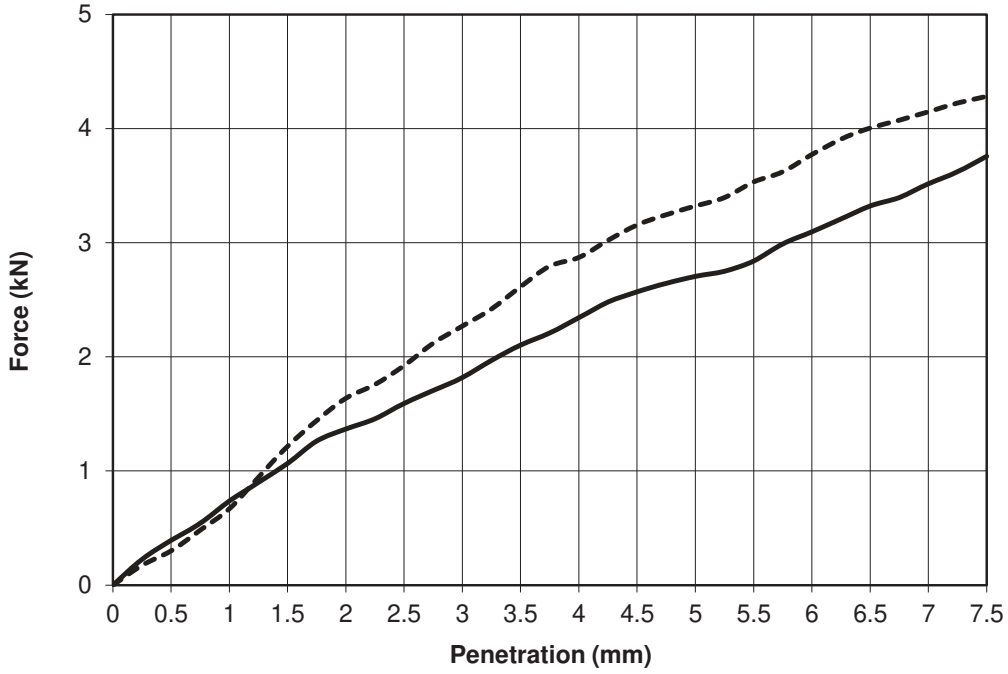
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R145763	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	18/02/23
BH/TP No.*	TP19	Sample No.*	AA185468 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7568



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1 % Lime/ 3 Days Soaked		
Moisture Content (%):	16	Bulk Density (Mg/m^3):	2.16
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.86
% Material >20mm:	9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**14**	**17**
Moisture Content %	16	16

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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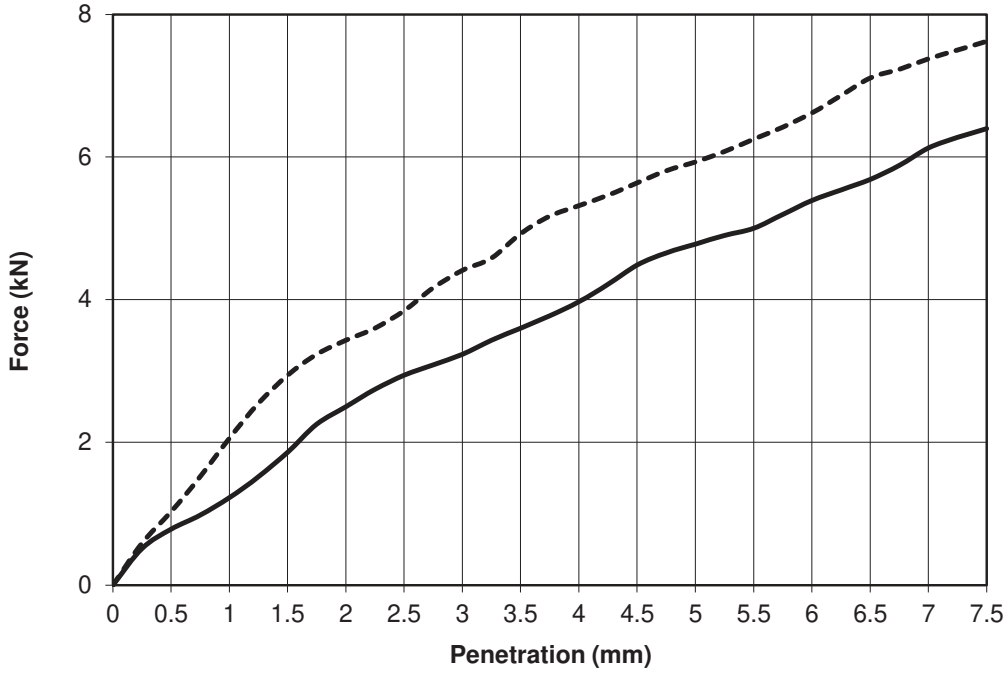
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143180	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	18/02/23
BH/TP No.*	TP19	Sample No.*	AA185468 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7568



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1 % Lime/ 5 Days Soaked		
Moisture Content (%):	16	Bulk Density (Mg/m^3):	2.18
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.88
% Material >20mm:	9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**24**	**30**
Moisture Content %	16	16

Results relate only to the specimen tested, in as received condition unless otherwise noted

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TEST REPORT
Determination of California Bearing Ratio (CBR)

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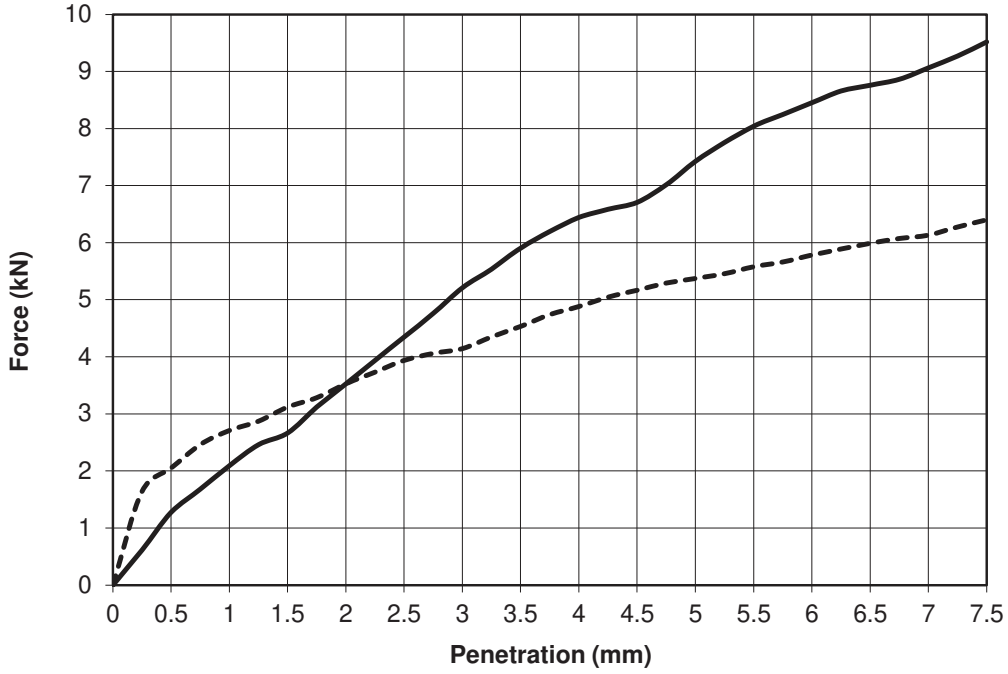
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R145764	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	24/02/23
BH/TP No.*	TP19	Sample No.*	AA185468 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7568



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1 % Lime/ 7 Days Soaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.18
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.94
% Material >20mm:	9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**37**	**30**
Moisture Content %	12	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

Opinions and interpretations are outside the scope of accreditation.

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J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

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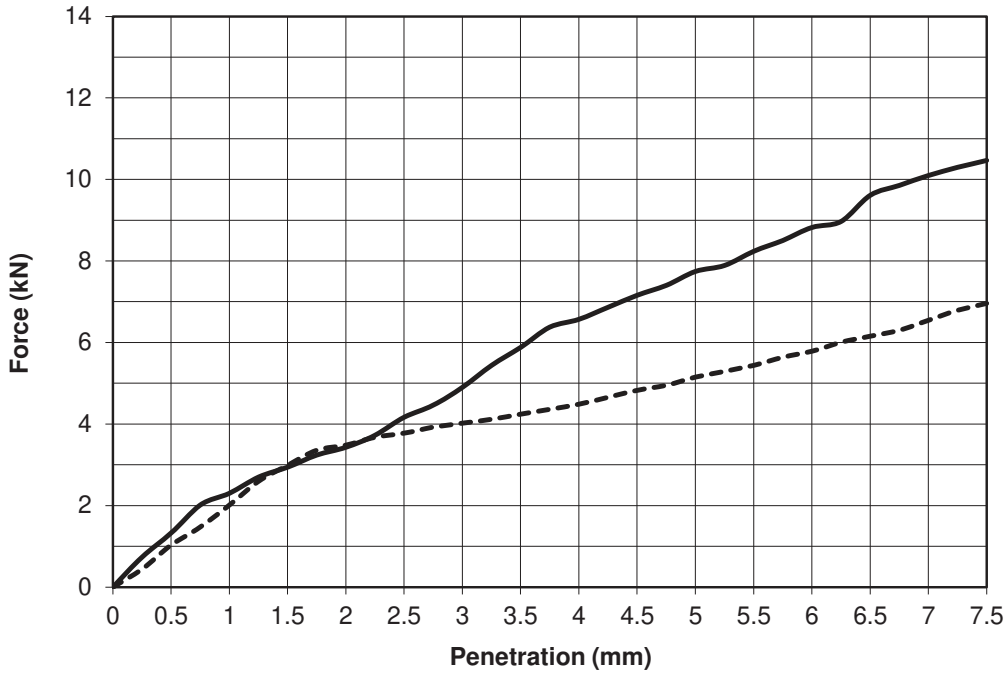
IGSL Ltd
Materials Laboratory
Unit J5,M7 Business Park
Naas Co.Kildare
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142672	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	01/02/23
BH/TP No.*	TP19	Sample No.*	AA185498 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7568



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	2 % Lime/3 Days Soaked		
Moisture Content (%):	14	Bulk Density (Mg/m^3):	2.20
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.93
% Material >20mm:	9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**39**	**29**
Moisture Content %	14	15

Results relate only to the specimen tested, in as received condition unless otherwise noted

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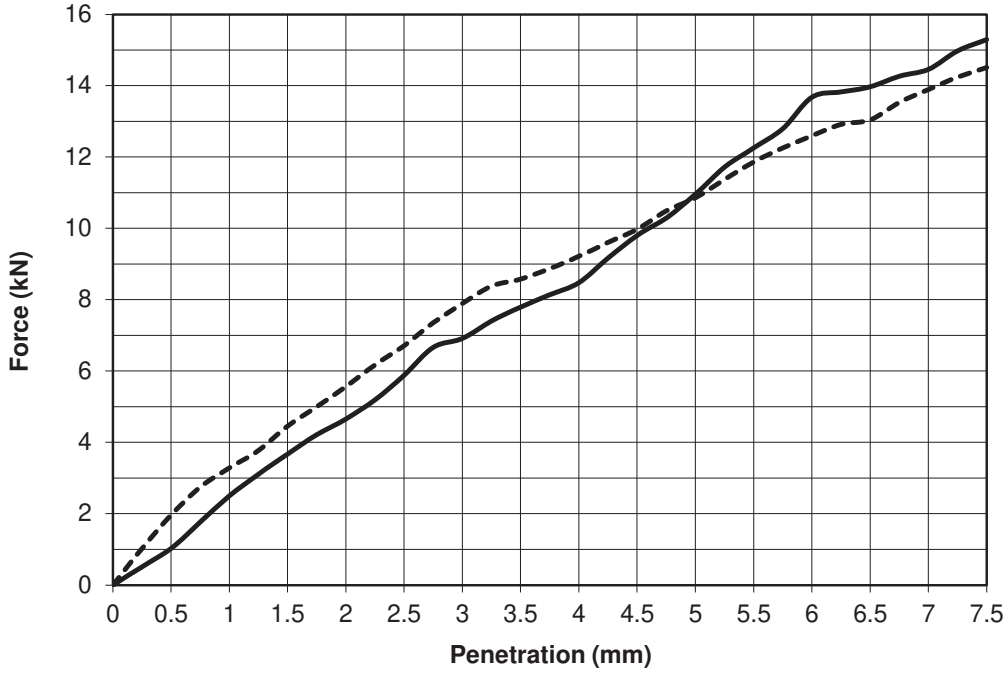
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142671	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	13/02/23
BH/TP No.*	TP19	Sample No.*	AA185498 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7568



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	2% Lime added 5 Days Soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.17
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.92
% Material >20mm:	9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**55**	**54**
Moisture Content %	13	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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TEST REPORT
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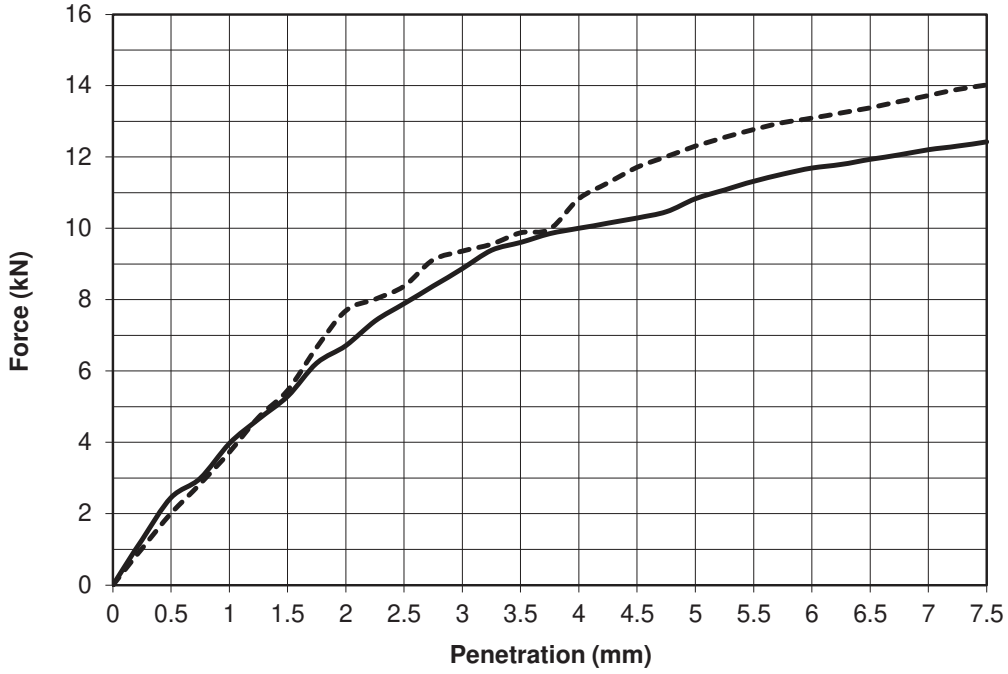
Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143181	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	16/02/23
BH/TP No.*	TP19	Sample No.*	AA185468 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7568



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	2 % Lime/ 7 Days Soaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.17
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.93
% Material >20mm:	9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**60**	**63**
Moisture Content %	12	12

Results relate only to the specimen tested, in as received condition unless otherwise noted

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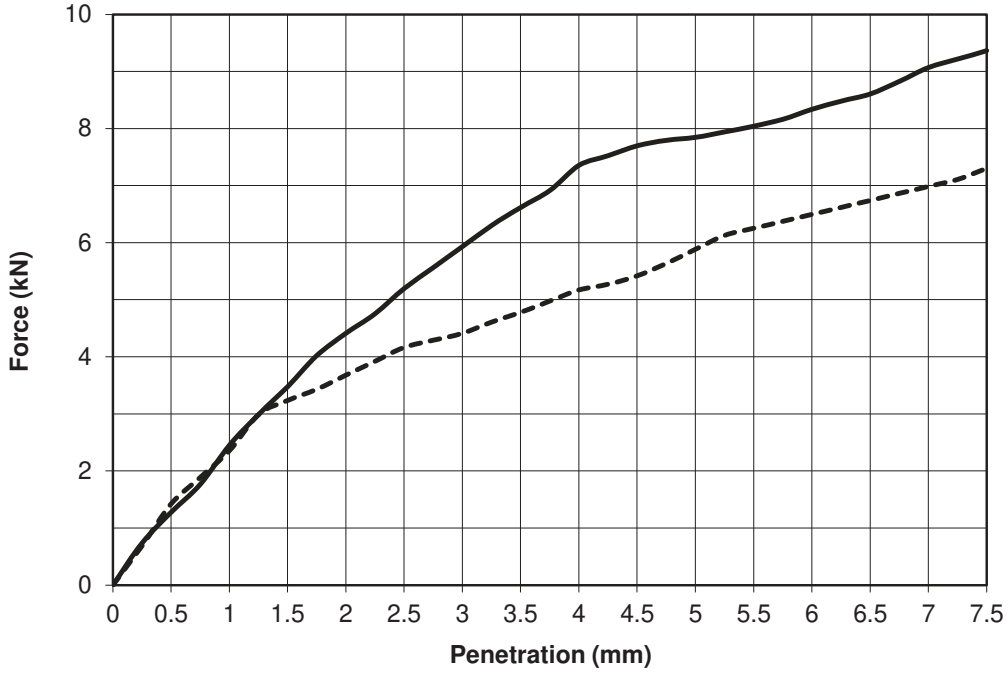
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143186	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	03/02/23
BH/TP No.*	TP19	Sample No.*	AA185468 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7568



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	3% Lime 3 Days Soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.09
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.84
% Material >20mm:	9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**39**	**32**
Moisture Content %	14	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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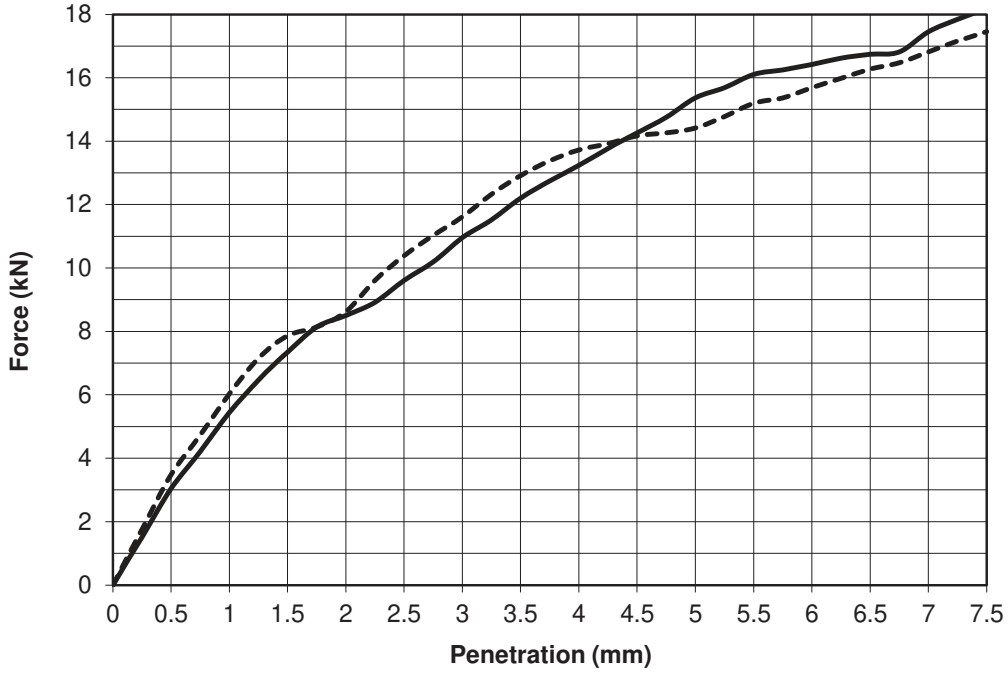
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143184	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	17/02/23
BH/TP No.*	TP19	Sample No.*	AA185468 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7568



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	3 % Lime /5 Days soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.20
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.95
% Material >20mm:	9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**77**	**79**
Moisture Content %	14	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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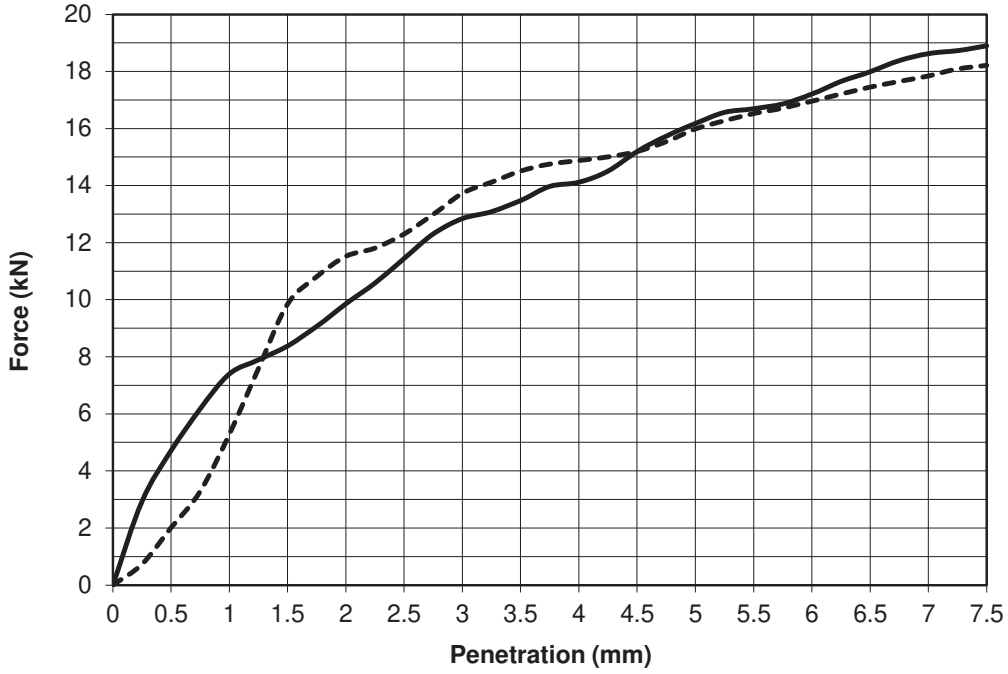
IGSL Ltd Materials Laboratory Unit J5,M7 Business Park Naas Co.Kildare 045 899324	TEST REPORT Determination of California Bearing Ratio (CBR) Tested in accordance with BS1377:Part 4:1990, clause 7	ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142673	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	01/02/23
BH/TP No.*	TP19	Sample No.*	AA185498 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7568



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	3 % Lime /7 Days soaked		
Moisture Content (%):	14	Bulk Density (Mg/m^3):	2.20
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.93
% Material >20mm:	9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**86**	**93**
Moisture Content %	15	14

Results relate only to the specimen tested, in as received condition unless otherwise noted

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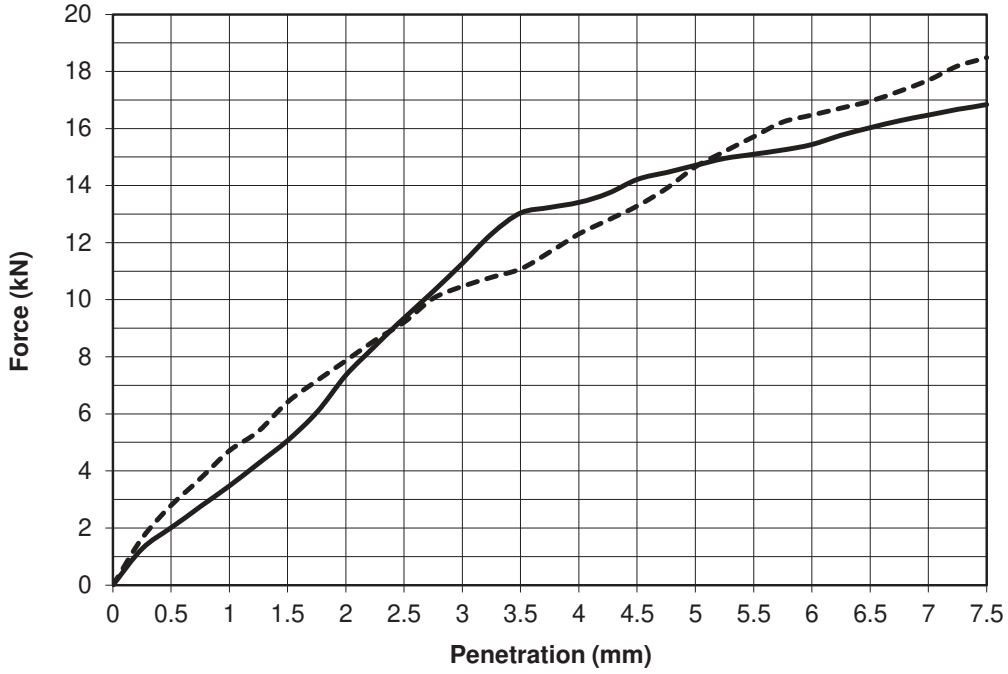
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142674	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	01/02/23
BH/TP No.*	TP19	Sample No.*	AA185498 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7568



Key: ———— Top ---------- Base

Description:	Mottle brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime /2% Cement 3 Days Soaked		
Moisture Content (%):	14	Bulk Density (Mg/m^3):	2.15
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.89
% Material >20mm:	9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**74**	**73**
Moisture Content %	14	14

Results relate only to the specimen tested, in as received condition unless otherwise noted

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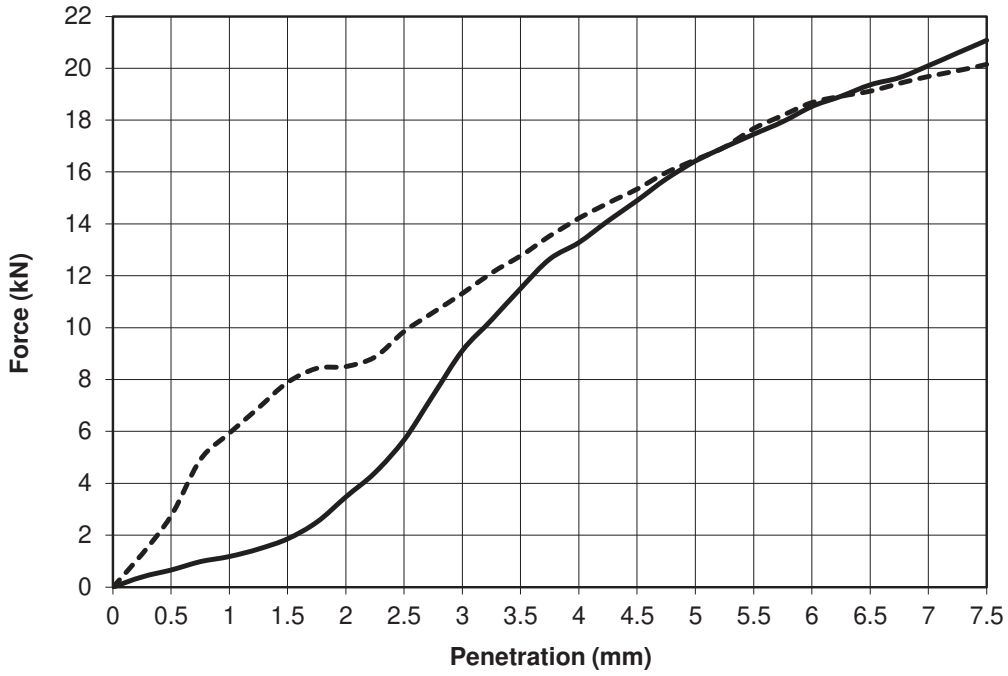
IGSL Ltd Materials Laboratory Unit J5,M7 Business Park Naas Co.Kildare 045 899324	TEST REPORT Determination of California Bearing Ratio (CBR) Tested in accordance with BS1377:Part 4:1990, clause 7	ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143185	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	17/02/23
BH/TP No.*	TP19	Sample No.*	AA185468 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7568



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime/2 Cement 5 Days Soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.18
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.94
% Material >20mm:	9		
Method of compaction:	Static Compaction Method 2		

Test Result	**Top**	**Base**
CBR %	**82**	**83**
Moisture Content %	13	12

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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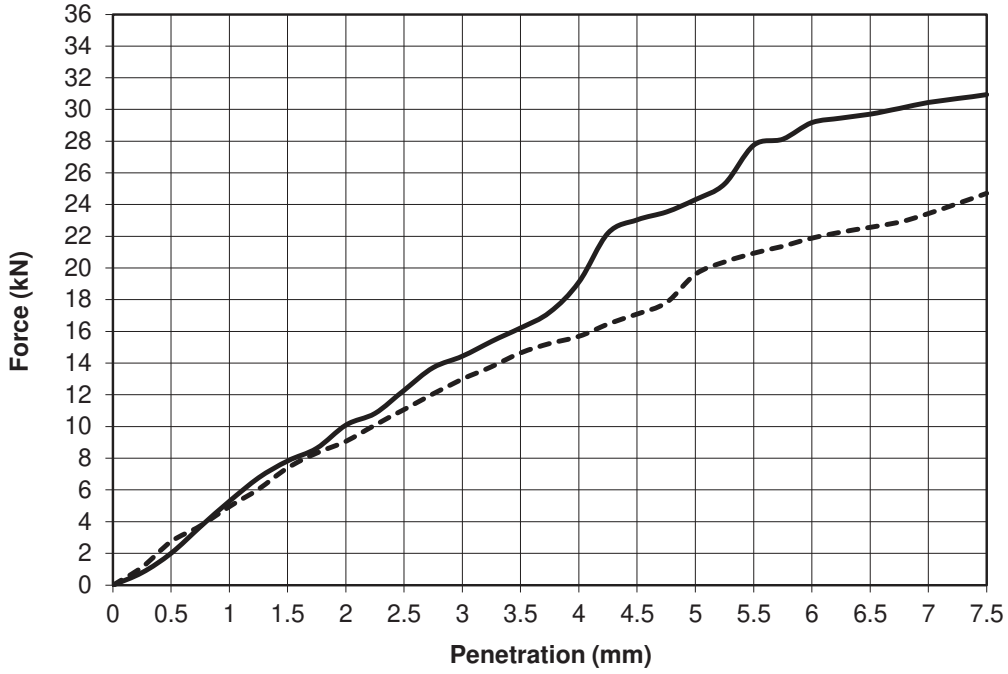
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143187	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	03/02/23
BH/TP No.*	TP19	Sample No.*	AA185468 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7568



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime/2% Cement /7 Days soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.18
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.93
% Material >20mm:	9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**122**	**98**
Moisture Content %	13	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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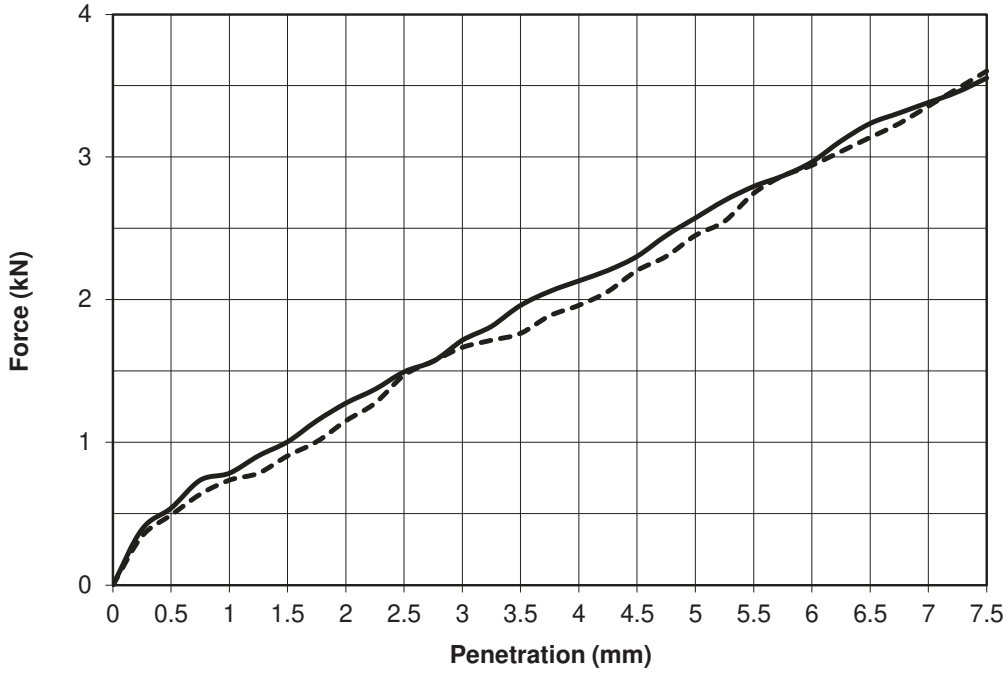
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R145765	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	18/02/23
BH/TP No.*	TP26	Sample No.*	AA181975 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7575



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime /3 Days Soaked		
Moisture Content (%):	16	Bulk Density (Mg/m^3):	2.16
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.87
% Material >20mm:	7.6		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**13**	**12**
Moisture Content %	16	16

Results relate only to the specimen tested, in as received condition unless otherwise noted

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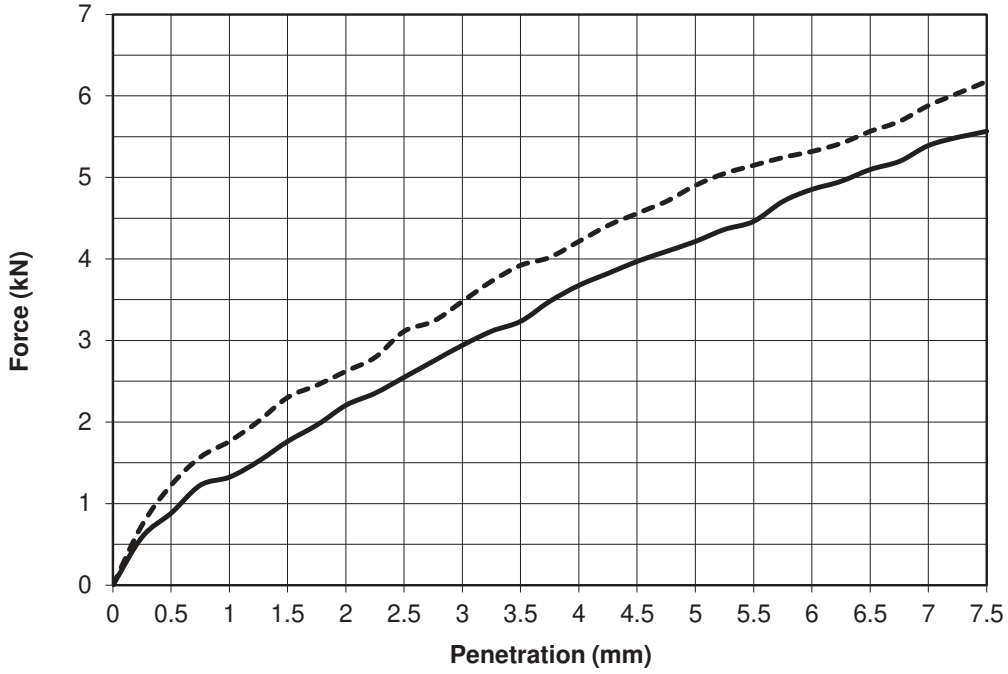
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143182	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	18/02/23
BH/TP No.*	TP26	Sample No.*	AA181975 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7575



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime /5 Days Soaked		
Moisture Content (%):	17	Bulk Density (Mg/m^3):	2.17
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.86
% Material >20mm:	7.6		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**21**	**25**
Moisture Content %	16	17

Results relate only to the specimen tested, in as received condition unless otherwise noted

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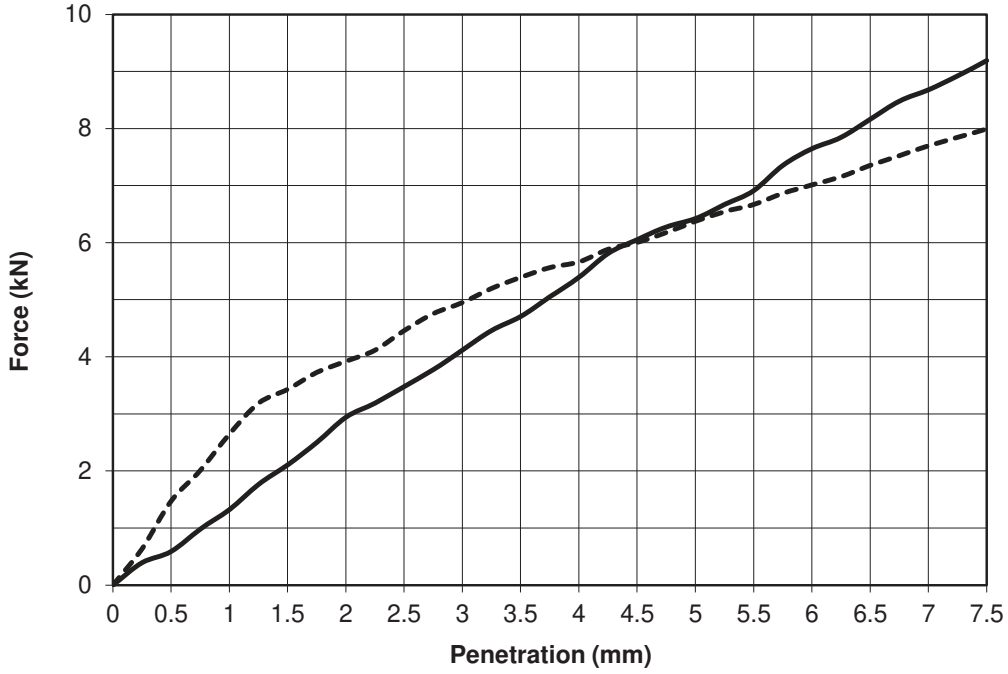
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142676	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	13/02/23
BH/TP No.*	TP26	Sample No.*	AA181975 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7575



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1 % Lime /7 Day Soaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.17
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.93
% Material >20mm:	7.6		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**32**	**34**
Moisture Content %	13	12

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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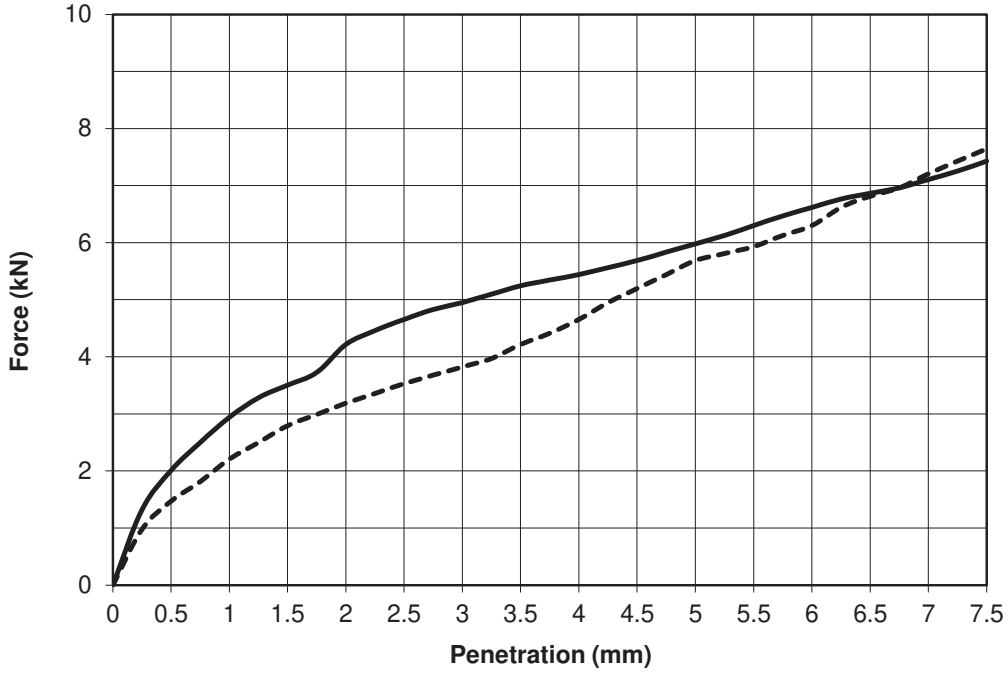
Report No.	R143183	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	18/02/23
BH/TP No.*	TP26	Sample No.*	AA181975 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7575



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	2% Lime/ 3 Days Soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.18
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.94
% Material >20mm:	7.6		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**35**	**28**
Moisture Content %	12	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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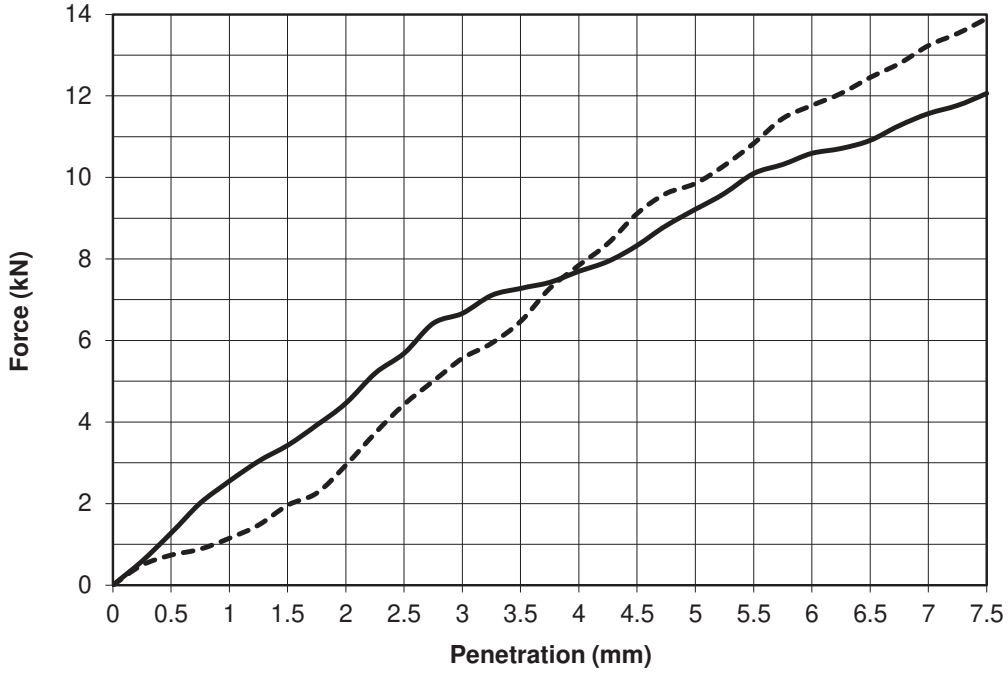
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142678	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	01/02/23
BH/TP No.*	TP26	Sample No.*	AA181975 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7575



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	2 % Lime/5 Day Soaked		
Moisture Content (%):	14	Bulk Density (Mg/m^3):	2.24
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.97
% Material >20mm:	7.6		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**46**	**49**
Moisture Content %	13	14

Results relate only to the specimen tested, in as received condition unless otherwise noted

Opinions and interpretations are outside the scope of accreditation.

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J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

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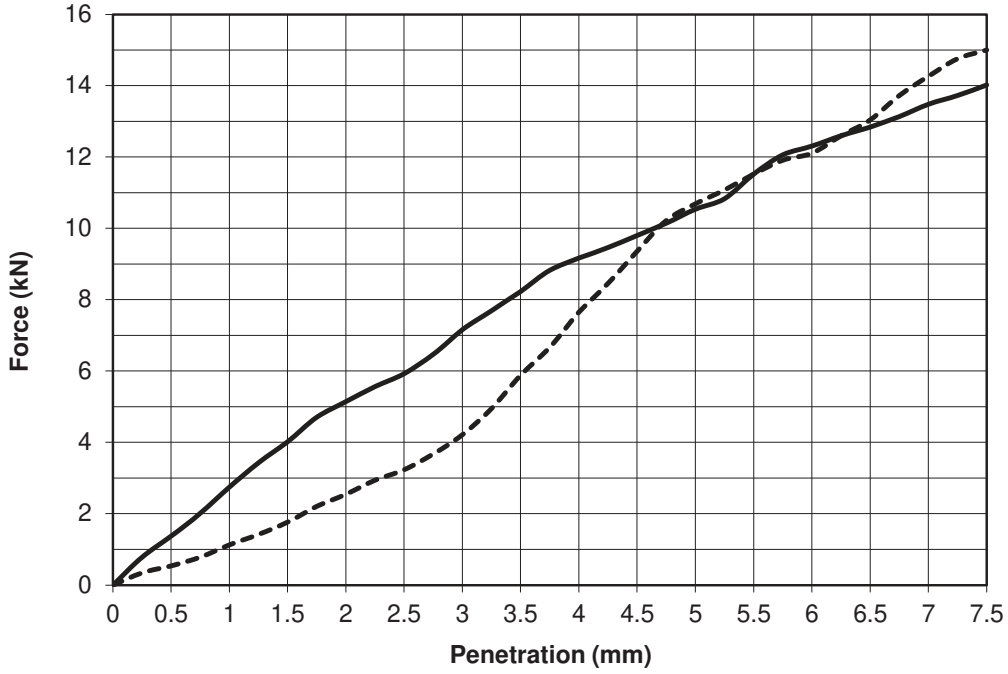
IGSL Ltd
Materials Laboratory
Unit J5,M7 Business Park
Naas Co.Kildare
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142679	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	01/02/23
BH/TP No.*	TP26	Sample No.*	AA181975 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7575



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	2% Lime/7 Days Soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.16
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.91
% Material >20mm:	7.6		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**53**	**54**
Moisture Content %	13	14

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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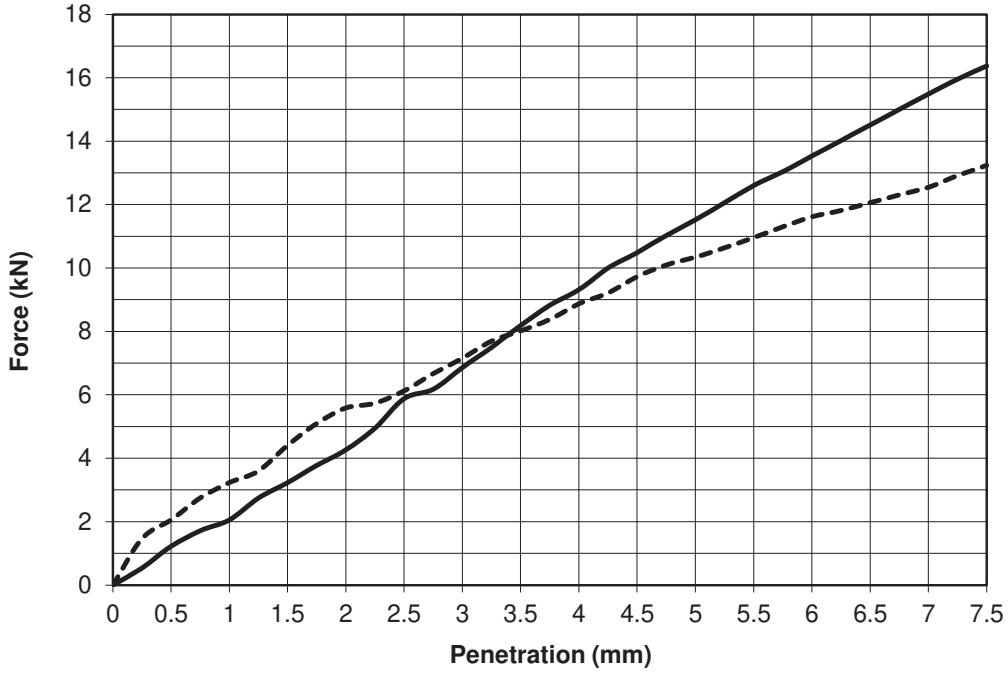
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142677	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	13/02/23
BH/TP No.*	TP26	Sample No.*	AA181975 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7575



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	3 % Lime /3 Day Soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.17
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.90
% Material >20mm:	7.6		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**58**	**52**
Moisture Content %	13	12

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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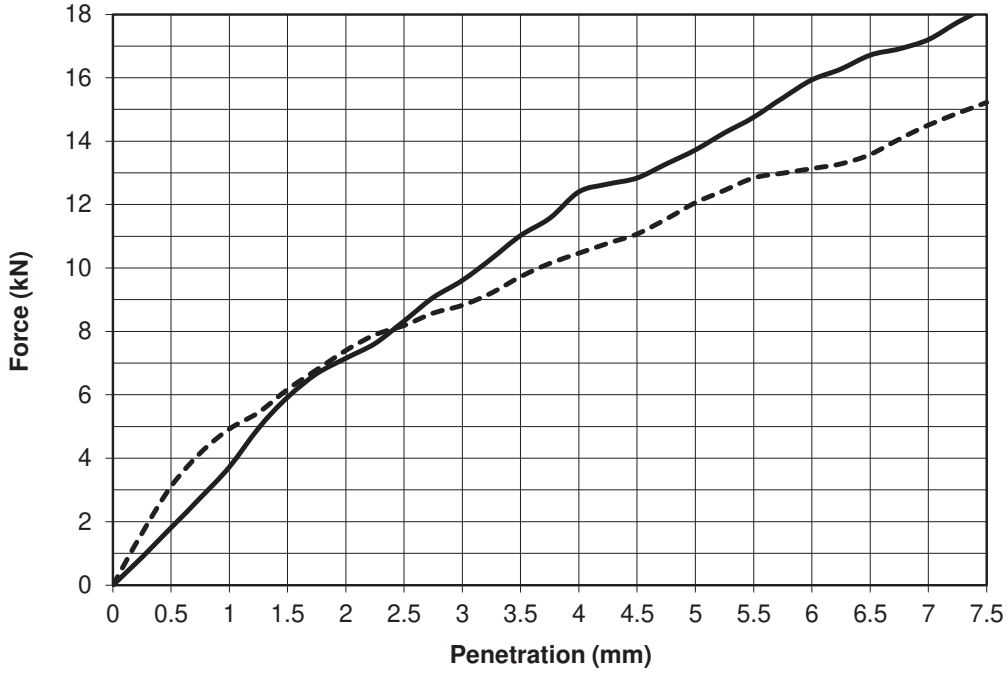
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143189	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	17/02/23
BH/TP No.*	TP26	Sample No.*	AA181975 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7575



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	3 % Lime / 5 Days soaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.18
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.95
% Material >20mm:	7.6		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**69**	**62**
Moisture Content %	12	12

Results relate only to the specimen tested, in as received condition unless otherwise noted

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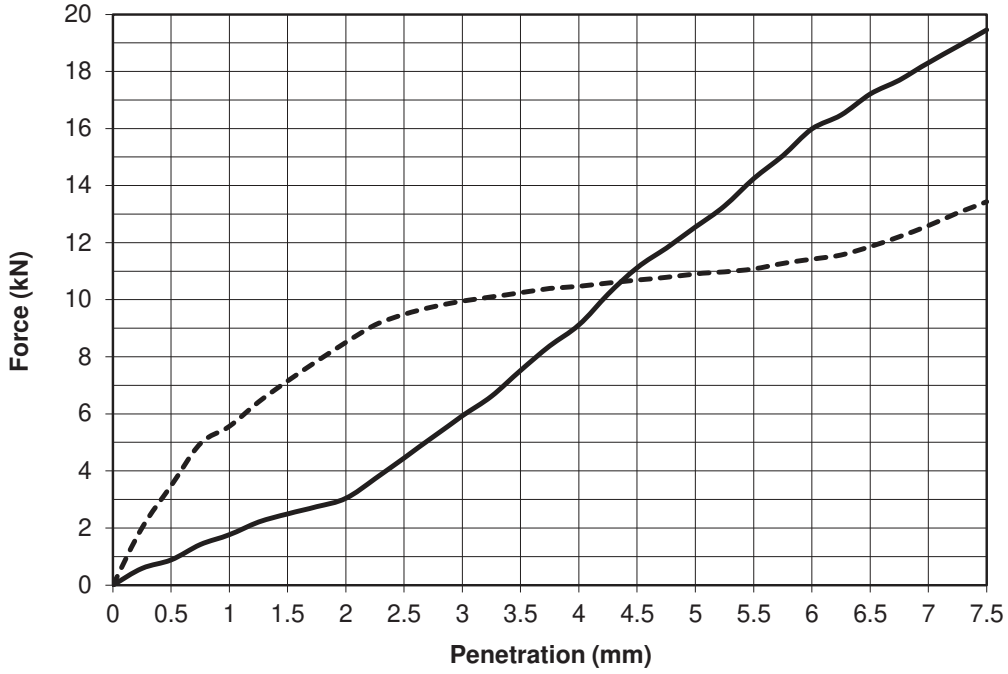
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143191	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	17/02/23
BH/TP No.*	TP26	Sample No.*	AA181975 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7575



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	3% Lime/7 Days Soaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.17
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.93
% Material >20mm:	7.6		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**63**	**72**
Moisture Content %	12	12

Results relate only to the specimen tested, in as received condition unless otherwise noted

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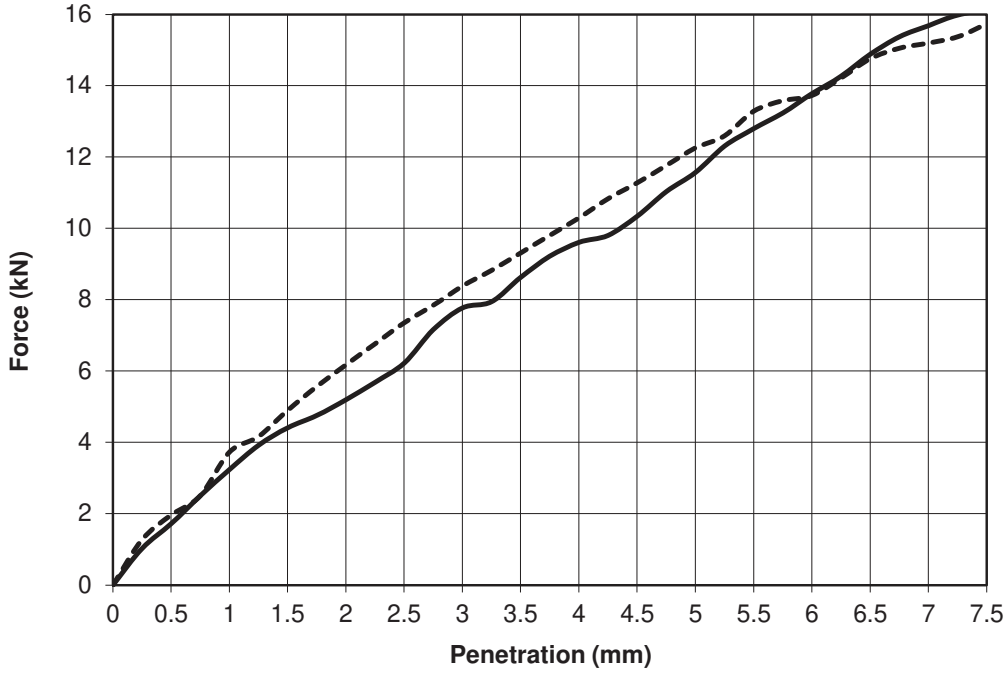
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142675	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	13/02/23
BH/TP No.*	TP26	Sample No.*	AA181975 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7575



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime/2% Cement /3 Days Soaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.17
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.93
% Material >20mm:	7.6		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**58**	**61**
Moisture Content %	13	12

Results relate only to the specimen tested, in as received condition unless otherwise noted

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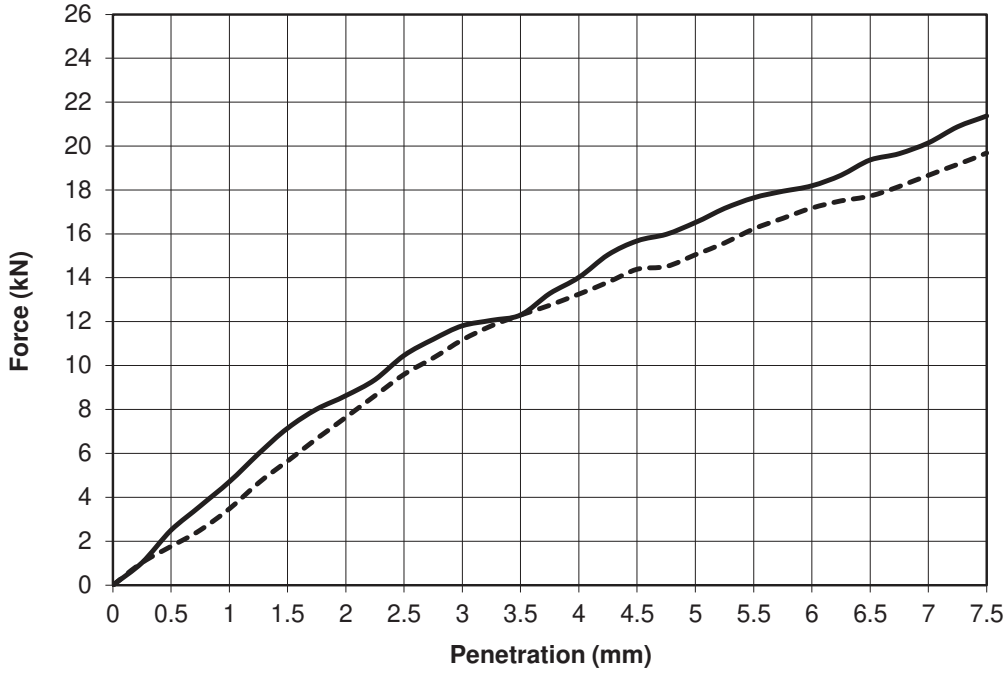
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142680	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	01/02/23
BH/TP No.*	TP26	Sample No.*	AA181975 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7575



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime/2% Cement/ 5 Days Soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.16
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.90
% Material >20mm:	7.6		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**83**	**75**
Moisture Content %	13	14

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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TEST REPORT
Determination of California Bearing Ratio (CBR)

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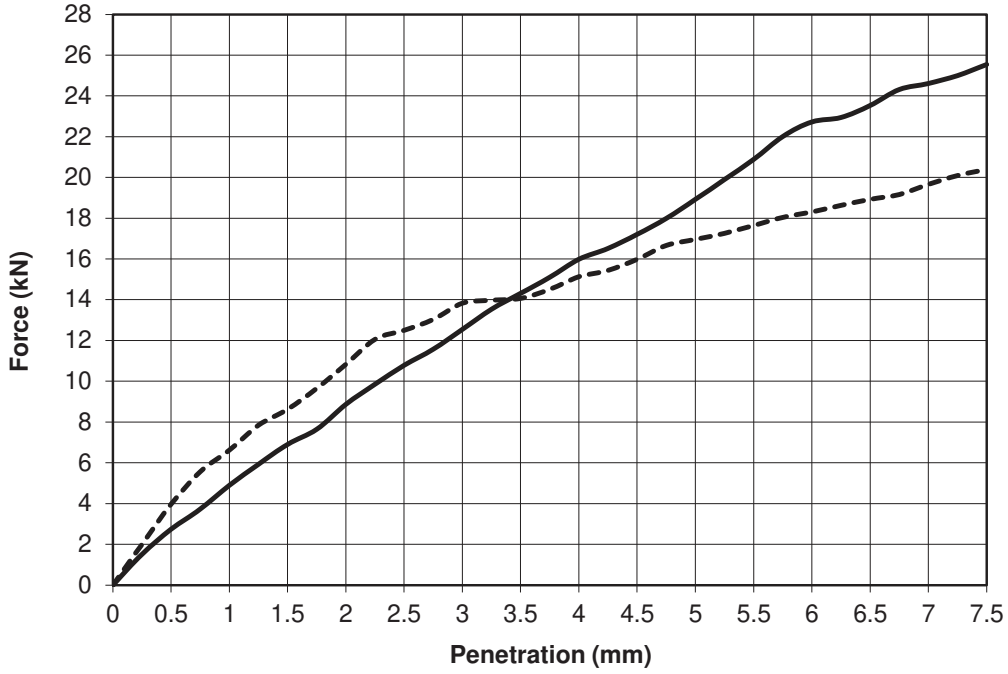
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143190	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	17/02/23
BH/TP No.*	TP26	Sample No.*	AA181975 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7575



Key: ———— Top ---------- Base

Description:	Mottled brown slightly sandy slightly gravelly SILT/CLAY		
Initial Condition:	1% Lime/2% Cement 7 Days Soaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.18
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.94
% Material >20mm:	7.6		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**95**	**94**
Moisture Content %	12	12

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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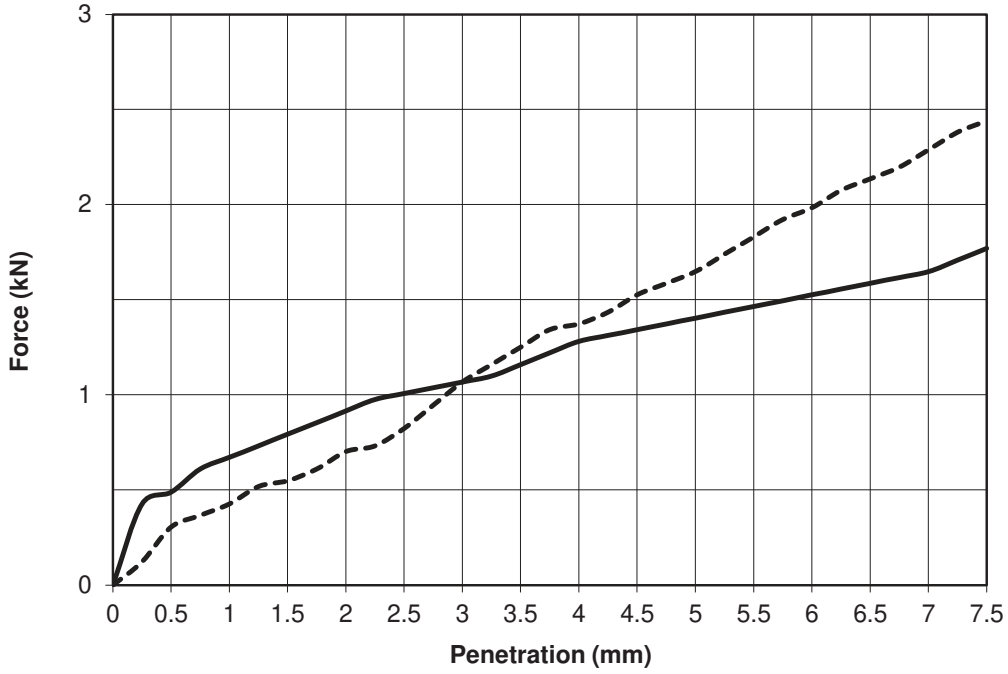
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R145766	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	18/02/23
BH/TP No.*	TP31	Sample No.*	AA181992 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7578



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime /3 Days soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.25
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.99
% Material >20mm:	6.9		
Method of compaction:	Static Compaction Method 2		

Test Result	**Top**	**Base**
CBR %	**7.6**	**8.3**
Moisture Content %	13	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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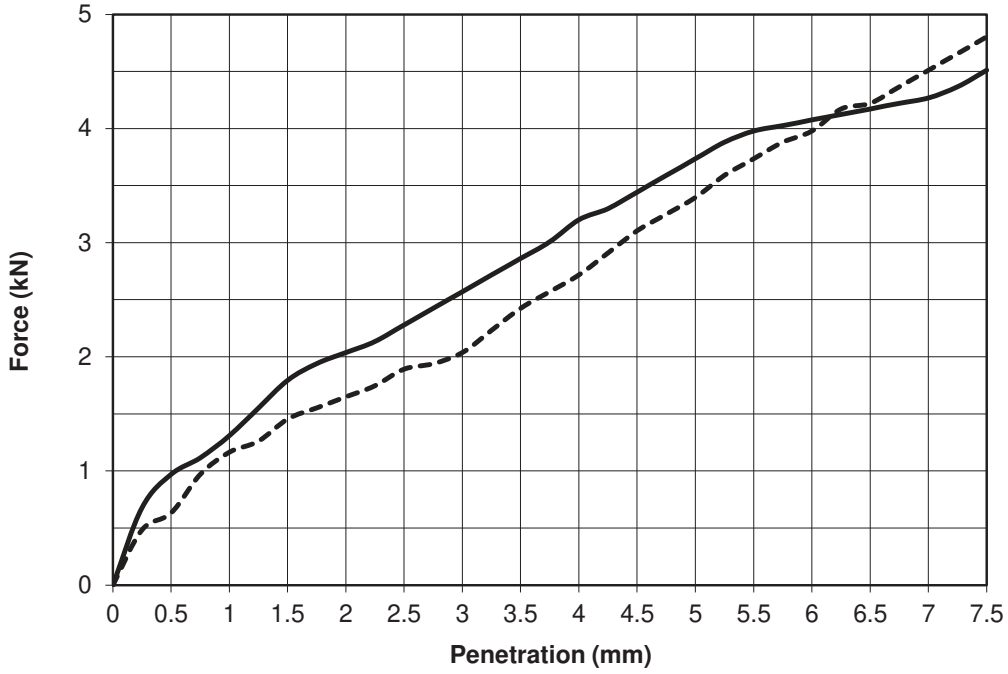
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R145767	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	18/02/23
BH/TP No.*	TP31	Sample No.*	AA181992 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7578



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime /5 Days soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.18
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.93
% Material >20mm:	6.9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**19**	**17**
Moisture Content %	13	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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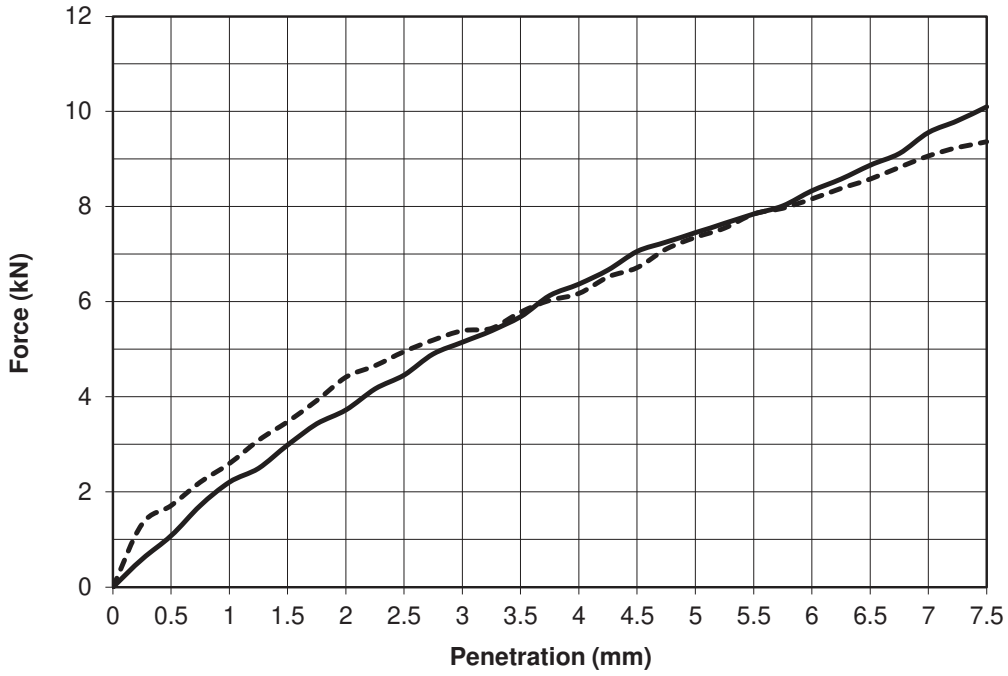
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R14319	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	18/02/23
BH/TP No.*	TP31	Sample No.*	AA181992 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7578



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime /7 Days soaked		
Moisture Content (%):	14	Bulk Density (Mg/m^3):	2.17
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.90
% Material >20mm:	6.9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**37**	**37**
Moisture Content %	14	14

Results relate only to the specimen tested, in as received condition unless otherwise noted

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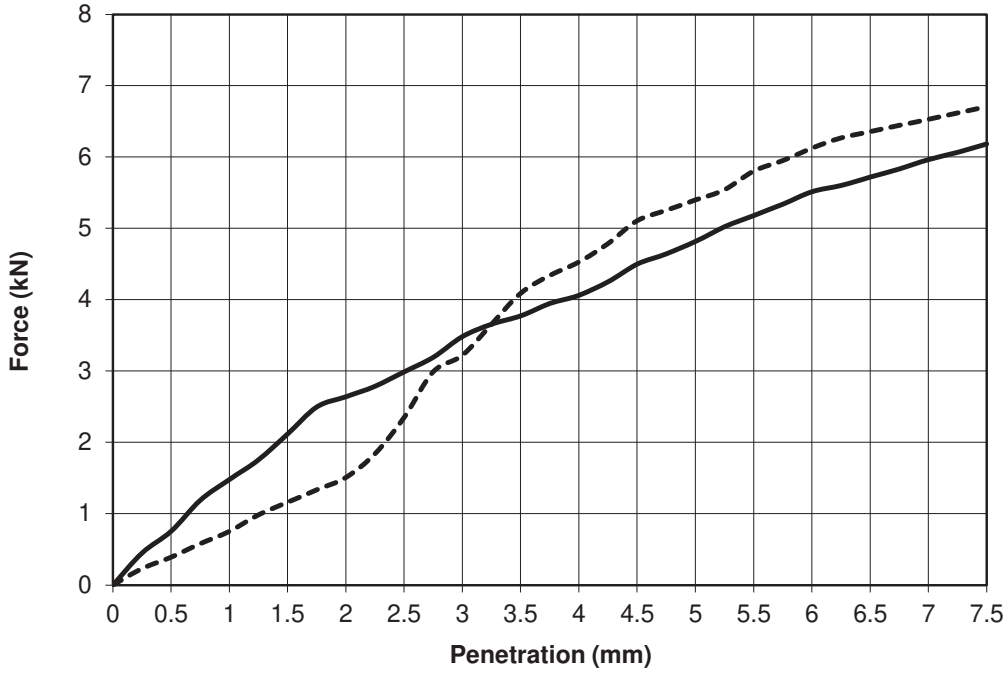
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142682	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	01/02/23
BH/TP No.*	TP31	Sample No.*	AA181992 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7578



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	2% Lime /3 Days Soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.16
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.92
% Material >20mm:	6.9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**41**	**46**
Moisture Content %	13	12

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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TEST REPORT
Determination of California Bearing Ratio (CBR)

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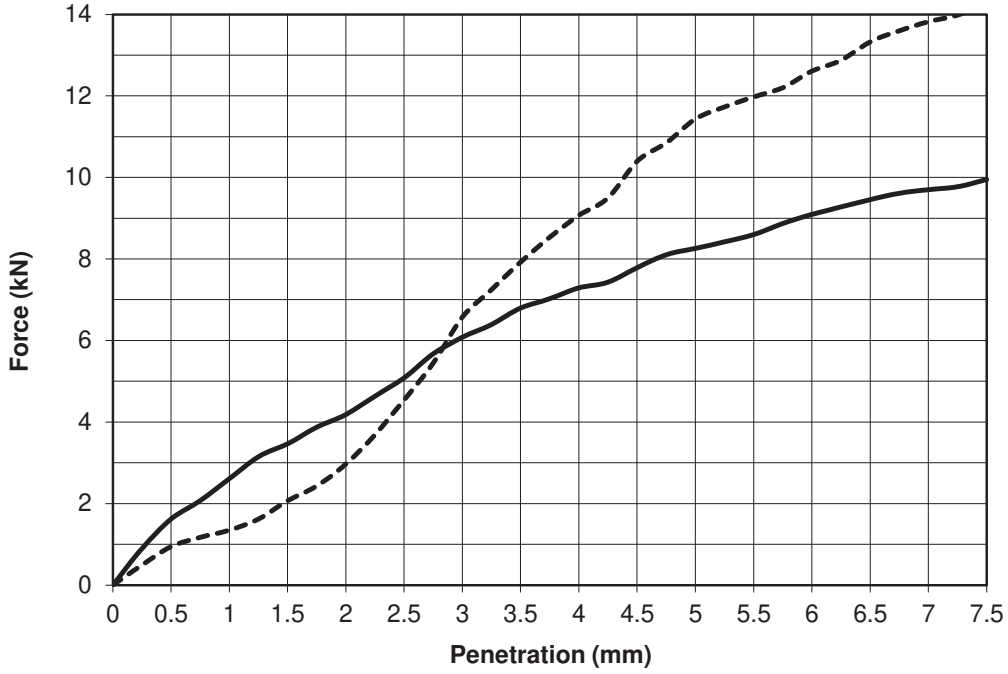
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142681	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	13/02/23
BH/TP No.*	TP31	Sample No.*	AA181992 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7578



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	2% Lime /5 Days Soaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.22
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.97
% Material >20mm:	6.9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**41**	**57**
Moisture Content %	12	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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TEST REPORT
Determination of California Bearing Ratio (CBR)

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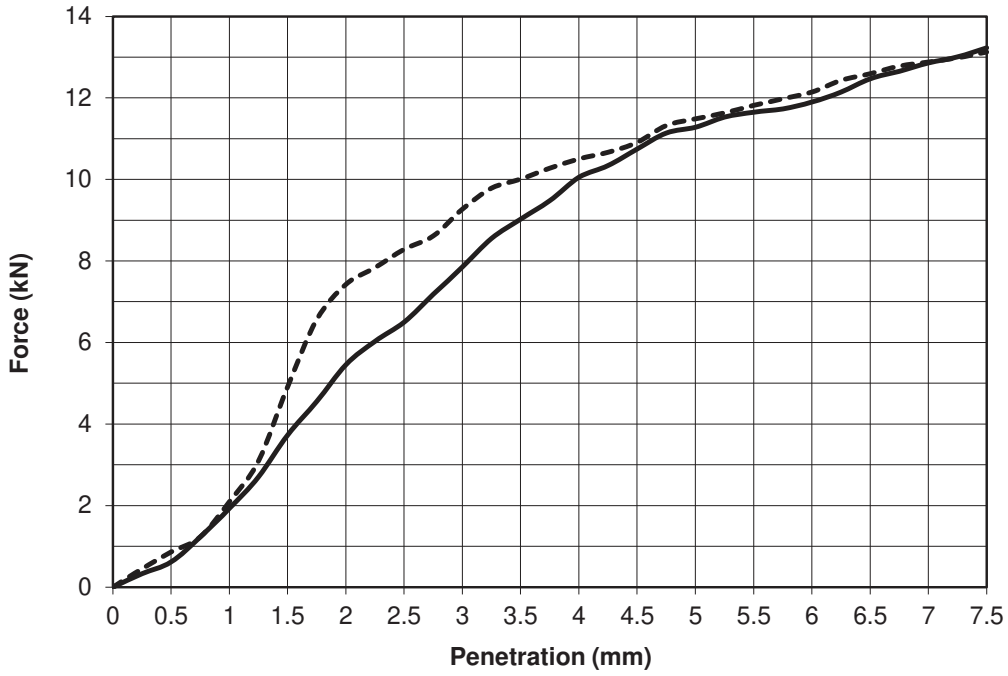
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142683	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	01/02/23
BH/TP No.*	TP31	Sample No.*	AA181992 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7578



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	2% Lime /7 Days Soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.18
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.93
% Material >20mm:	6.9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**63**	**57**
Moisture Content %	13	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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H Byrne (Laboratory Manager)

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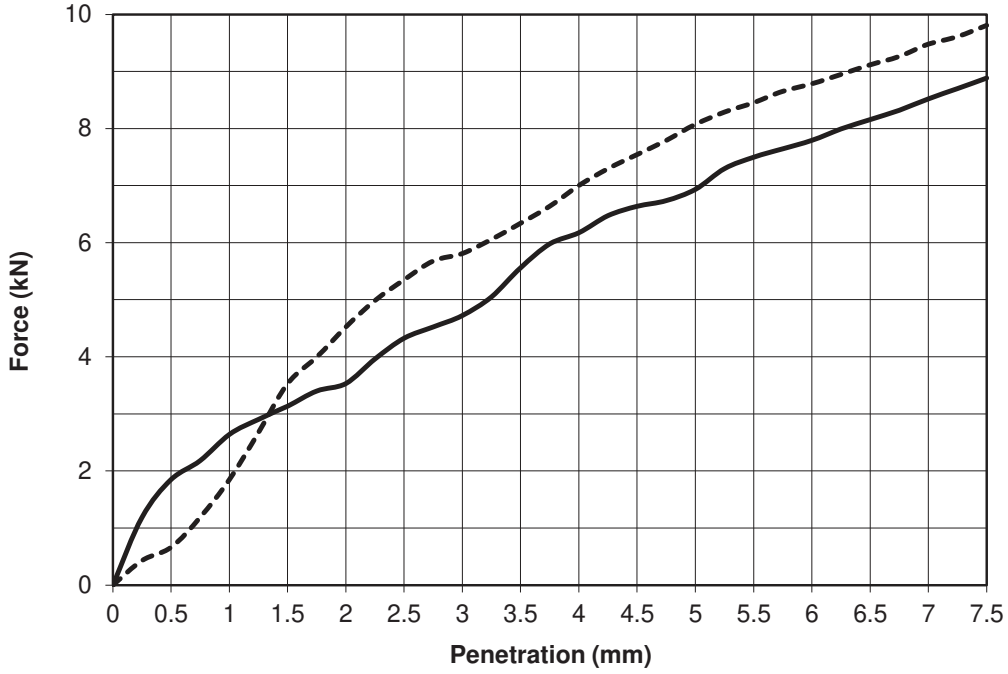
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143196	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	13/02/23
BH/TP No.*	TP31	Sample No.*	AA181992 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7578



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	3% Lime/ 3 Days Soaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.16
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.93
% Material >20mm:	6.9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**35**	**40**
Moisture Content %	12	12

Results relate only to the specimen tested, in as received condition unless otherwise noted

Opinions and interpretations are outside the scope of accreditation.

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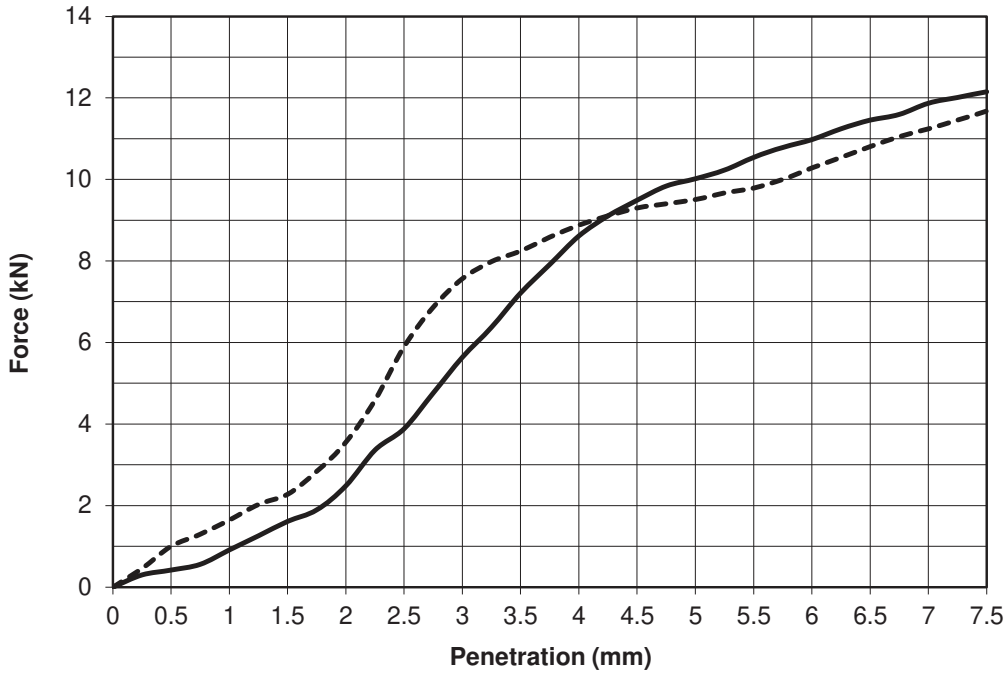
Materials Laboratory
Unit J5,M7 Business Park
Naas Co.Kildare
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142684	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	01/02/23
BH/TP No.*	TP31	Sample No.*	AA181992 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7578



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	3% Lime/ 5 Day Soaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.11
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.86
% Material >20mm:	6.9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**50**	**48**
Moisture Content %	13	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

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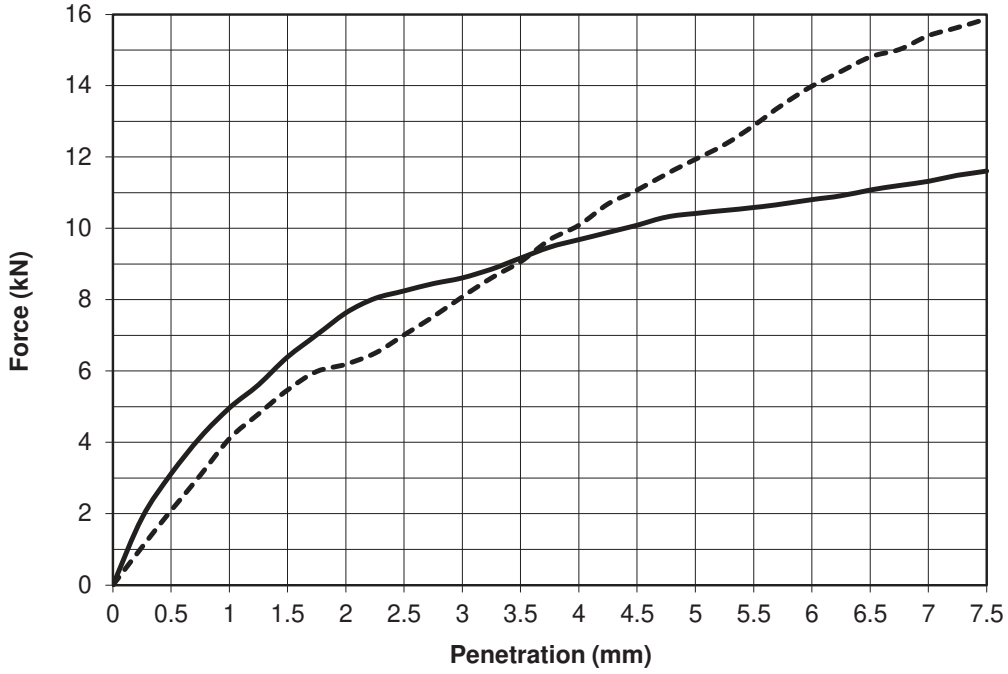
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143195	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	16/02/23
BH/TP No.*	TP31	Sample No.*	AA181992 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7578



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	3% Lime/ 7 Days Soaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.24
Surcharge (kg):	4	Dry Density (Mg/m^3):	2.00
% Material >20mm:	6.9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**62**	**60**
Moisture Content %	11	13

Results relate only to the specimen tested, in as received condition unless otherwise noted

Opinions and interpretations are outside the scope of accreditation.

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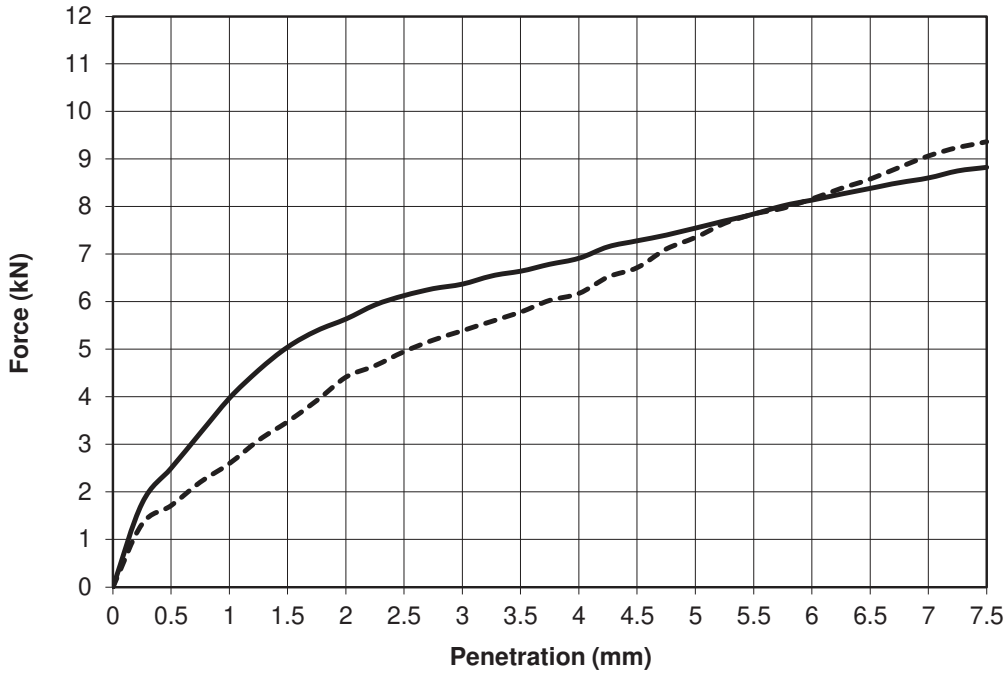
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R142193	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	17/02/23
BH/TP No.*	TP31	Sample No.*	AA181992 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7578



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime 2 % Cement/ 3 Days Soaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.22
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.97
% Material >20mm:	6.9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**46**	**37**
Moisture Content %	12	12

Results relate only to the specimen tested, in as received condition unless otherwise noted

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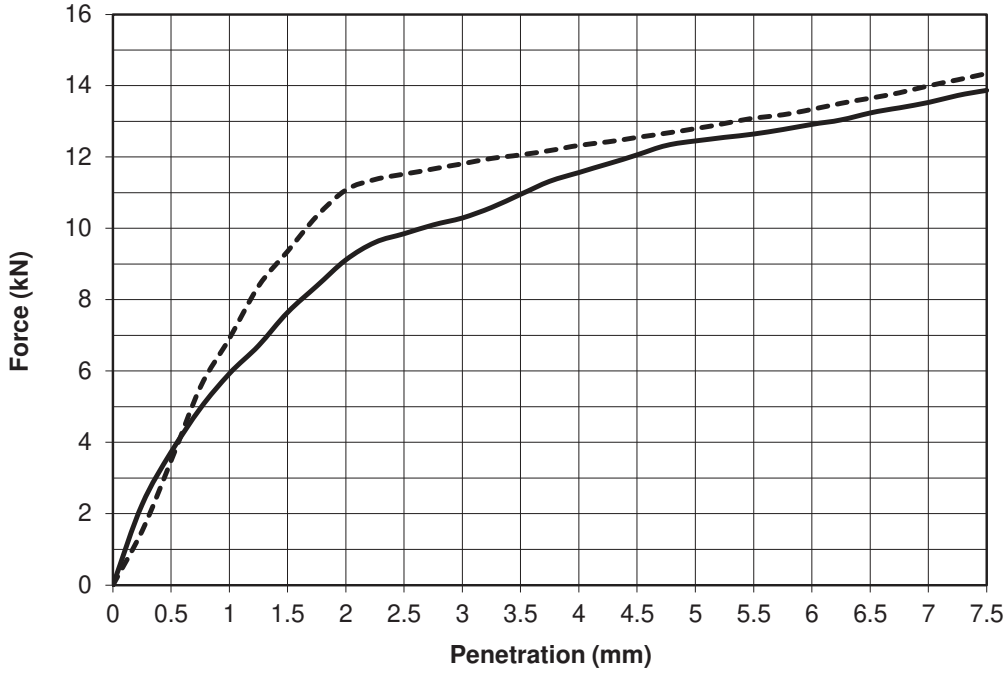
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143194	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	17/02/23
BH/TP No.*	TP31	Sample No.*	AA181992 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7578



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime 2% Cement/ 5 Day Soaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.24
Surcharge (kg):	4	Dry Density (Mg/m^3):	2.00
% Material >20mm:	6.9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**74**	**87**
Moisture Content %	12	12

Results relate only to the specimen tested, in as received condition unless otherwise noted

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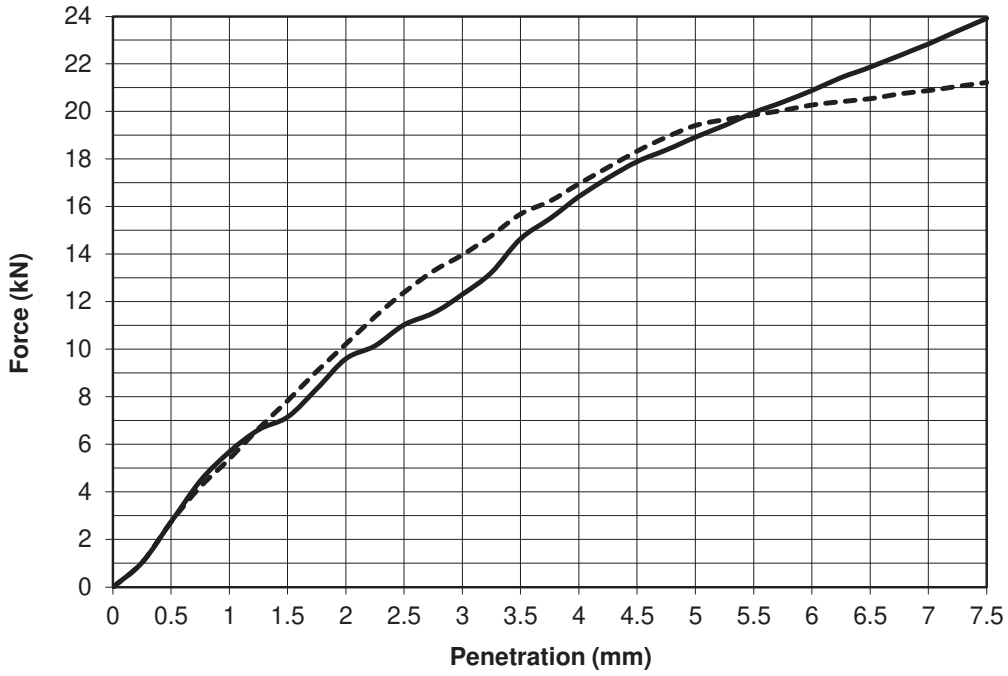
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	R143197	Contract	Halverstown , Naas - Proposed Data Centres
Contract No.	24330	Customer	DOBA
Date received	24/01/23	Date Tested	13/02/23
BH/TP No.*	TP31	Sample No.*	AA181992 Type: B
Depth* (m)	0.50	Lab sample No.	A22/7578



Key: ———— Top ---------- Base

Description:	Brown slightly sandy slightly gravelly CLAY		
Initial Condition:	1% Lime 2% Cement /7 Day Soaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.20
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.97
% Material >20mm:	6.9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**95**	**97**
Moisture Content %	12	12

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Test Report

Dry Density/Moisture Content Relationship

Tested in accordance with BS1377:Part 4:1990

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. R142691 Contract No. 24330

Contract Name: Halverstown , Naas . - Proposed Data Centres

Location*: TP04

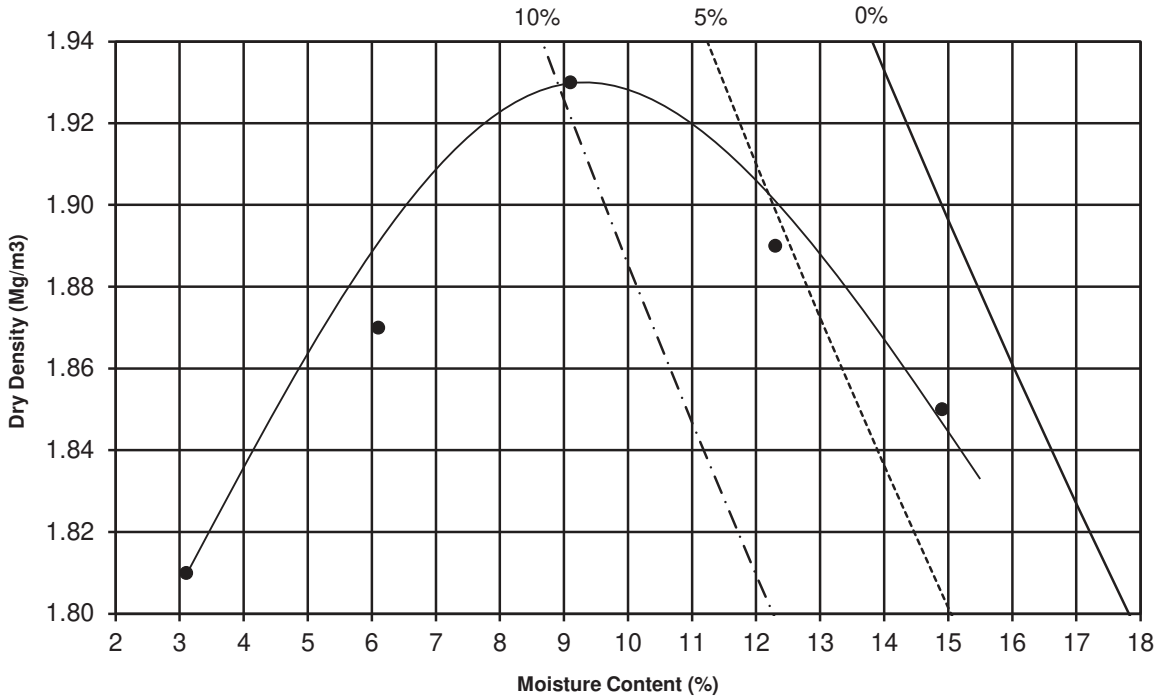
Sample No*. AA186982 Depth* (m) 0.6 Material Type B

Lab sample no. A22/7562 Customer: DOBA

Date Received: 24/01/2023 Test Method: 2.5 Kg Rammer

Date Tested: 26/01/2023 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.85	1.87	1.93	1.89	1.81		
Moisture Content (%)	15	6.1	9.1	12	3.1	0	



Maximum Dry Density (Mg/m^3): 1.93 Optimum Moisture Content (%): 9

Description: Mottled brown sandy gravelly SILT/CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 1.5

Results relate only to the specimen tested, in as received condition unless otherwise noted.
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Test Report

Dry Density/Moisture Content Relationship

Tested in accordance with BS1377:Part 4:1990

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. R145759 Contract No. 24330

Contract Name: Halverstown , Naas . - Proposed Data Centres

Location*: TP12

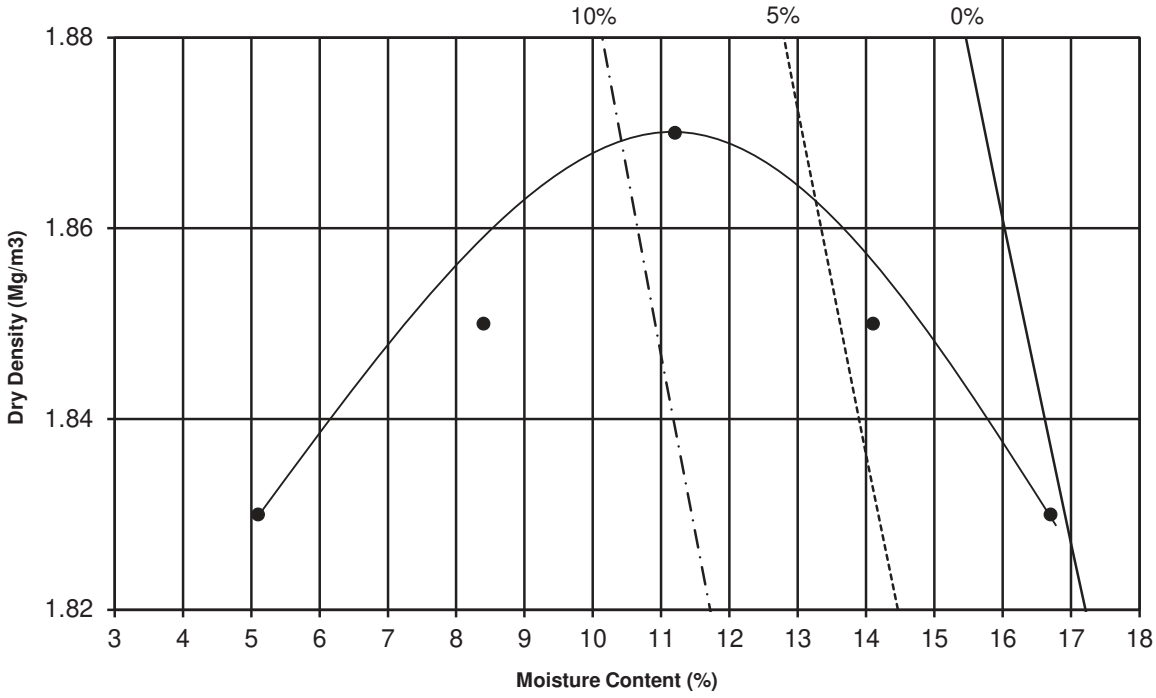
Sample No*. AA185481 Depth* (m) 0.5 Material Type B

Lab sample no. A22/7563 Customer: DOBA

Date Received: 24/01/2023 Test Method: 2.5 Kg Rammer

Date Tested: 26/01/2023 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.83	1.85	1.87	1.85	1.83		
Moisture Content (%)	17	8.4	11	14	5.1	0.0	



Maximum Dry Density (Mg/m^3): 1.87 Optimum Moisture Content (%): 11

Description: Brown slightly sandy, slightly gravelly, CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 3.9

Results relate only to the specimen tested, in as received condition unless otherwise noted.
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Test Report

Dry Density/Moisture Content Relationship

Tested in accordance with BS1377:Part 4:1990

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. R142692 Contract No. 24330

Contract Name: Halverstown , Naas . - Proposed Data Centres

Location*: TP15

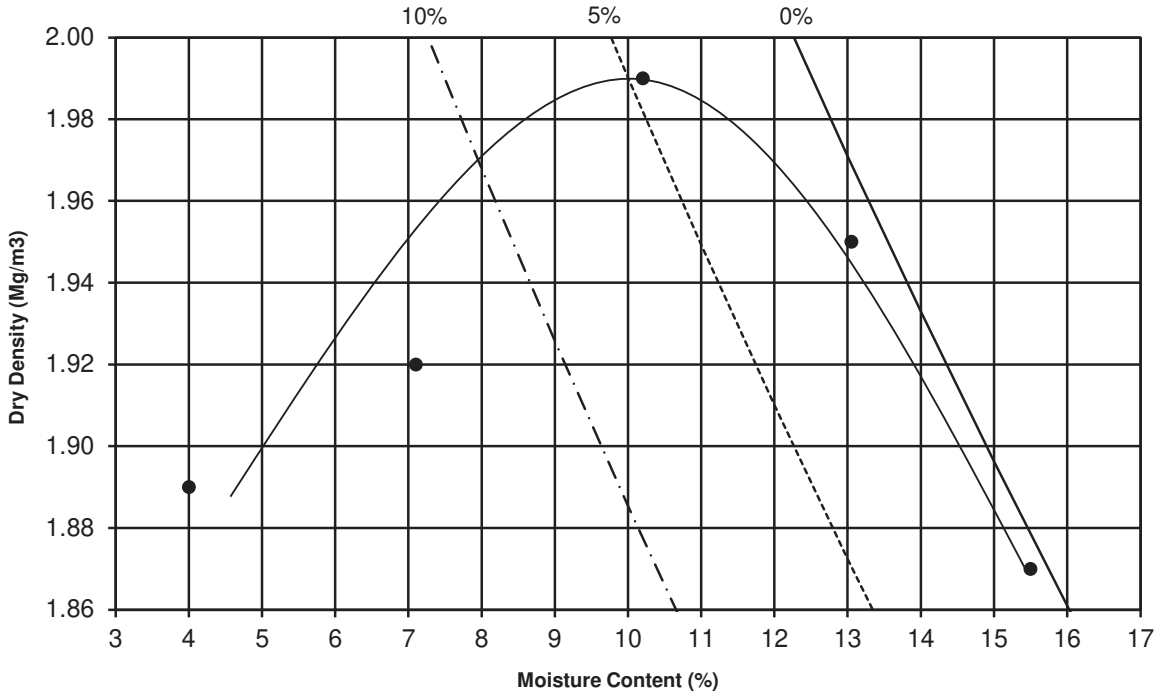
Sample No*. AA185479 Depth* (m) 1.5 Material Type B

Lab sample no. A22/7565 Customer: DOBA

Date Received: 24/01/2023 Test Method: 2.5 Kg Rammer

Date Tested: 26/01/2023 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.95	1.89	1.92	1.99	1.87		
Moisture Content (%)	13	4.0	7.1	10	16	0	



Maximum Dry Density (Mg/m^3): 1.99 Optimum Moisture Content (%): 10

Description: Brown slightly sandy, slightly gravelly, CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 2.9

Results relate only to the specimen tested, in as received condition unless otherwise noted.
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Test Report

Dry Density/Moisture Content Relationship

Tested in accordance with BS1377:Part 4:1990

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No. R142693 Contract No. 24330

Contract Name: Halverstown , Naas . - Proposed Data Centres

Location*: TP16

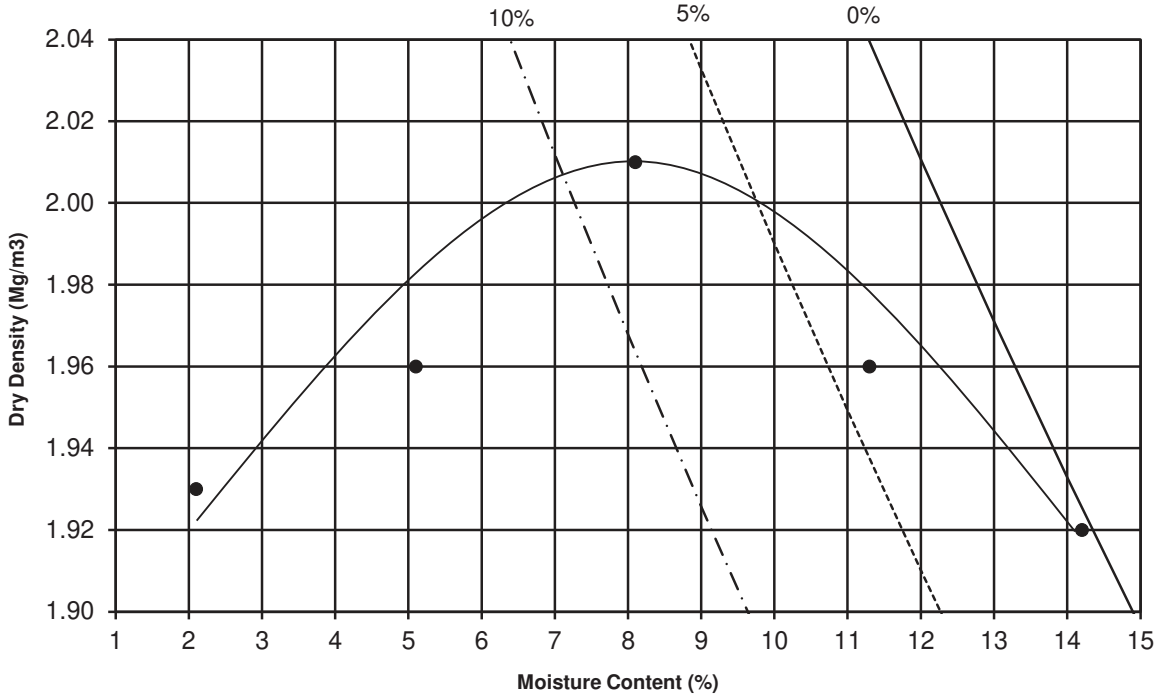
Sample No*. AA185481 Depth* (m) 1 Material Type B

Lab sample no. A22/7566 Customer: DOBA

Date Received: 24/01/2023 Test Method: 2.5 Kg Rammer

Date Tested: 24/01/2023 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.92	1.96	2.01	1.96	1.93		
Moisture Content (%)	14	5.1	8.1	11	2.1	0	



Maximum Dry Density (Mg/m^3): 2.01 Optimum Moisture Content (%): 8

Description: Mottled brown slightly sandy, slightly gravelly, CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 11

Results relate only to the specimen tested, in as received condition unless otherwise noted.
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Test Report

Dry Density/Moisture Content Relationship

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ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. R145756 Contract No. 24330

Contract Name: Halverstown , Naas . - Proposed Data Centres

Location*: TP19

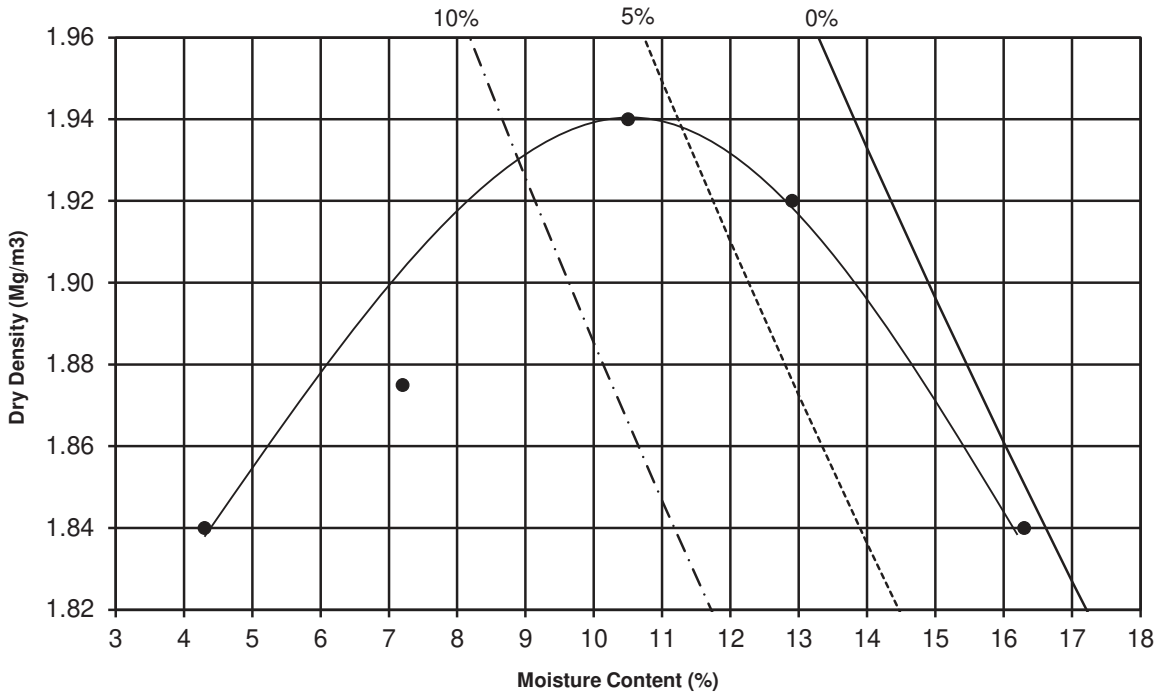
Sample No*. AA185468 Depth* (m) 0.5 Material Type B

Lab sample no. A22/7568 Customer: DOBA

Date Received: 24/01/2023 Test Method: 2.5 Kg Rammer

Date Tested: 26/01/2023 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.92	1.88	1.94	1.84	1.84		
Moisture Content (%)	13	7.2	11	16	4.3	0.0	



Maximum Dry Density (Mg/m^3): 1.94 Optimum Moisture Content (%): 11

Description: Mottled brown slightly sandy, slightly gravelly, CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 5.1

Results relate only to the specimen tested, in as received condition unless otherwise noted.
Opinions and interpretations are outside the scope of accreditation.
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Test Report

Dry Density/Moisture Content Relationship

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Report No. R142694 Contract No. 24330

Contract Name: Halverstown , Naas . - Proposed Data Centres

Location*: TP22

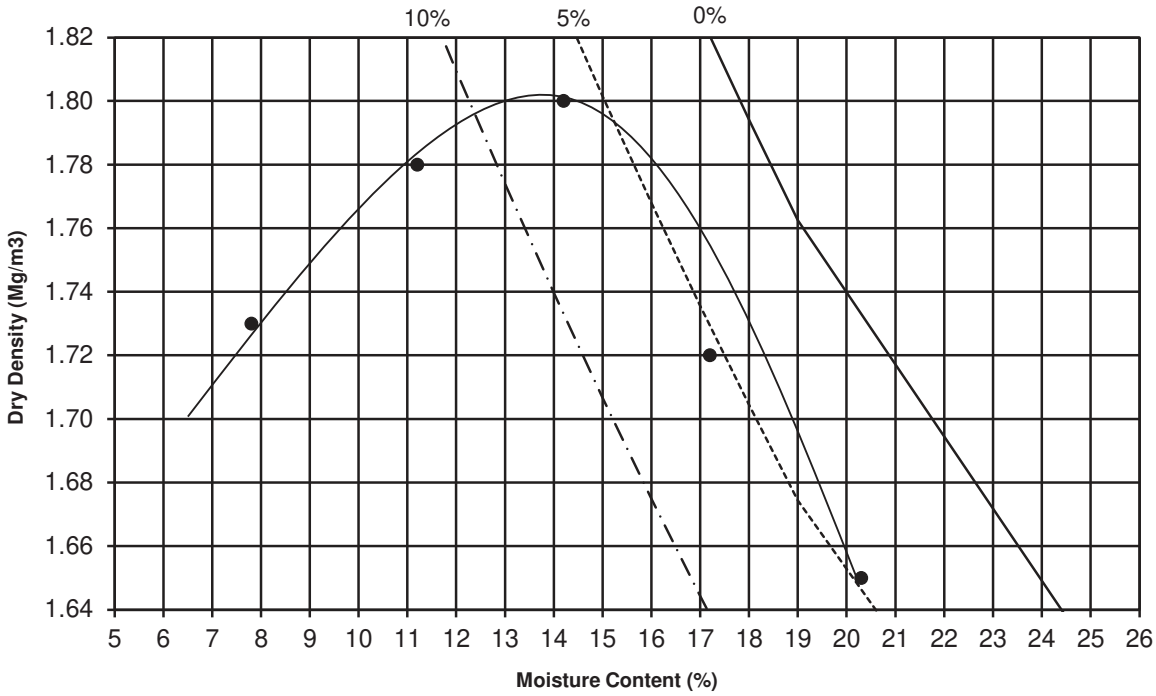
Sample No*. AA185497 Depth* (m) 0.6 Material Type B

Lab sample no. A22/7571 Customer: DOBA

Date Received: 24/01/2023 Test Method: 2.5 Kg Rammer

Date Tested: 26/01/2023 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.65	1.73	1.78	1.80	1.72		
Moisture Content (%)	20	7.8	11	14	17	0.0	



Maximum Dry Density (Mg/m^3): 1.80 Optimum Moisture Content (%): 14

Description: Mottled brown slightly sandy, slightly gravelly, CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 5.9

Results relate only to the specimen tested, in as received condition unless otherwise noted.
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Test Report

Dry Density/Moisture Content Relationship

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. R145758 Contract No. 24330

Contract Name: Halverstown , Naas . - Proposed Data Centres

Location*: TP26

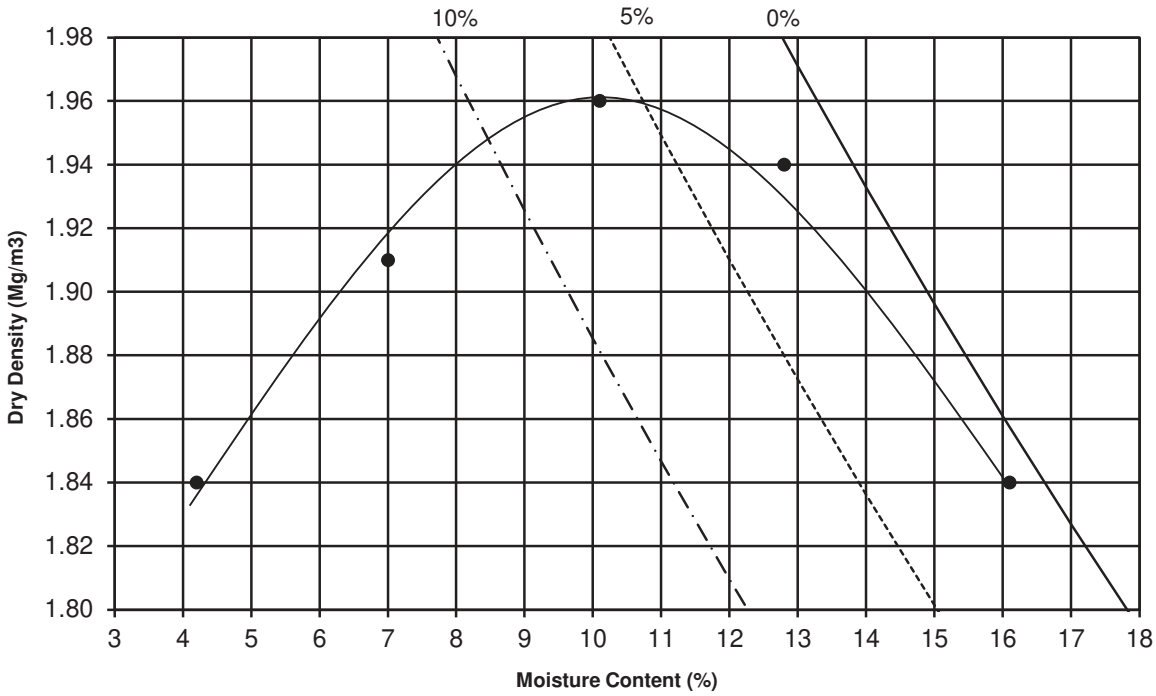
Sample No*. AA181975 Depth* (m) 0.5 Material Type B

Lab sample no. A22/7575 Customer: DOBA

Date Received: 24/01/2023 Test Method: 2.5 Kg Rammer

Date Tested: 26/01/2023 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.94	1.84	1.91	1.96	1.84		
Moisture Content (%)	13	4.2	7.0	10	16	0.0	



Maximum Dry Density (Mg/m^3): 1.96 Optimum Moisture Content (%): 10

Description: Brown slightly sandy, slightly gravelly, CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 7.6

Results relate only to the specimen tested, in as received condition unless otherwise noted.
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Test Report

Dry Density/Moisture Content Relationship

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ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. R145755 Contract No. 24330

Contract Name: Halverstown , Naas . - Proposed Data Centres

Location*: TP28

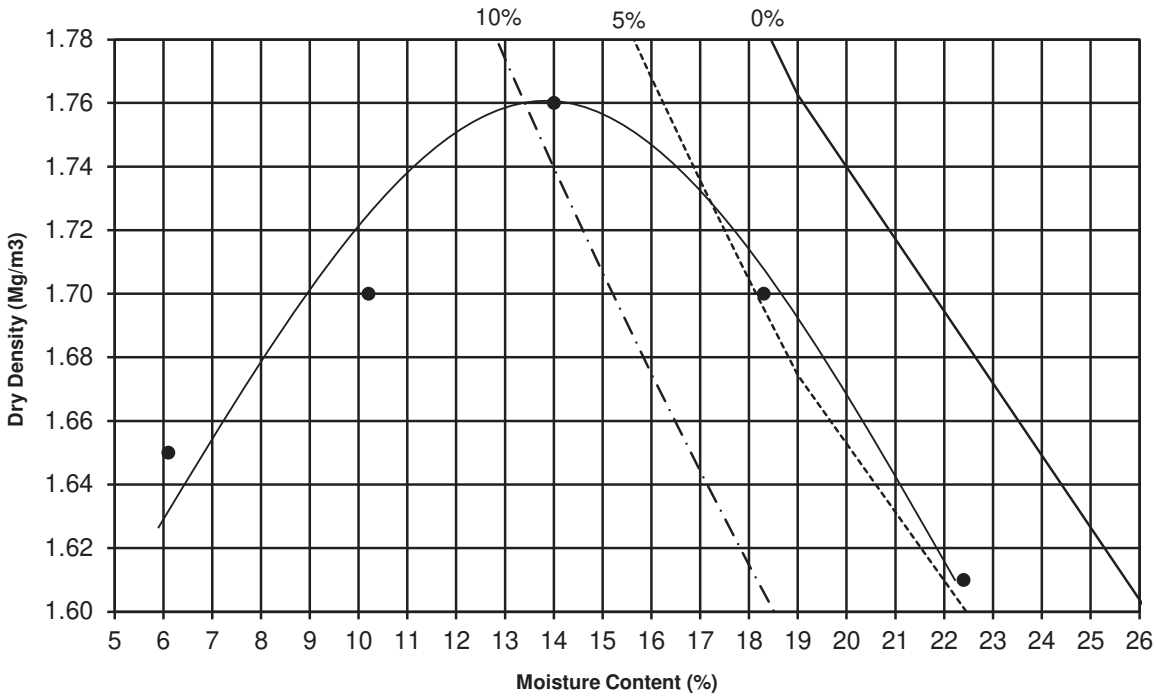
Sample No*. AA181969 Depth* (m) 0.6 Material Type B

Lab sample no. A22/7576 Customer: DOBA

Date Received: 24/01/2023 Test Method: 2.5 Kg Rammer

Date Tested: 26/01/2023 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.55	1.61	1.70	1.76	1.70	1.65	
Moisture Content (%)	26	22	18	14	10	6.1	



Maximum Dry Density (Mg/m^3): 1.76 Optimum Moisture Content (%): 14

Description: Mottled brown slightly sandy, slightly gravelly, CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 2.8

Results relate only to the specimen tested, in as received condition unless otherwise noted.
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Test Report

Dry Density/Moisture Content Relationship

Tested in accordance with BS1377:Part 4:1990

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No. R145757 Contract No. 24330

Contract Name: Halverstown , Naas . - Proposed Data Centres

Location*: TP31

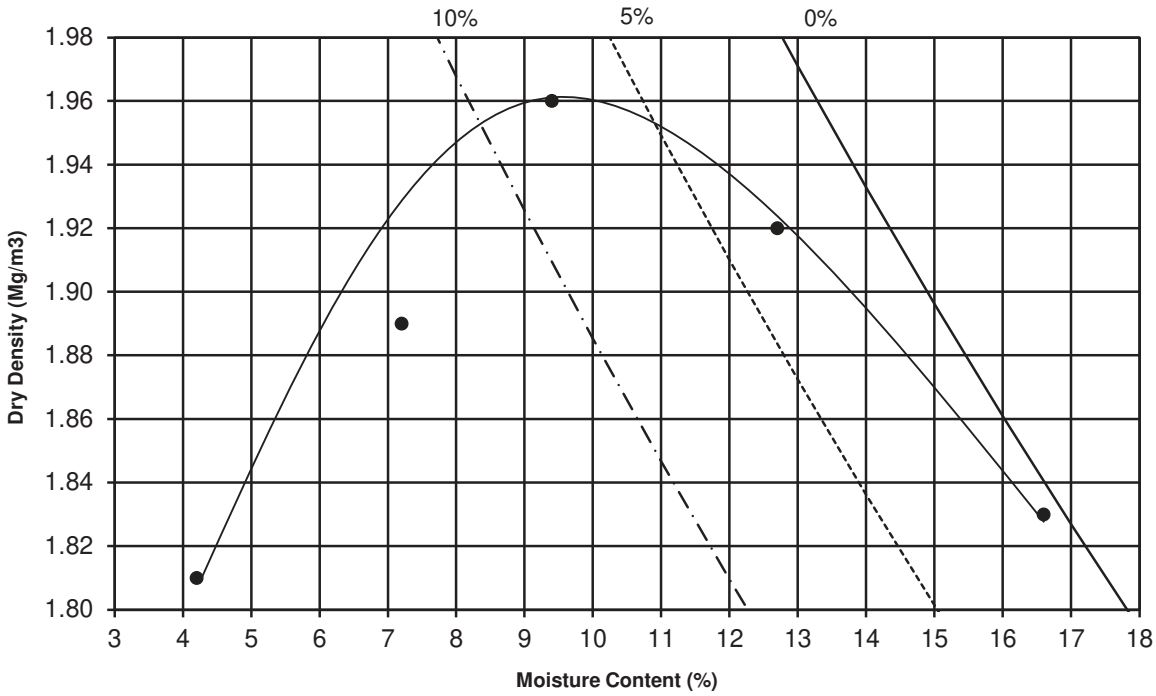
Sample No*. AA181992 Depth* (m) 0.5 Material Type B

Lab sample no. A22/7578 Customer: DOBA

Date Received: 24/01/2023 Test Method: 2.5 Kg Rammer

Date Tested: 26/01/2023 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.92	1.81	1.89	1.96	1.83		
Moisture Content (%)	13	4.2	7.2	9.4	17	0.0	



Maximum Dry Density (Mg/m^3): 1.96 Optimum Moisture Content (%): 9

Description: Brown slightly sandy, slightly gravelly, CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 6.9

Results relate only to the specimen tested, in as received condition unless otherwise noted.
Opinions and interpretations are outside the scope of accreditation.
* denotes Customer supplied information

Persons authorised to approve reports
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

IGSL Materials Laboratory	Approved by	Date	Page
	H Byrne	1/3/23	1 of 1

Appendix 12

Chemical / Environmental Laboratory Results (Soil)

Report_22-48580
Report_22-48622

Report_ L23-00718-IGS - 23-32082

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-48580-1		
Initial Date of Issue:	18-Jan-2023		
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	Darren Keogh		
Project	24330 Halversown Naas Proposed Data Centre Sites (DOBA)		
Quotation No.:	Q22-28896	**Date Received:**	20-Dec-2022
Order No.:		**Date Instructed:**	20-Dec-2022
No. of Samples:	36		
Turnaround (Wkdays):	7	**Results Due:**	04-Jan-2023
Date Approved:	18-Jan-2023		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL				**Chemtest Job No.:**	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896				**Chemtest Sample ID.:**	1567070	1567071	1567072	1567073	1567074	1567075	1567076	1567077	1567079
Order No.:				Client Sample Ref.:	AA184690	AA184693	AA184669	AA184668	AA174678	AA184675	AA186957	AA181997	AA186960
				Sample Location:	BH03	BH04	BH06	BH08	BH10	BH12	TP01	TP02	TP05
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.50	0.50
				Asbestos Lab:		DURHAM	DURHAM		DURHAM		DURHAM		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A		-	-		-		-		
Asbestos Identification	U	2192		N/A		No Asbestos Detected	No Asbestos Detected		No Asbestos Detected		No Asbestos Detected		
Moisture	N	2030	%	0.020	14	16	11	12	13	14	9.8	13	18
pH	M	2010		4.0		[A] 8.2	[A] 8.4		[A] 8.4		[A] 8.4		
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40		[A] < 0.40	[A] < 0.40		[A] < 0.40		[A] < 0.40		
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010		[A] < 0.010	[A] < 0.010		[A] < 0.010		[A] < 0.010		
Total Sulphur	M	2175	%	0.010		[A] < 0.010	[A] 0.025		[A] < 0.010		[A] < 0.010		
Sulphur (Elemental)	M	2180	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0		
Cyanide (Free)	M	2300	mg/kg	0.50		[A] < 0.50	[A] < 0.50		[A] < 0.50		[A] < 0.50		
Cyanide (Total)	M	2300	mg/kg	0.50		[A] 0.50	[A] < 0.50		[A] < 0.50		[A] < 0.50		
Thiocyanate	M	2300	mg/kg	5.0		[A] < 5.0	[A] < 5.0		[A] < 5.0		[A] < 5.0		
Aluminium (Total)	N	2430	mg/kg	100		[A] 5200	[A] 1200		[A] 5000		[A] 3100		
Iron (Total)	N	2430	mg/kg	100		[A] 11000	[A] 5800		[A] 10000		[A] 8100		
Arsenic	M	2455	mg/kg	0.5		7.0	6.6		8.9		4.7		
Barium	M	2455	mg/kg	0		52	33		42		27		
Beryllium	U	2455	mg/kg	0.5		0.6	< 0.5		0.5		< 0.5		
Cadmium	M	2455	mg/kg	0.10		1.3	0.96		1.5		0.81		
Chromium	M	2455	mg/kg	0.5		18	6.2		15		14		
Manganese	M	2455	mg/kg	1.0		680	550		750		490		
Copper	M	2455	mg/kg	0.50		13	10		17		6.9		
Mercury	M	2455	mg/kg	0.05		0.06	< 0.05		0.06		< 0.05		
Nickel	M	2455	mg/kg	0.50		33	17		34		21		
Lead	M	2455	mg/kg	0.50		22	12		26		13		
Selenium	M	2455	mg/kg	0.25		0.79	0.54		0.72		0.46		
Vanadium	U	2455	mg/kg	0.5		17	7.0		15		11		
Zinc	M	2455	mg/kg	0.50		88	57		100		53		
Chromium (Hexavalent)	N	2490	mg/kg	0.50		< 0.50	< 0.50		< 0.50		< 0.50		
Organic Matter	M	2625	%	0.40		[A] 1.3	[A] 1.2		[A] 0.55		[A] < 0.40		
Total Organic Carbon	M	2625	%	0.20		[A] 0.77	[A] 0.67		[A] 0.32		[A] < 0.20		
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0		
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0		
Aliphatic TPH >C8-C10	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0		
Aliphatic TPH >C10-C12	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0		
Aliphatic TPH >C12-C16	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0		
Aliphatic TPH >C16-C21	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0		
Aliphatic TPH >C21-C35	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0		
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0		

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL					Chemtest Job No.:	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896					Chemtest Sample ID.:	1567070	1567071	1567072	1567073	1567074	1567075	1567076	1567077	1567079
Order No.:					Client Sample Ref.:	AA184690	AA184693	AA184669	AA184668	AA174678	AA184675	AA186957	AA181997	AA186960
					Sample Location:	BH03	BH04	BH06	BH08	BH10	BH12	TP01	TP02	TP05
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.50	0.50
					Asbestos Lab:		DURHAM	DURHAM		DURHAM		DURHAM		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0		[A] < 5.0	[A] < 5.0		[A] < 5.0		[A] < 5.0			
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0			
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0			
Aromatic TPH >C8-C10	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0			
Aromatic TPH >C10-C12	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0			
Aromatic TPH >C12-C16	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0			
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0			
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0			
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0			
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		[A] < 5.0	[A] < 5.0		[A] < 5.0		[A] < 5.0			
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		[A] < 10	[A] < 10		[A] < 10		[A] < 10			
Dichlorodifluoromethane	U	2760	mg/kg	0.0010	[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010		
Chloromethane	M	2760	mg/kg	0.0010	[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010		
Vinyl Chloride	M	2760	mg/kg	0.0010	[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010		
Bromomethane	M	2760	mg/kg	0.020	[A] < 0.020			[A] < 0.020		[A] < 0.020		[A] < 0.020		
Chloroethane	U	2760	mg/kg	0.0020	[A] < 0.0020			[A] < 0.0020		[A] < 0.0020		[A] < 0.0020		
Trichlorofluoromethane	M	2760	mg/kg	0.0010	[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010		
1,1-Dichloroethene	M	2760	mg/kg	0.0010	[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010		
Trans 1,2-Dichloroethene	M	2760	mg/kg	0.0010	[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010		
1,1-Dichloroethane	M	2760	mg/kg	0.0010	[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010		
cis 1,2-Dichloroethene	M	2760	mg/kg	0.0010	[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010		
Bromochloromethane	U	2760	mg/kg	0.0050	[A] < 0.0050			[A] < 0.0050		[A] < 0.0050		[A] < 0.0050		
Trichloromethane	M	2760	mg/kg	0.0010	[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010		
1,1,1-Trichloroethane	M	2760	mg/kg	0.0010	[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010		
Tetrachloromethane	M	2760	mg/kg	0.0010	[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010		
1,1-Dichloropropene	U	2760	mg/kg	0.0010	[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010		
Benzene	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010		
1,2-Dichloroethane	M	2760	mg/kg	0.0020	[A] < 0.0020			[A] < 0.0020		[A] < 0.0020		[A] < 0.0020		
Trichloroethene	N	2760	mg/kg	0.0010	[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010		
1,2-Dichloropropane	M	2760	mg/kg	0.0010	[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010		
Dibromomethane	M	2760	mg/kg	0.0010	[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010		
Bromodichloromethane	M	2760	mg/kg	0.0050	[A] < 0.0050			[A] < 0.0050		[A] < 0.0050		[A] < 0.0050		
cis-1,3-Dichloropropene	N	2760	mg/kg	0.010	[A] < 0.010			[A] < 0.010		[A] < 0.010		[A] < 0.010		
Toluene	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010		
Trans-1,3-Dichloropropene	N	2760	mg/kg	0.010	[A] < 0.010			[A] < 0.010		[A] < 0.010		[A] < 0.010		
1,1,2-Trichloroethane	M	2760	mg/kg	0.010	[A] < 0.010			[A] < 0.010		[A] < 0.010		[A] < 0.010		
Tetrachloroethene	M	2760	mg/kg	0.0010	[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010		
1,3-Dichloropropane	U	2760	mg/kg	0.0020	[A] < 0.0020			[A] < 0.0020		[A] < 0.0020		[A] < 0.0020		

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL					Chemtest Job No.:	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896					Chemtest Sample ID.:	1567070	1567071	1567072	1567073	1567074	1567075	1567076	1567077	1567079
Order No.:					Client Sample Ref.:	AA184690	AA184693	AA184669	AA184668	AA174678	AA184675	AA186957	AA181997	AA186960
					Sample Location:	BH03	BH04	BH06	BH08	BH10	BH12	TP01	TP02	TP05
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.50	0.50
					Asbestos Lab:		DURHAM	DURHAM		DURHAM		DURHAM		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Dibromochloromethane	U	2760	mg/kg	0.010		[A] < 0.010			[A] < 0.010		[A] < 0.010		[A] < 0.010	
1,2-Dibromoethane	M	2760	mg/kg	0.0050		[A] < 0.0050			[A] < 0.0050		[A] < 0.0050		[A] < 0.0050	
Chlorobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
1,1,1,2-Tetrachloroethane	M	2760	mg/kg	0.0020		[A] < 0.0020			[A] < 0.0020		[A] < 0.0020		[A] < 0.0020	
Ethylbenzene	M	2760	mg/kg	0.0010		[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	
m & p-Xylene	M	2760	mg/kg	0.0010		[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	
o-Xylene	M	2760	mg/kg	0.0010		[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	
Styrene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
Tribromomethane	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
Isopropylbenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
Bromobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
1,2,3-Trichloropropane	N	2760	mg/kg	0.050		[A] < 0.050			[A] < 0.050		[A] < 0.050		[A] < 0.050	
N-Propylbenzene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
2-Chlorotoluene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
1,3,5-Trimethylbenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
4-Chlorotoluene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
Tert-Butylbenzene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
1,2,4-Trimethylbenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
Sec-Butylbenzene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
1,3-Dichlorobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
4-Isopropyltoluene	N	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
1,4-Dichlorobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
N-Butylbenzene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
1,2-Dichlorobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
1,2-Dibromo-3-Chloropropane	U	2760	mg/kg	0.050		[A] < 0.050			[A] < 0.050		[A] < 0.050		[A] < 0.050	
1,2,4-Trichlorobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
Hexachlorobutadiene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	
1,2,3-Trichlorobenzene	U	2760	mg/kg	0.0020		[A] < 0.0020			[A] < 0.0020		[A] < 0.0020		[A] < 0.0020	
Methyl Tert-Butyl Ether	M	2760	mg/kg	0.0010		[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	
N-Nitrosodimethylamine	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Phenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
2-Chlorophenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
1,3-Dichlorobenzene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
1,4-Dichlorobenzene	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
1,2-Dichlorobenzene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
2-Methylphenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL					**Chemtest Job No.:**	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896					**Chemtest Sample ID.:**	1567070	1567071	1567072	1567073	1567074	1567075	1567076	1567077	1567079
Order No.:					Client Sample Ref.:	AA184690	AA184693	AA184669	AA184668	AA174678	AA184675	AA186957	AA181997	AA186960
					Sample Location:	BH03	BH04	BH06	BH08	BH10	BH12	TP01	TP02	TP05
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.50	0.50
					Asbestos Lab:		DURHAM	DURHAM		DURHAM		DURHAM		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Hexachloroethane	N	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
4-Methylphenol	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Nitrobenzene	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Isophorone	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
2-Nitrophenol	N	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
2,4-Dimethylphenol	N	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
2,4-Dichlorophenol	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
4-Chloroaniline	N	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Hexachlorobutadiene	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
2-Methylnaphthalene	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
4-Nitrophenol	N	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
2-Chloronaphthalene	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
2-Nitroaniline	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Dimethylphthalate	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
3-Nitroaniline	N	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Dibenzofuran	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Diethyl Phthalate	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
4-Nitroaniline	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Azobenzene	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Hexachlorobenzene	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Pentachlorophenol	N	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Carbazole	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	[A] < 0.50			[A] < 0.50		[A] < 0.50		[A] < 0.50	

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL					**Chemtest Job No.:**	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896					**Chemtest Sample ID.:**	1567070	1567071	1567072	1567073	1567074	1567075	1567076	1567077	1567079
Order No.:					Client Sample Ref.:	AA184690	AA184693	AA184669	AA184668	AA174678	AA184675	AA186957	AA181997	AA186960
					Sample Location:	BH03	BH04	BH06	BH08	BH10	BH12	TP01	TP02	TP05
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.50	0.50
					Asbestos Lab:		DURHAM	DURHAM		DURHAM		DURHAM		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Naphthalene	M	2800	mg/kg	0.10		< 0.10	0.26		< 0.10		< 0.10			
Acenaphthylene	N	2800	mg/kg	0.10		< 0.10	< 0.10		< 0.10		< 0.10			
Acenaphthene	M	2800	mg/kg	0.10		< 0.10	< 0.10		< 0.10		< 0.10			
Fluorene	M	2800	mg/kg	0.10		< 0.10	< 0.10		< 0.10		< 0.10			
Phenanthrene	M	2800	mg/kg	0.10		< 0.10	< 0.10		< 0.10		< 0.10			
Anthracene	M	2800	mg/kg	0.10		< 0.10	< 0.10		< 0.10		< 0.10			
Fluoranthene	M	2800	mg/kg	0.10		< 0.10	< 0.10		< 0.10		< 0.10			
Pyrene	M	2800	mg/kg	0.10		< 0.10	< 0.10		< 0.10		< 0.10			
Benzo[a]anthracene	M	2800	mg/kg	0.10		< 0.10	< 0.10		< 0.10		< 0.10			
Chrysene	M	2800	mg/kg	0.10		< 0.10	< 0.10		< 0.10		< 0.10			
Benzo[b]fluoranthene	M	2800	mg/kg	0.10		< 0.10	< 0.10		< 0.10		< 0.10			
Benzo[k]fluoranthene	M	2800	mg/kg	0.10		< 0.10	< 0.10		< 0.10		< 0.10			
Benzo[a]pyrene	M	2800	mg/kg	0.10		< 0.10	< 0.10		< 0.10		< 0.10			
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10		< 0.10	< 0.10		< 0.10		< 0.10			
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		< 0.10	< 0.10		< 0.10		< 0.10			
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10		< 0.10	< 0.10		< 0.10		< 0.10			
Total Of 16 PAH's	N	2800	mg/kg	2.0		< 2.0	< 2.0		< 2.0		< 2.0			
PCB 81	N	2815	mg/kg	0.010										< 0.010
PCB 77	U	2815	mg/kg	0.010										< 0.010
PCB 105	N	2815	mg/kg	0.010										< 0.010
PCB 114	N	2815	mg/kg	0.010										< 0.010
PCB 118	N	2815	mg/kg	0.010										< 0.010
PCB 123	N	2815	mg/kg	0.010										< 0.010
PCB 126	N	2815	mg/kg	0.010										< 0.010
PCB 156	N	2815	mg/kg	0.010										< 0.010
PCB 157	N	2815	mg/kg	0.010										< 0.010
PCB 167	N	2815	mg/kg	0.010										< 0.010
PCB 169	N	2815	mg/kg	0.010										< 0.010
PCB 189	N	2815	mg/kg	0.010										< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12										< 0.12
Resorcinol	M	2920	mg/kg	0.020		< 0.020	< 0.020		< 0.020		< 0.020			
Phenol	M	2920	mg/kg	0.020		< 0.020	< 0.020		< 0.020		< 0.020			
Cresols	M	2920	mg/kg	0.020		< 0.020	< 0.020		< 0.020		< 0.020			
Xylenols	M	2920	mg/kg	0.020		< 0.020	< 0.020		< 0.020		< 0.020			
1-Naphthol	N	2920	mg/kg	0.020		< 0.020	< 0.020		< 0.020		< 0.020			
Trimethylphenols	M	2920	mg/kg	0.020		< 0.020	< 0.020		< 0.020		< 0.020			
Total Phenols	M	2920	mg/kg	0.10		< 0.10	< 0.10		< 0.10		< 0.10			

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL					**Chemtest Job No.:**	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896					**Chemtest Sample ID.:**	1567080	1567081	1567082	1567084	1567085	1567086	1567087	1567089	1567090
Order No.:					Client Sample Ref.:	AA186979	AA186963	AA186966	AA186969	AA185474	AA185457	AA185458	AA185485	AA185464
					Sample Location:	TP06	TP07	TP08	TP10	TP13	TP14	TP14	TP17	TP18
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	0.50	0.50	0.50	0.50	0.50	0.80	0.60	0.50
					Asbestos Lab:	DURHAM			DURHAM		DURHAM			DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
ACM Type	U	2192		N/A		-			-		-			-
Asbestos Identification	U	2192		N/A		No Asbestos Detected			No Asbestos Detected		No Asbestos Detected			No Asbestos Detected
Moisture	N	2030	%	0.020		13	13	12	13	14	10	6.6	9.5	6.9
pH	M	2010		4.0		[A] 8.5			[A] 8.6		[A] 8.4			[A] 8.5
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40		[A] < 0.40			[A] < 0.40		[A] < 0.40			[A] < 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010		[A] < 0.010			[A] < 0.010		[A] < 0.010			[A] < 0.010
Total Sulphur	M	2175	%	0.010		[A] < 0.010			[A] < 0.010		[A] < 0.010			[A] < 0.010
Sulphur (Elemental)	M	2180	mg/kg	1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0			[A] < 1.0
Cyanide (Free)	M	2300	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			[A] < 0.50
Cyanide (Total)	M	2300	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			[A] < 0.50
Thiocyanate	M	2300	mg/kg	5.0		[A] < 5.0			[A] < 5.0		[A] < 5.0			[A] < 5.0
Aluminium (Total)	N	2430	mg/kg	100		[A] 3700			[A] 5500		[A] 6200			[A] 4700
Iron (Total)	N	2430	mg/kg	100		[A] 7500			[A] 10000		[A] 9600			[A] 13000
Arsenic	M	2455	mg/kg	0.5		4.5			6.5		4.6			6.8
Barium	M	2455	mg/kg	0		27			40		45			54
Beryllium	U	2455	mg/kg	0.5		< 0.5			0.6		0.5			0.6
Cadmium	M	2455	mg/kg	0.10		0.85			1.1		0.76			1.4
Chromium	M	2455	mg/kg	0.5		12			18		13			18
Manganese	M	2455	mg/kg	1.0		330			410		190			440
Copper	M	2455	mg/kg	0.50		10			17		6.4			13
Mercury	M	2455	mg/kg	0.05		< 0.05			0.08		< 0.05			0.05
Nickel	M	2455	mg/kg	0.50		19			29		17			28
Lead	M	2455	mg/kg	0.50		29			22		19			26
Selenium	M	2455	mg/kg	0.25		0.55			0.74		0.67			0.95
Vanadium	U	2455	mg/kg	0.5		12			16		13			17
Zinc	M	2455	mg/kg	0.50		62			96		54			97
Chromium (Hexavalent)	N	2490	mg/kg	0.50		< 0.50			< 0.50		< 0.50			< 0.50
Organic Matter	M	2625	%	0.40		[A] 1.3			[A] 0.54		[A] 0.88			[A] 1.3
Total Organic Carbon	M	2625	%	0.20		[A] 0.76			[A] 0.32		[A] 0.51			[A] 0.78
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0			[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0			[A] < 1.0
Aliphatic TPH >C8-C10	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0			[A] < 1.0
Aliphatic TPH >C10-C12	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0			[A] < 1.0
Aliphatic TPH >C12-C16	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0			[A] < 1.0
Aliphatic TPH >C16-C21	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0			[A] < 1.0
Aliphatic TPH >C21-C35	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0			[A] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0			[A] < 1.0

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL					**Chemtest Job No.:**	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896					**Chemtest Sample ID.:**	1567080	1567081	1567082	1567084	1567085	1567086	1567087	1567089	1567090
Order No.:					Client Sample Ref.:	AA186979	AA186963	AA186966	AA186969	AA185474	AA185457	AA185458	AA185485	AA185464
					Sample Location:	TP06	TP07	TP08	TP10	TP13	TP14	TP14	TP17	TP18
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	0.50	0.50	0.50	0.50	0.50	0.80	0.60	0.50
					Asbestos Lab:	DURHAM			DURHAM		DURHAM			DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0		[A] < 5.0			[A] < 5.0		[A] < 5.0			[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0			[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0			[A] < 1.0
Aromatic TPH >C8-C10	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0			[A] < 1.0
Aromatic TPH >C10-C12	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0			[A] < 1.0
Aromatic TPH >C12-C16	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0			[A] < 1.0
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0			[A] < 1.0
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0			[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0			[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		[A] < 5.0			[A] < 5.0		[A] < 5.0			[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		[A] < 10			[A] < 10		[A] < 10			[A] < 10
Dichlorodifluoromethane	U	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Chloromethane	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Vinyl Chloride	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Bromomethane	M	2760	mg/kg	0.020			[A] < 0.020			[A] < 0.020		[A] < 0.020		
Chloroethane	U	2760	mg/kg	0.0020			[A] < 0.0020			[A] < 0.0020		[A] < 0.0020		
Trichlorofluoromethane	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,1-Dichloroethene	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Trans 1,2-Dichloroethene	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,1-Dichloroethane	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
cis 1,2-Dichloroethene	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Bromochloromethane	U	2760	mg/kg	0.0050			[A] < 0.0050			[A] < 0.0050		[A] < 0.0050		
Trichloromethane	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,1,1-Trichloroethane	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Tetrachloromethane	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,1-Dichloropropene	U	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Benzene	M	2760	mg/kg	0.0010	[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010		[A] < 0.0010
1,2-Dichloroethane	M	2760	mg/kg	0.0020			[A] < 0.0020			[A] < 0.0020		[A] < 0.0020		
Trichloroethene	N	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,2-Dichloropropane	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Dibromomethane	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Bromodichloromethane	M	2760	mg/kg	0.0050			[A] < 0.0050			[A] < 0.0050		[A] < 0.0050		
cis-1,3-Dichloropropene	N	2760	mg/kg	0.010			[A] < 0.010			[A] < 0.010		[A] < 0.010		
Toluene	M	2760	mg/kg	0.0010	[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010		[A] < 0.0010
Trans-1,3-Dichloropropene	N	2760	mg/kg	0.010			[A] < 0.010			[A] < 0.010		[A] < 0.010		
1,1,2-Trichloroethane	M	2760	mg/kg	0.010			[A] < 0.010			[A] < 0.010		[A] < 0.010		
Tetrachloroethene	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,3-Dichloropropane	U	2760	mg/kg	0.0020			[A] < 0.0020			[A] < 0.0020		[A] < 0.0020		

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL					**Chemtest Job No.:**	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896					**Chemtest Sample ID.:**	1567080	1567081	1567082	1567084	1567085	1567086	1567087	1567089	1567090
Order No.:					Client Sample Ref.:	AA186979	AA186963	AA186966	AA186969	AA185474	AA185457	AA185458	AA185485	AA185464
					Sample Location:	TP06	TP07	TP08	TP10	TP13	TP14	TP14	TP17	TP18
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	0.50	0.50	0.50	0.50	0.50	0.80	0.60	0.50
					Asbestos Lab:	DURHAM			DURHAM		DURHAM			DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Dibromochloromethane	U	2760	mg/kg	0.010		[A] < 0.010			[A] < 0.010		[A] < 0.010			
1,2-Dibromoethane	M	2760	mg/kg	0.0050		[A] < 0.0050			[A] < 0.0050		[A] < 0.0050			
Chlorobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
1,1,1,2-Tetrachloroethane	M	2760	mg/kg	0.0020		[A] < 0.0020			[A] < 0.0020		[A] < 0.0020			
Ethylbenzene	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010		[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010			[A] < 0.0010
m & p-Xylene	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010		[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010			[A] < 0.0010
o-Xylene	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010		[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010			[A] < 0.0010
Styrene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
Tribromomethane	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
Isopropylbenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
Bromobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
1,2,3-Trichloropropane	N	2760	mg/kg	0.050		[A] < 0.050			[A] < 0.050		[A] < 0.050			
N-Propylbenzene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
2-Chlorotoluene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
1,3,5-Trimethylbenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
4-Chlorotoluene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
Tert-Butylbenzene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
1,2,4-Trimethylbenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
Sec-Butylbenzene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
1,3-Dichlorobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
4-Isopropyltoluene	N	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
1,4-Dichlorobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
N-Butylbenzene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
1,2-Dichlorobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
1,2-Dibromo-3-Chloropropane	U	2760	mg/kg	0.050		[A] < 0.050			[A] < 0.050		[A] < 0.050			
1,2,4-Trichlorobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
Hexachlorobutadiene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010			
1,2,3-Trichlorobenzene	U	2760	mg/kg	0.0020		[A] < 0.0020			[A] < 0.0020		[A] < 0.0020			
Methyl Tert-Butyl Ether	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010		[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010			[A] < 0.0010
N-Nitrosodimethylamine	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Phenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
2-Chlorophenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
1,3-Dichlorobenzene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
1,4-Dichlorobenzene	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
1,2-Dichlorobenzene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
2-Methylphenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL					**Chemtest Job No.:**	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896					**Chemtest Sample ID.:**	1567080	1567081	1567082	1567084	1567085	1567086	1567087	1567089	1567090
Order No.:					Client Sample Ref.:	AA186979	AA186963	AA186966	AA186969	AA185474	AA185457	AA185458	AA185485	AA185464
					Sample Location:	TP06	TP07	TP08	TP10	TP13	TP14	TP14	TP17	TP18
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	0.50	0.50	0.50	0.50	0.50	0.80	0.60	0.50
					Asbestos Lab:	DURHAM			DURHAM		DURHAM			DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Hexachloroethane	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
4-Methylphenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Nitrobenzene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Isophorone	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
2-Nitrophenol	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
2,4-Dimethylphenol	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
2,4-Dichlorophenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
4-Chloroaniline	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Hexachlorobutadiene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
2-Methylnaphthalene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
4-Nitrophenol	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
2-Chloronaphthalene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
2-Nitroaniline	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Dimethylphthalate	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
2,6-Dinitrotoluene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
3-Nitroaniline	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Dibenzofuran	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
4-Chlorophenylphenylether	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
2,4-Dinitrotoluene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Diethyl Phthalate	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
4-Nitroaniline	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Azobenzene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Hexachlorobenzene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Pentachlorophenol	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Carbazole	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Butylbenzyl Phthalate	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50			

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL			**Chemtest Job No.:**		22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896			**Chemtest Sample ID.:**		1567080	1567081	1567082	1567084	1567085	1567086	1567087	1567089	1567090
Order No.:			Client Sample Ref.:		AA186979	AA186963	AA186966	AA186969	AA185474	AA185457	AA185458	AA185485	AA185464
			Sample Location:		TP06	TP07	TP08	TP10	TP13	TP14	TP14	TP17	TP18
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.50	0.50	0.50	0.50	0.50	0.80	0.60	0.50
			Asbestos Lab:		DURHAM			DURHAM		DURHAM			DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Naphthalene	M	2800	mg/kg	0.10	< 0.10			< 0.10		< 0.10			< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10			< 0.10		< 0.10			< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10			< 0.10		< 0.10			< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10			< 0.10		< 0.10			< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10			< 0.10		< 0.10			< 0.10
Anthracene	M	2800	mg/kg	0.10	< 0.10			< 0.10		< 0.10			< 0.10
Fluoranthene	M	2800	mg/kg	0.10	< 0.10			< 0.10		< 0.10			< 0.10
Pyrene	M	2800	mg/kg	0.10	< 0.10			< 0.10		< 0.10			< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10			< 0.10		< 0.10			< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10			< 0.10		< 0.10			< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10			< 0.10		< 0.10			< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10			< 0.10		< 0.10			< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10			< 0.10		< 0.10			< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10			< 0.10		< 0.10			< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10			< 0.10		< 0.10			< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10			< 0.10		< 0.10			< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0			< 2.0		< 2.0			< 2.0
PCB 81	N	2815	mg/kg	0.010			< 0.010					< 0.010	
PCB 77	U	2815	mg/kg	0.010			< 0.010					< 0.010	
PCB 105	N	2815	mg/kg	0.010			< 0.010					< 0.010	
PCB 114	N	2815	mg/kg	0.010			< 0.010					< 0.010	
PCB 118	N	2815	mg/kg	0.010			< 0.010					< 0.010	
PCB 123	N	2815	mg/kg	0.010			< 0.010					< 0.010	
PCB 126	N	2815	mg/kg	0.010			< 0.010					< 0.010	
PCB 156	N	2815	mg/kg	0.010			< 0.010					< 0.010	
PCB 157	N	2815	mg/kg	0.010			< 0.010					< 0.010	
PCB 167	N	2815	mg/kg	0.010			< 0.010					< 0.010	
PCB 169	N	2815	mg/kg	0.010			< 0.010					< 0.010	
PCB 189	N	2815	mg/kg	0.010			< 0.010					< 0.010	
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12			< 0.12					< 0.12	
Resorcinol	M	2920	mg/kg	0.020	< 0.020			< 0.020		< 0.020			< 0.020
Phenol	M	2920	mg/kg	0.020	< 0.020			< 0.020		< 0.020			< 0.020
Cresols	M	2920	mg/kg	0.020	< 0.020			< 0.020		< 0.020			< 0.020
Xylenols	M	2920	mg/kg	0.020	< 0.020			< 0.020		< 0.020			< 0.020
1-Naphthol	N	2920	mg/kg	0.020	< 0.020			< 0.020		< 0.020			< 0.020
Trimethylphenols	M	2920	mg/kg	0.020	< 0.020			< 0.020		< 0.020			< 0.020
Total Phenols	M	2920	mg/kg	0.10	< 0.10			< 0.10		< 0.10			< 0.10

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL					**Chemtest Job No.:**	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896					**Chemtest Sample ID.:**	1567091	1567092	1567093	1567094	1567096	1567097	1567098	1567099	1567100
Order No.:					Client Sample Ref.:	AA185488	AA185498	AA181957	AA181963	AA181976	AA181972	AA181969	AA181966	AA181978
					Sample Location:	TP20	TP22	TP23	TP25	TP26	TP27	TP28	TP29	TP30
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.60	1.40	0.50	0.50	1.30	0.50	0.60	0.50	0.50
					Asbestos Lab:	DURHAM		DURHAM			DURHAM		DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
ACM Type	U	2192		N/A		-		-			-		-	
Asbestos Identification	U	2192		N/A		No Asbestos Detected		No Asbestos Detected			No Asbestos Detected		No Asbestos Detected	
Moisture	N	2030	%	0.020		13	11	14	13	10	11	21	8.4	14
pH	M	2010		4.0		[A] 8.6		[A] 8.5			[A] 8.5		[A] 8.4	
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40		[A] < 0.40		[A] < 0.40			[A] < 0.40		[A] < 0.40	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010		[A] < 0.010		[A] < 0.010			[A] < 0.010		[A] < 0.010	
Total Sulphur	M	2175	%	0.010		[A] < 0.010		[A] < 0.010			[A] < 0.010		[A] < 0.010	
Sulphur (Elemental)	M	2180	mg/kg	1.0		[A] < 1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0	
Cyanide (Free)	M	2300	mg/kg	0.50		[A] < 0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50	
Cyanide (Total)	M	2300	mg/kg	0.50		[A] < 0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50	
Thiocyanate	M	2300	mg/kg	5.0		[A] < 5.0		[A] < 5.0			[A] < 5.0		[A] < 5.0	
Aluminium (Total)	N	2430	mg/kg	100		[A] 3700		[A] 7500			[A] 4100		[A] 4800	
Iron (Total)	N	2430	mg/kg	100		[A] 9200		[A] 15000			[A] 9800		[A] 4900	
Arsenic	M	2455	mg/kg	0.5		5.8		9.1			7.5		7.7	
Barium	M	2455	mg/kg	0		79		51			71		46	
Beryllium	U	2455	mg/kg	0.5		< 0.5		0.8			0.5		0.8	
Cadmium	M	2455	mg/kg	0.10		1.2		2.4			1.9		1.7	
Chromium	M	2455	mg/kg	0.5		14		20			14		19	
Manganese	M	2455	mg/kg	1.0		< 1.0		1000			1000		680	
Copper	M	2455	mg/kg	0.50		11		21			13		17	
Mercury	M	2455	mg/kg	0.05		< 0.05		0.07			< 0.05		0.06	
Nickel	M	2455	mg/kg	0.50		24		52			35		37	
Lead	M	2455	mg/kg	0.50		19		29			23		25	
Selenium	M	2455	mg/kg	0.25		0.60		1.1			0.54		0.84	
Vanadium	U	2455	mg/kg	0.5		14		21			14		18	
Zinc	M	2455	mg/kg	0.50		73		130			88		110	
Chromium (Hexavalent)	N	2490	mg/kg	0.50		< 0.50		< 0.50			< 0.50		< 0.50	
Organic Matter	M	2625	%	0.40		[A] 0.75		[A] 0.66			[A] < 0.40		[A] < 0.40	
Total Organic Carbon	M	2625	%	0.20		[A] 0.43		[A] 0.38			[A] < 0.20		[A] < 0.20	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0	
Aliphatic TPH >C8-C10	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0	
Aliphatic TPH >C10-C12	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0	
Aliphatic TPH >C12-C16	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0	
Aliphatic TPH >C16-C21	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0	
Aliphatic TPH >C21-C35	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0	

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL					**Chemtest Job No.:**	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896					**Chemtest Sample ID.:**	1567091	1567092	1567093	1567094	1567096	1567097	1567098	1567099	1567100
Order No.:					Client Sample Ref.:	AA185488	AA185498	AA181957	AA181963	AA181976	AA181972	AA181969	AA181966	AA181978
					Sample Location:	TP20	TP22	TP23	TP25	TP26	TP27	TP28	TP29	TP30
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.60	1.40	0.50	0.50	1.30	0.50	0.60	0.50	0.50
					Asbestos Lab:	DURHAM		DURHAM			DURHAM		DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0		[A] < 5.0		[A] < 5.0			[A] < 5.0		[A] < 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0	
Aromatic TPH >C8-C10	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0	
Aromatic TPH >C10-C12	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0	
Aromatic TPH >C12-C16	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0	
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0	
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0			[A] < 1.0		[A] < 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		[A] < 5.0		[A] < 5.0			[A] < 5.0		[A] < 5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		[A] < 10		[A] < 10			[A] < 10		[A] < 10	
Dichlorodifluoromethane	U	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Chloromethane	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Vinyl Chloride	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Bromomethane	M	2760	mg/kg	0.020			[A] < 0.020			[A] < 0.020		[A] < 0.020		
Chloroethane	U	2760	mg/kg	0.0020			[A] < 0.0020			[A] < 0.0020		[A] < 0.0020		
Trichlorofluoromethane	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,1-Dichloroethene	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Trans 1,2-Dichloroethene	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,1-Dichloroethane	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
cis 1,2-Dichloroethene	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Bromochloromethane	U	2760	mg/kg	0.0050			[A] < 0.0050			[A] < 0.0050		[A] < 0.0050		
Trichloromethane	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,1,1-Trichloroethane	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Tetrachloromethane	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,1-Dichloropropene	U	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Benzene	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	
1,2-Dichloroethane	M	2760	mg/kg	0.0020			[A] < 0.0020			[A] < 0.0020		[A] < 0.0020		
Trichloroethene	N	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,2-Dichloropropane	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Dibromomethane	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Bromodichloromethane	M	2760	mg/kg	0.0050			[A] < 0.0050			[A] < 0.0050		[A] < 0.0050		
cis-1,3-Dichloropropene	N	2760	mg/kg	0.010			[A] < 0.010			[A] < 0.010		[A] < 0.010		
Toluene	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010		[A] < 0.0010		[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	
Trans-1,3-Dichloropropene	N	2760	mg/kg	0.010			[A] < 0.010			[A] < 0.010		[A] < 0.010		
1,1,2-Trichloroethane	M	2760	mg/kg	0.010			[A] < 0.010			[A] < 0.010		[A] < 0.010		
Tetrachloroethene	M	2760	mg/kg	0.0010			[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,3-Dichloropropane	U	2760	mg/kg	0.0020			[A] < 0.0020			[A] < 0.0020		[A] < 0.0020		

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL					**Chemtest Job No.:**	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896					**Chemtest Sample ID.:**	1567091	1567092	1567093	1567094	1567096	1567097	1567098	1567099	1567100
Order No.:					Client Sample Ref.:	AA185488	AA185498	AA181957	AA181963	AA181976	AA181972	AA181969	AA181966	AA181978
					Sample Location:	TP20	TP22	TP23	TP25	TP26	TP27	TP28	TP29	TP30
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.60	1.40	0.50	0.50	1.30	0.50	0.60	0.50	0.50
					Asbestos Lab:	DURHAM		DURHAM			DURHAM		DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Dibromochloromethane	U	2760	mg/kg	0.010		[A] < 0.010			[A] < 0.010		[A] < 0.010		
1,2-Dibromoethane	M	2760	mg/kg	0.0050		[A] < 0.0050			[A] < 0.0050		[A] < 0.0050		
Chlorobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,1,1,2-Tetrachloroethane	M	2760	mg/kg	0.0020		[A] < 0.0020			[A] < 0.0020		[A] < 0.0020		
Ethylbenzene	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010		[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	
m & p-Xylene	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010		[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	
o-Xylene	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010		[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	
Styrene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Tribromomethane	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Isopropylbenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Bromobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,2,3-Trichloropropane	N	2760	mg/kg	0.050		[A] < 0.050			[A] < 0.050		[A] < 0.050		
N-Propylbenzene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
2-Chlorotoluene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,3,5-Trimethylbenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
4-Chlorotoluene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Tert-Butylbenzene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,2,4-Trimethylbenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Sec-Butylbenzene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,3-Dichlorobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
4-Isopropyltoluene	N	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,4-Dichlorobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
N-Butylbenzene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,2-Dichlorobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,2-Dibromo-3-Chloropropane	U	2760	mg/kg	0.050		[A] < 0.050			[A] < 0.050		[A] < 0.050		
1,2,4-Trichlorobenzene	M	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
Hexachlorobutadiene	U	2760	mg/kg	0.0010		[A] < 0.0010			[A] < 0.0010		[A] < 0.0010		
1,2,3-Trichlorobenzene	U	2760	mg/kg	0.0020		[A] < 0.0020			[A] < 0.0020		[A] < 0.0020		
Methyl Tert-Butyl Ether	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010		[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	
N-Nitrosodimethylamine	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Phenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
2-Chlorophenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
1,3-Dichlorobenzene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
1,4-Dichlorobenzene	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
1,2-Dichlorobenzene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
2-Methylphenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL			**Chemtest Job No.:**		22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896			**Chemtest Sample ID.:**		1567091	1567092	1567093	1567094	1567096	1567097	1567098	1567099	1567100
Order No.:			Client Sample Ref.:		AA185488	AA185498	AA181957	AA181963	AA181976	AA181972	AA181969	AA181966	AA181978
			Sample Location:		TP20	TP22	TP23	TP25	TP26	TP27	TP28	TP29	TP30
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.60	1.40	0.50	0.50	1.30	0.50	0.60	0.50	0.50
			Asbestos Lab:		DURHAM		DURHAM			DURHAM		DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Hexachloroethane	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
4-Methylphenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Nitrobenzene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Isophorone	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
2-Nitrophenol	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
2,4-Dimethylphenol	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
2,4-Dichlorophenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
4-Chloroaniline	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Hexachlorobutadiene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
2-Methylnaphthalene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
4-Nitrophenol	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
2-Chloronaphthalene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
2-Nitroaniline	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Dimethylphthalate	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
2,6-Dinitrotoluene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
3-Nitroaniline	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Dibenzofuran	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
4-Chlorophenylphenylether	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
2,4-Dinitrotoluene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Diethyl Phthalate	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
4-Nitroaniline	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Azobenzene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Hexachlorobenzene	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Pentachlorophenol	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Carbazole	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Butylbenzyl Phthalate	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50		[A] < 0.50			[A] < 0.50		[A] < 0.50		

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL			**Chemtest Job No.:**		22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896			**Chemtest Sample ID.:**		1567091	1567092	1567093	1567094	1567096	1567097	1567098	1567099	1567100
Order No.:			Client Sample Ref.:		AA185488	AA185498	AA181957	AA181963	AA181976	AA181972	AA181969	AA181966	AA181978
			Sample Location:		TP20	TP22	TP23	TP25	TP26	TP27	TP28	TP29	TP30
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.60	1.40	0.50	0.50	1.30	0.50	0.60	0.50	0.50
			Asbestos Lab:		DURHAM		DURHAM			DURHAM		DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Naphthalene	M	2800	mg/kg	0.10	< 0.10		< 0.10			< 0.10		< 0.10	
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10		< 0.10			< 0.10		< 0.10	
Acenaphthene	M	2800	mg/kg	0.10	< 0.10		< 0.10			< 0.10		< 0.10	
Fluorene	M	2800	mg/kg	0.10	< 0.10		< 0.10			< 0.10		< 0.10	
Phenanthrene	M	2800	mg/kg	0.10	< 0.10		< 0.10			< 0.10		< 0.10	
Anthracene	M	2800	mg/kg	0.10	< 0.10		< 0.10			< 0.10		< 0.10	
Fluoranthene	M	2800	mg/kg	0.10	< 0.10		< 0.10			< 0.10		< 0.10	
Pyrene	M	2800	mg/kg	0.10	< 0.10		< 0.10			< 0.10		< 0.10	
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10		< 0.10			< 0.10		< 0.10	
Chrysene	M	2800	mg/kg	0.10	< 0.10		< 0.10			< 0.10		< 0.10	
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10		< 0.10			< 0.10		< 0.10	
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10		< 0.10			< 0.10		< 0.10	
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10		< 0.10			< 0.10		< 0.10	
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10		< 0.10			< 0.10		< 0.10	
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10		< 0.10			< 0.10		< 0.10	
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10		< 0.10			< 0.10		< 0.10	
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0		< 2.0			< 2.0		< 2.0	
PCB 81	N	2815	mg/kg	0.010				< 0.010					< 0.010
PCB 77	U	2815	mg/kg	0.010				< 0.010					< 0.010
PCB 105	N	2815	mg/kg	0.010				< 0.010					< 0.010
PCB 114	N	2815	mg/kg	0.010				< 0.010					< 0.010
PCB 118	N	2815	mg/kg	0.010				< 0.010					< 0.010
PCB 123	N	2815	mg/kg	0.010				< 0.010					< 0.010
PCB 126	N	2815	mg/kg	0.010				< 0.010					< 0.010
PCB 156	N	2815	mg/kg	0.010				< 0.010					< 0.010
PCB 157	N	2815	mg/kg	0.010				< 0.010					< 0.010
PCB 167	N	2815	mg/kg	0.010				< 0.010					< 0.010
PCB 169	N	2815	mg/kg	0.010				< 0.010					< 0.010
PCB 189	N	2815	mg/kg	0.010				< 0.010					< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12				< 0.12					< 0.12
Resorcinol	M	2920	mg/kg	0.020	< 0.020		< 0.020			< 0.020		< 0.020	
Phenol	M	2920	mg/kg	0.020	< 0.020		< 0.020			< 0.020		< 0.020	
Cresols	M	2920	mg/kg	0.020	< 0.020		< 0.020			< 0.020		< 0.020	
Xylenols	M	2920	mg/kg	0.020	< 0.020		< 0.020			< 0.020		< 0.020	
1-Naphthol	N	2920	mg/kg	0.020	< 0.020		< 0.020			< 0.020		< 0.020	
Trimethylphenols	M	2920	mg/kg	0.020	< 0.020		< 0.020			< 0.020		< 0.020	
Total Phenols	M	2920	mg/kg	0.10	< 0.10		< 0.10			< 0.10		< 0.10	

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL			**Chemtest Job No.:**		22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896			**Chemtest Sample ID.:**		1567101	1567103	1567104	1567105
Order No.:			Client Sample Ref.:		AA181992	AA181995	AA181989	AA181987
			Sample Location:		TP31	TP32	TP33	TP34
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.40	0.50	1.40
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-	-	
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	
Moisture	N	2030	%	0.020	11	9.0	15	9.1
pH	M	2010		4.0	[A] 7.3	[A] 8.3	[A] 7.7	
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	[A] < 0.40	[A] < 0.40	[A] < 0.40	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	
Total Sulphur	M	2175	%	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	
Sulphur (Elemental)	M	2180	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	
Cyanide (Free)	M	2300	mg/kg	0.50	[A] 0.50	[A] 1.1	[A] 0.60	
Cyanide (Total)	M	2300	mg/kg	0.50	[A] 0.60	[A] 1.1	[A] 0.60	
Thiocyanate	M	2300	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	
Aluminium (Total)	N	2430	mg/kg	100	[A] 8700	[A] 2200	[A] 5100	
Iron (Total)	N	2430	mg/kg	100	[A] 17000	[A] 7700	[A] 14000	
Arsenic	M	2455	mg/kg	0.5	9.4	6.9	7.6	
Barium	M	2455	mg/kg	0	42	35	42	
Beryllium	U	2455	mg/kg	0.5	0.8	< 0.5	0.6	
Cadmium	M	2455	mg/kg	0.10	1.1	0.99	1.6	
Chromium	M	2455	mg/kg	0.5	19	6.8	15	
Manganese	M	2455	mg/kg	1.0	990	580	740	
Copper	M	2455	mg/kg	0.50	18	10	16	
Mercury	M	2455	mg/kg	0.05	0.08	< 0.05	0.05	
Nickel	M	2455	mg/kg	0.50	41	17	34	
Lead	M	2455	mg/kg	0.50	32	12	25	
Selenium	M	2455	mg/kg	0.25	0.95	0.62	0.72	
Vanadium	U	2455	mg/kg	0.5	21	7.2	16	
Zinc	M	2455	mg/kg	0.50	130	58	100	
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	
Organic Matter	M	2625	%	0.40	[A] 0.59	[A] < 0.40	[A] 0.67	
Total Organic Carbon	M	2625	%	0.20	[A] 0.34	[A] 0.22	[A] 0.39	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	
Aliphatic TPH >C8-C10	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	
Aliphatic TPH >C10-C12	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	
Aliphatic TPH >C12-C16	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	
Aliphatic TPH >C16-C21	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	
Aliphatic TPH >C21-C35	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL			**Chemtest Job No.:**		22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896			**Chemtest Sample ID.:**		1567101	1567103	1567104	1567105
Order No.:			Client Sample Ref.:		AA181992	AA181995	AA181989	AA181987
			Sample Location:		TP31	TP32	TP33	TP34
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.40	0.50	1.40
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	
Aromatic TPH >C8-C10	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	
Aromatic TPH >C10-C12	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	
Aromatic TPH >C12-C16	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	
Dichlorodifluoromethane	U	2760	mg/kg	0.0010				[A] < 0.0010
Chloromethane	M	2760	mg/kg	0.0010				[A] < 0.0010
Vinyl Chloride	M	2760	mg/kg	0.0010				[A] < 0.0010
Bromomethane	M	2760	mg/kg	0.020				[A] < 0.020
Chloroethane	U	2760	mg/kg	0.0020				[A] < 0.0020
Trichlorofluoromethane	M	2760	mg/kg	0.0010				[A] < 0.0010
1,1-Dichloroethene	M	2760	mg/kg	0.0010				[A] < 0.0010
Trans 1,2-Dichloroethene	M	2760	mg/kg	0.0010				[A] < 0.0010
1,1-Dichloroethane	M	2760	mg/kg	0.0010				[A] < 0.0010
cis 1,2-Dichloroethene	M	2760	mg/kg	0.0010				[A] < 0.0010
Bromochloromethane	U	2760	mg/kg	0.0050				[A] < 0.0050
Trichloromethane	M	2760	mg/kg	0.0010				[A] < 0.0010
1,1,1-Trichloroethane	M	2760	mg/kg	0.0010				[A] < 0.0010
Tetrachloromethane	M	2760	mg/kg	0.0010				[A] < 0.0010
1,1-Dichloropropene	U	2760	mg/kg	0.0010				[A] < 0.0010
Benzene	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
1,2-Dichloroethane	M	2760	mg/kg	0.0020				[A] < 0.0020
Trichloroethene	N	2760	mg/kg	0.0010				[A] < 0.0010
1,2-Dichloropropane	M	2760	mg/kg	0.0010				[A] < 0.0010
Dibromomethane	M	2760	mg/kg	0.0010				[A] < 0.0010
Bromodichloromethane	M	2760	mg/kg	0.0050				[A] < 0.0050
cis-1,3-Dichloropropene	N	2760	mg/kg	0.010				[A] < 0.010
Toluene	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
Trans-1,3-Dichloropropene	N	2760	mg/kg	0.010				[A] < 0.010
1,1,2-Trichloroethane	M	2760	mg/kg	0.010				[A] < 0.010
Tetrachloroethene	M	2760	mg/kg	0.0010				[A] < 0.0010
1,3-Dichloropropane	U	2760	mg/kg	0.0020				[A] < 0.0020

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL					Chemtest Job No.:	22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896					Chemtest Sample ID.:	1567101	1567103	1567104	1567105
Order No.:					Client Sample Ref.:	AA181992	AA181995	AA181989	AA181987
					Sample Location:	TP31	TP32	TP33	TP34
					Sample Type:	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	1.40	0.50	1.40
					Asbestos Lab:	DURHAM	DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Dibromochloromethane	U	2760	mg/kg	0.010					[A] < 0.010
1,2-Dibromoethane	M	2760	mg/kg	0.0050					[A] < 0.0050
Chlorobenzene	M	2760	mg/kg	0.0010					[A] < 0.0010
1,1,1,2-Tetrachloroethane	M	2760	mg/kg	0.0020					[A] < 0.0020
Ethylbenzene	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	
m & p-Xylene	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	
o-Xylene	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	
Styrene	M	2760	mg/kg	0.0010					[A] < 0.0010
Tribromomethane	U	2760	mg/kg	0.0010					[A] < 0.0010
Isopropylbenzene	M	2760	mg/kg	0.0010					[A] < 0.0010
Bromobenzene	M	2760	mg/kg	0.0010					[A] < 0.0010
1,2,3-Trichloropropane	N	2760	mg/kg	0.050					[A] < 0.050
N-Propylbenzene	U	2760	mg/kg	0.0010					[A] < 0.0010
2-Chlorotoluene	M	2760	mg/kg	0.0010					[A] < 0.0010
1,3,5-Trimethylbenzene	M	2760	mg/kg	0.0010					[A] < 0.0010
4-Chlorotoluene	U	2760	mg/kg	0.0010					[A] < 0.0010
Tert-Butylbenzene	U	2760	mg/kg	0.0010					[A] < 0.0010
1,2,4-Trimethylbenzene	M	2760	mg/kg	0.0010					[A] < 0.0010
Sec-Butylbenzene	U	2760	mg/kg	0.0010					[A] < 0.0010
1,3-Dichlorobenzene	M	2760	mg/kg	0.0010					[A] < 0.0010
4-Isopropyltoluene	N	2760	mg/kg	0.0010					[A] < 0.0010
1,4-Dichlorobenzene	M	2760	mg/kg	0.0010					[A] < 0.0010
N-Butylbenzene	U	2760	mg/kg	0.0010					[A] < 0.0010
1,2-Dichlorobenzene	M	2760	mg/kg	0.0010					[A] < 0.0010
1,2-Dibromo-3-Chloropropane	U	2760	mg/kg	0.050					[A] < 0.050
1,2,4-Trichlorobenzene	M	2760	mg/kg	0.0010					[A] < 0.0010
Hexachlorobutadiene	U	2760	mg/kg	0.0010					[A] < 0.0010
1,2,3-Trichlorobenzene	U	2760	mg/kg	0.0020					[A] < 0.0020
Methyl Tert-Butyl Ether	M	2760	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	
N-Nitrosodimethylamine	M	2790	mg/kg	0.50					[A] < 0.50
Phenol	M	2790	mg/kg	0.50					[A] < 0.50
2-Chlorophenol	M	2790	mg/kg	0.50					[A] < 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50					[A] < 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50					[A] < 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50					[A] < 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50					[A] < 0.50
2-Methylphenol	M	2790	mg/kg	0.50					[A] < 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50					[A] < 0.50

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL			Chemtest Job No.:		22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896			Chemtest Sample ID.:		1567101	1567103	1567104	1567105
Order No.:			Client Sample Ref.:		AA181992	AA181995	AA181989	AA181987
			Sample Location:		TP31	TP32	TP33	TP34
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.40	0.50	1.40
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Hexachloroethane	N	2790	mg/kg	0.50				[A] < 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50				[A] < 0.50
4-Methylphenol	M	2790	mg/kg	0.50				[A] < 0.50
Nitrobenzene	M	2790	mg/kg	0.50				[A] < 0.50
Isophorone	M	2790	mg/kg	0.50				[A] < 0.50
2-Nitrophenol	N	2790	mg/kg	0.50				[A] < 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50				[A] < 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50				[A] < 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50				[A] < 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50				[A] < 0.50
4-Chloroaniline	N	2790	mg/kg	0.50				[A] < 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50				[A] < 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50				[A] < 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50				[A] < 0.50
4-Nitrophenol	N	2790	mg/kg	0.50				[A] < 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50				[A] < 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50				[A] < 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50				[A] < 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50				[A] < 0.50
2-Nitroaniline	M	2790	mg/kg	0.50				[A] < 0.50
Dimethylphthalate	M	2790	mg/kg	0.50				[A] < 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50				[A] < 0.50
3-Nitroaniline	N	2790	mg/kg	0.50				[A] < 0.50
Dibenzofuran	M	2790	mg/kg	0.50				[A] < 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50				[A] < 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50				[A] < 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50				[A] < 0.50
4-Nitroaniline	M	2790	mg/kg	0.50				[A] < 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50				[A] < 0.50
Azobenzene	M	2790	mg/kg	0.50				[A] < 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50				[A] < 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50				[A] < 0.50
Pentachlorophenol	N	2790	mg/kg	0.50				[A] < 0.50
Carbazole	M	2790	mg/kg	0.50				[A] < 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50				[A] < 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50				[A] < 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50				[A] < 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50				[A] < 0.50

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL			Chemtest Job No.:		22-48580	22-48580	22-48580	22-48580
Quotation No.: Q22-28896			Chemtest Sample ID.:		1567101	1567103	1567104	1567105
Order No.:			Client Sample Ref.:		AA181992	AA181995	AA181989	AA181987
			Sample Location:		TP31	TP32	TP33	TP34
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.40	0.50	1.40
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	
Anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	
Fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	
Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	
Chrysene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	
PCB 81	N	2815	mg/kg	0.010				
PCB 77	U	2815	mg/kg	0.010				
PCB 105	N	2815	mg/kg	0.010				
PCB 114	N	2815	mg/kg	0.010				
PCB 118	N	2815	mg/kg	0.010				
PCB 123	N	2815	mg/kg	0.010				
PCB 126	N	2815	mg/kg	0.010				
PCB 156	N	2815	mg/kg	0.010				
PCB 157	N	2815	mg/kg	0.010				
PCB 167	N	2815	mg/kg	0.010				
PCB 169	N	2815	mg/kg	0.010				
PCB 189	N	2815	mg/kg	0.010				
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12				
Resorcinol	M	2920	mg/kg	0.020	< 0.020	< 0.020	< 0.020	
Phenol	M	2920	mg/kg	0.020	< 0.020	< 0.020	< 0.020	
Cresols	M	2920	mg/kg	0.020	< 0.020	< 0.020	< 0.020	
Xylenols	M	2920	mg/kg	0.020	< 0.020	< 0.020	< 0.020	
1-Naphthol	N	2920	mg/kg	0.020	< 0.020	< 0.020	< 0.020	
Trimethylphenols	M	2920	mg/kg	0.020	< 0.020	< 0.020	< 0.020	
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	

Results - Single Stage WAC

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-48580						
Chemtest Sample ID:	1567078						
Sample Ref:	AA186953				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP03						
Top Depth(m):	0.50						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 0.20	3	5	6
Loss On Ignition	2610	M	%	1.7	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.035	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0009	0.0093	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	0.0010	0.010	0.5	10	70
Copper	1455	U	0.0020	0.020	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0009	0.0092	0.5	10	30
Nickel	1455	U	0.0016	0.016	0.4	10	40
Lead	1455	U	0.0010	0.0097	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455	U	0.032	0.32	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.39	3.9	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	46	460	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	9.0	90	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-48580						
Chemtest Sample ID:	1567083						
Sample Ref:	AA186975				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP09						
Top Depth(m):	0.50						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 0.26	3	5	6
Loss On Ignition	2610	M	%	1.7	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.044	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0002	0.0023	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	0.0011	0.011	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0009	0.0094	0.5	10	30
Nickel	1455	U	0.0007	0.0072	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	0.0007	0.0069	0.1	0.5	7
Zinc	1455	U	0.011	0.11	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.69	6.9	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	62	620	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.8	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-48580						
Chemtest Sample ID:	1567088						
Sample Ref:	AA185478				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP15						
Top Depth(m):	0.50						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 0.55	3	5	6
Loss On Ignition	2610	M	%	1.8	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.20	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0020	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	0.0012	0.012	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0014	0.014	0.5	10	30
Nickel	1455	U	0.0007	0.0073	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455	U	0.019	0.19	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.40	4.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	46	460	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.8

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-48580						
Chemtest Sample ID:	1567095						
Sample Ref:	AA181975				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP26						
Top Depth(m):	0.50						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 0.63	3	5	6
Loss On Ignition	2610	M	%	2.9	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.043	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	0.0039	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	0.0019	0.019	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0009	0.0090	0.5	10	30
Nickel	1455	U	0.0013	0.013	0.4	10	40
Lead	1455	U	0.0005	0.0051	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455	U	0.028	0.28	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.28	2.8	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	9.1	91	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-48580						
Chemtest Sample ID:	1567102						
Sample Ref:	AA181994				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP32						
Top Depth(m):	0.50						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 0.30	3	5	6
Loss On Ignition	2610	M	%	3.3	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	M		7.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.038	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0006	0.0056	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	0.0010	0.0097	0.5	10	70
Copper	1455	U	0.0021	0.021	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0020	0.5	10	30
Nickel	1455	U	0.0027	0.027	0.4	10	40
Lead	1455	U	0.0010	0.010	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455	U	0.041	0.41	4	50	200
Chloride	1220	U	1.2	12	800	15000	25000
Fluoride	1220	U	0.13	1.3	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	13	130	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	11	110	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

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

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1567070	AA184690		BH03		A	Amber Glass 250ml
1567070	AA184690		BH03		A	Plastic Tub 500g
1567071	AA184693		BH04		A	Amber Glass 250ml
1567071	AA184693		BH04		A	Plastic Tub 500g
1567072	AA184669		BH06		A	Amber Glass 250ml
1567072	AA184669		BH06		A	Plastic Tub 500g
1567073	AA184668		BH08		A	Amber Glass 250ml
1567073	AA184668		BH08		A	Plastic Tub 500g
1567074	AA174678		BH10		A	Amber Glass 250ml
1567074	AA174678		BH10		A	Plastic Tub 500g
1567075	AA184675		BH12		A	Amber Glass 250ml
1567075	AA184675		BH12		A	Plastic Tub 500g
1567076	AA186957		TP01		A	Amber Glass 250ml
1567076	AA186957		TP01		A	Plastic Tub 500g
1567077	AA181997		TP02		A	Amber Glass 250ml
1567077	AA181997		TP02		A	Plastic Tub 500g
1567078	AA186953		TP03		A	Amber Glass 250ml
1567078	AA186953		TP03		A	Plastic Tub 500g
1567080	AA186979		TP06		A	Amber Glass 250ml
1567080	AA186979		TP06		A	Plastic Tub 500g
1567081	AA186963		TP07		A	Amber Glass 250ml
1567081	AA186963		TP07		A	Plastic Tub 500g

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1567083	AA186975		TP09		A	Amber Glass 250ml
1567083	AA186975		TP09		A	Plastic Tub 500g
1567084	AA186969		TP10		A	Amber Glass 250ml
1567084	AA186969		TP10		A	Plastic Tub 500g
1567085	AA185474		TP13		A	Amber Glass 250ml
1567085	AA185474		TP13		A	Plastic Tub 500g
1567086	AA185457		TP14		A	Amber Glass 250ml
1567086	AA185457		TP14		A	Plastic Tub 500g
1567087	AA185458		TP14		A	Amber Glass 250ml
1567087	AA185458		TP14		A	Plastic Tub 500g
1567088	AA185478		TP15		A	Amber Glass 250ml
1567088	AA185478		TP15		A	Plastic Tub 500g
1567090	AA185464		TP18		A	Amber Glass 250ml
1567090	AA185464		TP18		A	Plastic Tub 500g
1567091	AA185488		TP20		A	Amber Glass 250ml
1567091	AA185488		TP20		A	Plastic Tub 500g
1567092	AA185498		TP22		A	Amber Glass 250ml
1567092	AA185498		TP22		A	Plastic Tub 500g
1567093	AA181957		TP23		A	Amber Glass 250ml
1567093	AA181957		TP23		A	Plastic Tub 500g
1567095	AA181975		TP26		A	Amber Glass 250ml
1567095	AA181975		TP26		A	Plastic Tub 500g

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1567096	AA181976		TP26		A	Amber Glass 250ml
1567096	AA181976		TP26		A	Plastic Tub 500g
1567097	AA181972		TP27		A	Amber Glass 250ml
1567097	AA181972		TP27		A	Plastic Tub 500g
1567098	AA181969		TP28		A	Amber Glass 250ml
1567098	AA181969		TP28		A	Plastic Tub 500g
1567099	AA181966		TP29		A	Amber Glass 250ml
1567099	AA181966		TP29		A	Plastic Tub 500g
1567101	AA181992		TP31		A	Amber Glass 250ml
1567101	AA181992		TP31		A	Plastic Tub 500g
1567102	AA181994		TP32		A	Amber Glass 250ml
1567102	AA181994		TP32		A	Plastic Tub 500g
1567103	AA181995		TP32		A	Amber Glass 250ml
1567103	AA181995		TP32		A	Plastic Tub 500g
1567104	AA181989		TP33		A	Amber Glass 250ml
1567104	AA181989		TP33		A	Plastic Tub 500g
1567105	AA181987		TP34		A	Amber Glass 250ml
1567105	AA181987		TP34		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

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N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-48622-1		
Initial Date of Issue:	05-Jan-2023		
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	Darren Keogh		
Project	24330 Halversown Naas Proposed Data Centre Sites (DOBA)		
Quotation No.:	Q20-21693	**Date Received:**	20-Dec-2022
Order No.:		**Date Instructed:**	20-Dec-2022
No. of Samples:	10		
Turnaround (Wkdays):	7	**Results Due:**	04-Jan-2023
Date Approved:	05-Jan-2023		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Soil

Project: 24330 Halversown Naas Proposed Data Centre Sites (DOBA)

Client: IGSL					**Chemtest Job No.:**	22-48622	22-48622	22-48622	22-48622	22-48622	22-48622	22-48622	22-48622	22-48622	22-48622
Quotation No.: Q20-21693					**Chemtest Sample ID.:**	1567189	1567190	1567191	1567192	1567193	1567194	1567196	1567197	1567198	1567199
Order No.:					Client Sample Ref.:	AA184687	AA184690	AA184670	AA184673	AA184679	AA184677	AA186982	AA185481	AA185468	AA181975
					Sample Location:	BH01	BH03	BH05	BH07	BH09	BH11	TP04	TP12	TP19	TP26
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	1.00	1.00	1.00	1.00	1.00	0.60	0.50	0.50	0.50
Determinand	**Accred.**	**SOP**	**Units**	**LOD**											
Moisture	N	2030	%	0.020		14	13	10	28	14	21	16	11	9.3	17
pH (2.5:1)	N	2010		4.0		[A] 8.5	[A] 8.7	[A] 8.5	[A] 8.3	[A] 8.6	[A] 8.2	[A] 8.5	[A] 8.4	[A] 8.6	[A] 8.4
Magnesium (Water Soluble)	N	2120	g/l	0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total Sulphur	U	2175	%	0.010		[A] 0.032	[A] 0.051	[A] < 0.010	[A] 0.026	[A] < 0.010	[A] < 0.010	[A] 0.013	[A] 0.015	[A] 0.25	[A] 0.099
Chloride (Water Soluble)	U	2220	g/l	0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Nitrate (Water Soluble)	N	2220	g/l	0.010		0.011	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Ammonium (Water Soluble)	U	2220	g/l	0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sulphate (Acid Soluble)	U	2430	%	0.010		[A] 0.11	[A] 0.024	[A] 0.037	[A] 0.074	[A] 0.024	[A] 0.036	[A] 0.026	[A] 0.015	[A] 0.019	[A] 0.030

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1567189	AA184687		BH01		A	Amber Glass 250ml
1567189	AA184687		BH01		A	Plastic Tub 500g
1567190	AA184690		BH03		A	Amber Glass 250ml
1567190	AA184690		BH03		A	Plastic Tub 500g
1567191	AA184670		BH05		A	Amber Glass 250ml
1567191	AA184670		BH05		A	Plastic Tub 500g
1567192	AA184673		BH07		A	Amber Glass 250ml
1567192	AA184673		BH07		A	Plastic Tub 500g
1567193	AA184679		BH09		A	Amber Glass 250ml
1567193	AA184679		BH09		A	Plastic Tub 500g
1567194	AA184677		BH11		A	Amber Glass 250ml
1567194	AA184677		BH11		A	Plastic Tub 500g
1567196	AA186982		TP04		A	Amber Glass 250ml
1567196	AA186982		TP04		A	Plastic Tub 500g
1567197	AA185481		TP12		A	Amber Glass 250ml
1567197	AA185481		TP12		A	Plastic Tub 500g
1567198	AA185468		TP19		A	Amber Glass 250ml
1567198	AA185468		TP19		A	Plastic Tub 500g
1567199	AA181975		TP26		A	Amber Glass 250ml
1567199	AA181975		TP26		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

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M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
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All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

7 - 11 Harding Street
Leicester
LE1 4DH

IGSL
Unit F
M7 Business Park
Naas

Analytical Test Report: L23/00718/IGS - 23-32082

Your Project Reference:	**24330 Halverstown Naas**		
Your Order Number:	21187	Samples Received / Instructed:	15/02/2023 / 15/02/2023
Report Issue Number:	1	Sample Tested:	15/02 to 22/02/2023
Samples Analysed:	5 aggregate samples	Report issued:	23/02/2023

Signed

James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30˚C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 23.09.2022

Issued by: J. Gane

Issue No: 1

Rev No: 1

7 - 11 Harding Street
Leicester
LE1 4DH

L23/00718/IGS - 23-32082

Project Reference - 24330 Halverstown Naas

Analytical Test Results - Chemical Analysis

Lab Reference			279664	279665	279666	279667	279668
Client Sample ID			A22/7562	A22/7575	A22/7568	A22/7563	A22/7578
Material			Soil	Soil	Soil	Soil	Soil
Source/Client Reference			TP04@ 0.6m	TP026@ 0.5m	TP19 @ 0.5m	TP12@ 0.5m	TP31@ 0.5m
Sample Matrix			Sand	Sand	Sand	Sand	Sand
Determinant	**Units**	**Accreditation**					
Water soluble sulphate	(mg/l)	u	< 10	< 10	< 10	< 10	< 10
Acid Soluble Sulphate	(%)	u	0.07	0.06	0.05	0.05	0.20
Total Sulphur	(%)	UKAS	0.03	0.03	0.03	0.03	0.08
pH Value	pH Units	MCERTS	12.7	12.6	12.8	12.5	12.6

7 - 11 Harding Street
Leicester
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L23/00718/IGS - 23-32082

Project Reference - 24330 Halverstown Naas

Sample Descriptions

Lab Reference	Client Sample ID	Material	Source/Client Reference	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
279664	A22/7562	Soil	TP04@0.6m	Mottled brown very gravelly silty sand	-	-	40
279665	A22/7575	Soil	TP026@0.5m	Mottled brown very gravelly silty sand	-	-	57
279666	A22/7568	Soil	TP19@0.5m	Mottled brown very gravelly silty sand	-	-	52
279667	A22/7563	Soil	TP12@0.5m	Mottled brown very gravelly silty sand	-	-	61
279668	A22/7578	Soil	TP31@0.5m	Mottled brown very gravelly silty sand	-	-	55

7 - 11 Harding Street
Leicester
LE1 4DH

L23/00718/IGS - 23-32082

Project Reference - 24330 Halverstown Naas

Sample Comments

Lab Reference	Client Sample ID	Material	Source/Client Reference	Comments
279664	A22/7562	Soil	TP04@0.6m	
279665	A22/7575	Soil	TP026@0.5m	
279666	A22/7568	Soil	TP19@0.5m	
279667	A22/7563	Soil	TP12@0.5m	
279668	A22/7578	Soil	TP31@0.5m	

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LE1 4DH

L23/00718/IGS - 23-32082

Project Reference - 24330 Halverstown Naas

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
ASSO4S	MS - CL - Acid Soluble Sulphate	Oven Dried	Passing 2mm test sieve	Determination of total sulphate in soils by acid extraction followed by ICP analysis
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377TS-ELT	BS1377 Total Sulphur Content by HTC	Oven dried	BS1377 : Part 1 : 2016	Total Sulphur Content testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.10 (using Eltra CS-800 Analyser)

7 - 11 Harding Street
Leicester
LE1 4DH

L23/00718/IGS - 23-32082

Project Reference - 24330 Halverstown Naas

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided
C - Received in inappropriate container
H - Contains headspace
T - Temperature on receipt exceeds storage temperature
R - Date of sampling to receipt insufficient to allow analysis to be completed without deviation, Please note this is only a deviation if 'X' is also recorded against the sample

Observations whist in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Material	Source/Client Reference	Test	Deviations
279664	A22/7562	Soil	TP04@0.6m		A
279665	A22/7575	Soil	TP026@0.5m		A
279666	A22/7568	Soil	TP19@0.5m		A
279667	A22/7563	Soil	TP12@0.5m		A
279668	A22/7578	Soil	TP31@0.5m		A

Appendix 13

Waste Characterisation Report (OCM)

Unit 15
Melbourne Business Park
Model Farm Road
Cork T12 WR89

T: 021 434 5366
E:admin@ocallaghanmoran.com
www.ocallaghanmoran.com

Waste Characterisation Assessment

Lands at Halverstown

Naas

Co. Kildare

Prepared For: -

IGSL Limited
Unit F
M7 Business Park
Naas
County Kildare

Prepared By: -

O'Callaghan Moran & Associates
Unit 15 Melbourne Business Park
Model Farm Road
Cork

February 2023

Project	Waste Characterisation: Halverstown, Naas, Co. Kildare			
Client	IGSL Limited			
Report No	Date	Status	Prepared By	Reviewed By
230010101	15/02/2023	Final	Austin Hynes PGeo MSc	Sean Moran B.Sc. MSc

TABLE OF CONTENTS

APPENDICES

1 INTRODUCTION

IGSL Limited requested O'Callaghan Moran & Associates (OCM) to undertake a waste characterisation assessment of five (5 No.) samples of natural ground collected from five (5 No.) trial pits from lands at Halverstown, Naas, Co. Kildare.

1.1 Methodology

IGSL provided a description of the ground conditions and collected samples of the soils from the trial pit locations. The samples were analysed at an accredited laboratory and the results formed the basis for a waste classification assessment, which was undertaken by OCM in accordance with the Environmental Protection Agency (EPA) Guidelines on the Classification of Waste (2015).

2 WASTE CLASSIFICATION ASSESSMENT

2.1 Soil Sampling and Laboratory Analysis

2.1.1 *Site Investigation*

The site investigation was completed by IGSL Limited in October 2022 and included the collection of five (5 No.) composite samples from five (5 No.) trial pits. The location of the samples is shown on Figure 2.1. The logs for the trial pits are in Appendix 1.

Each trial pit was installed in a separate field across the site area. There is topsoil at the surface of all trial pits to 0.30 mbgl. The subsurface of all trial pits comprises Natural Ground.

The subsurface of TP03 is composed of silty slight gravelly SAND to 0.80 mbgl. This is underlain by stiff, sandy gravelly SILT to 1.80 mbgl. Firm to stiff sandy gravelly CLAY was encountered between 1.80-2.20 mbgl.

At TP09, firm sandy gravelly SILT was encountered between 0.30-0.80 mbgl. This is underlain by firm, sandy gravelly SILT with cobble content to 1.60 mbgl. Silty sandy GRAVEL with cobble content was encountered to a depth of 2.40 mbgl.

TP15 is composed of firm, sandy gravelly SILT with cobble content to 1.00 mbgl. This is underlain by firm, sandy gravelly SILT to 1.70 mbgl. Soft to firm, sandy gravelly CLAY with cobble content was encountered between 1.70-2.80 mbgl.

The subsurface of TP26 comprises firm, sandy gravelly CLAY to 0.90 mbgl. Stiff, sandy gravelly CLAY with cobble content was encountered between 0.90-2.10 mbgl. This is underlain by firm to stiff, sandy gravelly CLAY with cobble content.

At TP32, firm, sandy gravelly CLAY was encountered to 0.80 mbgl. This is underlain by stiff, sandy gravelly CLAY with cobble content to 2.30 mbgl.

2.1.2 *Sample Collection*

IGSL collected the samples and placed them in laboratory prepared containers that were stored in coolers prior to shipment to Chemtest Ltd.

2.1.3 *Laboratory Analysis*

The samples were tested for metals (arsenic, barium, cadmium, chromium, copper, mercury, molybdenum, nickel, lead, antimony, selenium and zinc, total organic carbon (TOC), BTEX (benzene, toluene, ethylbenzene and xylene) aliphatic and aromatic hydrocarbons, polychlorinated biphenyls (PCB), mineral oil, polyaromatic hydrocarbons (PAH) and asbestos. Leachate generated from the samples was tested for arsenic, barium, cadmium, chromium, copper,

mercury, molybdenum, nickel, lead, antimony, selenium and zinc, chloride, fluoride, soluble sulphate, phenols, dissolved organic carbon (DOC), total dissolved solids (TDS).

This parameter range facilitates an assessment of the hazardous properties of the waste, and also allows a determination of appropriate off-site management options based on the Waste Acceptance Criteria (WAC) applied by landfill operators.

The analytical methods were all ISO/CEN approved and the method detection limits were below the relevant guidance/threshold values. The full laboratory report is in Appendix 2.

O'Callaghan Moran & Associates,
Unit 15 Melbourne Business Park,
Model Farm Road, Cork.
Tel. (021) 4345366
Email: info@ocallaghanmoran.com

Title:

Figure 2.1 Sample Location Plan

Legend

Client:

IGSL Limited

2.2 Waste Classification

The Haz Waste Online Classification Engine, developed in the UK by One Touch Data Ltd, was used to determine the waste classification. This tool was developed specifically to establish whether waste is non-hazardous or hazardous and has been approved for use in Ireland by the Environmental Protection Agency. The full Waste Classification Report is in Appendix 3 and the results are summarised in Table 2.1.

Table 2.1 Waste Classification

Sample No.	Depth	Classification	LoW Code
TP3	0.5	Non-Hazardous	17 05 04
TP9	0.5	Non-Hazardous	17 05 04
TP15	0.5	Non-Hazardous	17 05 04
TP26	0.5	Non-Hazardous	17 05 04
TP32	0.5	Non-Hazardous	17 05 04

Asbestos was not detected in any of the samples tested.

All samples are classified as non-hazardous and the appropriate List of Waste Code is 17 05 04 (Soil and Stone other than those mentioned in 17 05 03*).

2.3 Waste Acceptance Criteria

The results of the WAC testing are presented in Table 2.2, which includes for comparative purposes the WAC for Inert, Non Hazardous and Hazardous Waste Landfills pursuant to Article 16 of the EU Landfill Directive 1999/31/EC Annex II which establishes criteria and procedures for the acceptance of waste at landfills.

The sample from TP26 marginally exceeds the inert WAC for Total Organic Carbon (TOC).

All other samples meet the inert WAC.

Table 2.2 WAC Results

Parameter	Unit	TP3	TP9	TP15	TP26	TP32	Inert Landfill	Inert Landfill Increased Limits	Non-Hazardous Landfill	Hazardous Landfill
Depth	**m**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**				
Antimony	mg/kg	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.06	0.18	0.7	5
Arsenic	mg/kg	0.013	0.020	0.022	0.017	0.015	0.5	1.5	2	25
Barium	mg/kg	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	20	20	100	300
Cadmium	mg/kg	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	0.04	0.04	1	5
Chromium	mg/kg	< 0.0050	0.015	0.010	< 0.0050	0.0074	0.5	0.5	10	70
Copper	mg/kg	0.024	0.022	0.020	0.016	0.010	2	2	50	100
Lead	mg/kg	< 0.0050	0.011	0.014	< 0.0050	< 0.0050	0.5	0.5	10	50
Molybdenum	mg/kg	0.0090	0.0041	0.0083	0.013	0.0062	0.5	1.5	10	30
Nickel	mg/kg	0.0050	0.016	0.012	0.0063	0.0058	0.4	0.4	10	40
Selenium	mg/kg	0.048	0.043	0.047	0.043	0.041	0.1	0.3	0.5	7
Zinc	mg/kg	0.12	0.10	0.081	0.076	0.041	4	4	50	200
Mercury	mg/kg	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.01	0.01	0.2	2
Phenol	mg/kg	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	1	1	NE	NE
Fluoride	mg/kg	1.1	2.5	1.6	1.2	1.2	10	10	150	500
Chloride	mg/kg	13	< 10	< 10	< 10	< 10	800	2,400	15,000	25,000
Sulphate	mg/kg	28	13	< 10	< 10	< 10	1000*	3,000	20000*	50,000
DOC **	mg/kg	55	65	68	63	< 50	500	500	800	1,000
pH	pH units	8.7	8.6	8.7	8.4	8.9	NE	NE	NE	NE
TDS ***	mg/kg	640	300	390	540	420	4,000	12,000	60,000	100,000
TOC	%	0.23	0.29	< 0.20	3.2	0.9	3	6	NE	6
Benzene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
Toluene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
Ethylbenzene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
m/p-Xylene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
o-Xylene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
PCB Total of 7	mg/kg	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	1	1	NE	NE
Total 17 PAH's	mg/kg	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	NE	100	NE	NE
Mineral Oil	mg/kg	< 10	< 10	< 10	< 10	< 10	500	500	NE	NE
Asbestos	% mass	NAD	NAD	NAD	NAD	NAD	NE	NE	NE	NE

NAD denotes No Asbestos Detected

* denotes sulphate level exceeding inert waste limit may be considered as complying if the TDS value does not exceed 6,000mg/kg at L/S = 10l/kg.

** denotes a higher limit may be accepted provided the DOC alternative values of 500mg/kg is achieved

*** denotes TDS. The values for TDS can be used to sulphate and chloride.

PAH over 1mg/kg and Mineral Oil over 50 mg/kg exceeds limit at soil recovery site in Ireland

2.4 Waste Management Options

All of the soils are suitable for retention on site for landscaping or similar purposes. However if the soils are removed from the site options for recovery or disposal are outlined in this section.

The EPA has issued guidance on acceptance criteria for a range of parameters for soil recovery sites. This includes;

- Metals (solid conc. not leachability) in soil and stone (including As, Cd, Cr, Cu, Hg, Ni, Pb, Zn);
- Total organic carbon in soil and stone;
- Total BTEX (benzene, toluene, ethylbenzene, xylenes) in soil and stone;
- Mineral oil in soil and stone;
- Polycyclic aromatic hydrocarbons (PAHs) in soil and stone;
- Polychlorinated Biphenyls (PCBs) in soil and stone;
- Asbestos fibres in soil and stone.

The guidance requires that soils from brownfield sites should not exceed the limits for the parameters specified in Table 2.3 and 2.4. For metals limits have been specified for a range of soil types nationally separated into six domain areas.

Table 2.3 Soil Recovery Site Criteria

Parameter	Limit for Soil Recovery Sites
Total BTEX	0.05 mg/kg
Mineral Oil	50 mg/kg
Total PAHs	1 mg/kg
Total PCBs	0.05 mg/kg

All samples which meet the Inert WAC meet the soil recovery criteria for BTEX, Mineral Oil, PAH's and PCB's.

The soil and stone cannot be sent to soil recovery sites if the trigger levels for a particular domain are exceeded. There is however some flexibility in applying the limits. A derogation applies where up to three parameters can exceed the limit for a sample provided the concentration in the samples is no more than 1.5 times the trigger level. The site which is subject to this investigation is located in Domain 2 and the trigger levels are listed in Table 2.4.

Table 2.4 Soil Recovery Trigger Levels

		Domain 2 Trigger Level	1.5 times Trigger Level
Arsenic	**mg/kg**	24.90	37.35
Cadmium	**mg/kg**	3.28	4.92
Chromium	**mg/kg**	50.30	75.45
Copper	**mg/kg**	63.50	95.25
Mercury	**mg/kg**	0.36	0.54
Nickel	**mg/kg**	61.90	92.85
Lead	**mg/kg**	86.10	129.15
Zinc	**mg/kg**	197.00	295.5

All samples meet the soil recovery criteria for metal concentrations.

Waste management options are summarised on Table 2.5. All are subject to approval of the waste management facility operators. The sample from TP-26 marginally exceeded the TOC limit but the level exceedance is not considered to be significant and the sample is therefore considered to meet Class A for recovery purposes subject to approval of the facility operator. If it is not accepted then it must be sent to a facility that can accept Class B-1 material (inert waste increased limits). Class A material is suitable for soil recovery at permitted soil recovery sites.

Table 2.5 Waste Management Options

Sample No.	Depth	Classification	LoW Code	Category
TP3	0.5	Non-Hazardous	17 05 04	A
TP9	0.5	Non-Hazardous	17 05 04	A
TP15	0.5	Non-Hazardous	17 05 04	A
TP26	0.5	Non-Hazardous	17 05 04	A
TP32	0.5	Non-Hazardous	17 05 04	A

A	Meets Soil Recovery Criteria

3 CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

3.1.1 *Waste Classification*

Asbestos was not detected in any of the samples tested.

All samples are classified as non-hazardous and the appropriate List of Waste Code is 17 05 04 (Soil and Stone other than those mentioned in 17 05 03*).

If the soils have to be removed from the site the recovery/disposal options are discussed in Section 2.4.

3.2 Recommendations

OCM recommend that a copy of this report be provided in full to the relevant waste management facilities to which the made ground and subsoils will be consigned to confirm its suitability for acceptance.

Appendix 1

Trial Pit Logs

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**TP03**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,128.56 E 719,683.63 N
		DATE STARTED	18/10/2022
		DATE COMPLETED	18/10/2022
CLIENT		**GROUND LEVEL (m)**	80.45
		EXCAVATION METHOD	7t Hitachi
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Soft brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to medium subrounded.									
		0.30	80.15						
Brownish grey slightly gravelly silty SAND. Sand is fine to medium. Gravel is fine to coarse subangular to subrounded.					AA186953	B	0.50-0.60	39 31 34	
		0.80	79.65						
Stiff grey mottled orange sandy gravelly SILT. Sand is fine to medium. Gravel is fine to coarse subangular to subrounded.					AA186954	B	1.20-1.20		
1.0									
		1.80	78.65		AA186955	B	1.80-1.80		
Firm to stiff brown sandy gravelly clayey SILT with a medium cobble content. Sand is fine to coarse. Gravel is fine to coarse subrounded.Cobbles are subrounded to rounded of limestone.									
2.0									
		2.20	78.25						
Brownish grey very gravelly silty SAND with medium cobbles and ocassional boulders. Sand is fine to medium. Gravel is fine to coarse subangular to subrounded.Cobbles and boulders are subrounded to rounded of limestone.					AA186956	B	2.50-2.60		
		2.90	77.55						
End of Trial Pit at 2.90m									
3.0									

Groundwater Conditions
Dry

Stability
Slightly unstable from 2.20m

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**TP09**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,274.81 E 719,546.61 N
		DATE STARTED	19/10/2022
		DATE COMPLETED	19/10/2022
CLIENT		**GROUND LEVEL (m)**	79.66
		EXCAVATION METHOD	7t Hitachi
ENGINEER	DOBA		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TOPSOIL: Soft brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to medium subrounded.									
			0.30	79.36						
	Firm grey mottled orange sandy gravelly SILT with silty sand lenses. Sand is fine to coarse. Gravel is fine to coarse subrounded.					AA186975	B	0.50-0.60	40 38 46 60 63 67	
			0.80	78.86						
1.0	Firm greyish brown sandy gravelly clayey SILT with a low cobble content. Sand is fine to coarse. Gravel is fine to coarse subrounded.Cobbles are subrounded to rounded of limestone.					AA186976	B	1.20-1.30		
			1.60	78.06						
2.0	Brown silty sandy GRAVEL with a medium cobble content. Sand is fine to coarse. Gravel is fine to coarse subrounded.Cobbles are subrounded to rounded of limestone. Side wall collapse at 1.60m					AA186977	B	1.90-2.00		
			2.40	77.26	1 (Seepage)					
	Firm dark grey very sandy gravelly clayey SILT with a medium cobble content. Sand is fine to coarse. Gravel is fine to coarse subrounded.Cobbles are subrounded to rounded of limestone. (Recovered wet)					AA186978	B	2.50-2.60		
			3.00	76.66						
3.0	End of Trial Pit at 3.00m									

Groundwater Conditions
Seepage at 2.50m

Stability
Unstable, side wall collapse from 1.60m

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**TP15**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,444.04 E 719,538.61 N
		DATE STARTED	04/10/2022
		DATE COMPLETED	04/10/2022
CLIENT		**GROUND LEVEL (m)**	80.39
		EXCAVATION METHOD	7t Hitachi
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Soft brown gravelly sandy CLAY with rootlets. Sand is fine to coarse. Gravel is fine to medium subrounded.									
Firm greyish brown sandy gravelly slightly clayey SILT with a low coblle content. Sand is fine to coarse. Gravel is fine to coarse subrounded. Cobbles are subrounded to rounded of limestone		0.30	80.09		AA185478	B	0.50-0.50		
1.0 Firm greyish brown sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse subrounded. Cobbles are subrounded to rounded of limestone		1.00	79.39		AA185479	B	1.50-1.50		
Firm rarely soft to firm brown slightly sandy gravelly silty CLAY with a low cobble content with pockets of coarse yellow sand from 2.50m. Gravel is fine to coarse subrounded. Cobbles are subrounded to rounded of limestone 2.0 Side wall collapse from 2.0m to 2.50m		1.70	78.69		AA185480	B	2.30-2.30		
End of Trial Pit at 2.80m 3.0		2.80	77.59						

Groundwater Conditions
Dry

Stability
Slightly unstable, side wall collapse at 2.0m

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**TP26**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,611.58 E 719,726.52 N
		DATE STARTED	13/10/2022
		DATE COMPLETED	13/10/2022
CLIENT		**GROUND LEVEL (m)**	83.00
		EXCAVATION METHOD	7t Hitachi
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Soft brown gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is fine to medium subrounded.									
		0.30	82.70					38	
Firm brown sandy gravelly silty CLAY with root hairs. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded.								46	
								42	
					AA181975	B	0.50-0.60	66	
								73	
								68	
		0.90	82.10						
1.0 Stiff brown very sandy very gravelly silty CLAY with a medium cobble content and ocassional boulders. Sand is fine to coarse. Gravel is fine to coarse subrounded.Cobbles and boulders are subrounded to rounded of limestone.									
					AA181976	B	1.30-1.40		
Boulder at 1.80m (up to 400mm)									
2.0		2.10	80.90						
Firm to stiff brown sandy very gravelly silty CLAY with a low cobble content. Sand is fine to coarse. Gravel is fine to coarse subrounded.Cobbles are subrounded to rounded of limestone.									
					AA181978	B	2.40-2.50		
		2.70	80.30						
End of Trial Pit at 2.70m									
3.0									

Groundwater Conditions
Dry

Stability
Good

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings.

TRIAL PIT RECORD

REPORT NUMBER 24330

CONTRACT	Halverstown	**TRIAL PIT NO.**	**TP32**
		SHEET	Sheet 1 of 1
LOGGED BY	MB	**CO-ORDINATES**	686,084.15 E 719,879.36 N
		DATE STARTED	17/10/2022
		DATE COMPLETED	17/10/2022
CLIENT		**GROUND LEVEL (m)**	83.16
		EXCAVATION METHOD	7t Hitachi
ENGINEER	DOBA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL: Soft brown gravelly sandy CLAY with roolets. Sand is fine to coarse. Gravel is fine to medium subrounded.									
		0.30	82.86					25	
Firm brown very sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to coarse subrounded.Cobbles are subrounded to rounded of limestone.								34	
								29	
					AA181994	B	0.50-0.60	50	
								56	
								58	
		0.80	82.36						
Stiff brown very sandy slightly silty gravelly CLAY with a medium cobble content.Sand is fine to coarse. Gravel is fine to coarse subrounded. Cobbles are subrounded to rounded of limestone.									
1.0									
					AA181995	B	1.40-1.50		
2.0									
		2.30	80.86						
Stiff greyish brown sandy gravelly clayey SILT with a medium cobble content and occassional boulders. Sand is fine to coarse. Gravel is fine to coarse subrounded. Cobbles and boulders are subrounded to rounded of limestone.									
					AA181996	B	2.50-2.60		
		2.80	80.36						
End of Trial Pit at 2.30m									
3.0									

Groundwater Conditions
Dry

Stability
Good

General Remarks
Pit footprint scanned using cable avoidance tool [CAT]. Pit backfilled with arisings.

Appendix 2

Laboratory Report

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-02702-1		
Initial Date of Issue:	13-Feb-2023		
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	Darren Keogh		
Project	Halverstown		
Quotation No.:	Q20-19951	**Date Received:**	30-Jan-2023
Order No.:		**Date Instructed:**	30-Jan-2023
No. of Samples:	5		
Turnaround (Wkdays):	7	**Results Due:**	07-Feb-2023
Date Approved:	13-Feb-2023		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: Halverstown

Client: IGSL					**Chemtest Job No.:**	23-02702	23-02702	23-02702	23-02702	23-02702
Quotation No.: Q20-19951					**Chemtest Sample ID.:**	1580840	1580841	1580842	1580843	1580844
					Client Sample ID.:	TP3	TP9	TP15	TP26	TP32
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.5	0.5	0.5	0.5	0.5
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**					
pH	U	1010	10:1		N/A	7.2	7.5	7.8	7.9	8.2
Ammonium	U	1220	10:1	mg/l	0.050	0.077	< 0.050	0.073	0.095	0.11
Ammonium	N	1220	10:1	mg/kg	0.10	0.78	1.1	0.76	1.0	1.2
Boron (Dissolved)	U	1455	10:1	mg/kg	0.01	< 0.01	< 0.01	< 0.01	0.11	< 0.01
Benzo[j]fluoranthene	N	1800	10:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Results - Soil

Project: Halverstown

Client: IGSL			**Chemtest Job No.:**		23-02702	23-02702	23-02702	23-02702	23-02702
Quotation No.: Q20-19951			**Chemtest Sample ID.:**		1580840	1580841	1580842	1580843	1580844
			Client Sample ID.:		TP3	TP9	TP15	TP26	TP32
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.5	0.5	0.5	0.5	0.5
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	13	16	9.8	27	13
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	[A] < 0.40	[A] < 0.40	[A] < 0.40	[A] < 0.40	[A] < 0.40
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 3.9	[A] 2.4	[A] 7.5	[A] 6.4	[A] 5.5
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.024	[A] 0.015	[A] 0.027	[A] 0.030	[A] 0.031
Arsenic	U	2455	mg/kg	0.5	7.1	7.3	9.7	7.4	9.7
Barium	U	2455	mg/kg	0	42	66	69	42	49
Cadmium	U	2455	mg/kg	0.10	1.9	1.7	1.9	1.3	2.2
Chromium	U	2455	mg/kg	0.5	14	19	19	16	20
Molybdenum	U	2455	mg/kg	0.5	0.7	< 0.5	1.0	0.6	1.6
Antimony	N	2455	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	U	2455	mg/kg	0.50	13	16	17	14	17
Mercury	U	2455	mg/kg	0.05	0.08	0.07	0.07	0.07	0.10
Nickel	U	2455	mg/kg	0.50	32	34	37	28	37
Lead	U	2455	mg/kg	0.50	36	28	29	30	47
Selenium	U	2455	mg/kg	0.25	0.57	0.65	0.77	0.59	0.90
Zinc	U	2455	mg/kg	0.50	120	93	120	81	130
Chromium (Trivalent)	N	2490	mg/kg	1.0	14	19	19	16	20
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C8-C10	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: Halverstown

Client: IGSL			**Chemtest Job No.:**		23-02702	23-02702	23-02702	23-02702	23-02702
Quotation No.: Q20-19951			**Chemtest Sample ID.:**		1580840	1580841	1580842	1580843	1580844
			Client Sample ID.:		TP3	TP9	TP15	TP26	TP32
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.5	0.5	0.5	0.5	0.5
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Benzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Acenaphthylene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Acenaphthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Fluorene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Phenanthrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[a]anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Chrysene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[a]pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Coronene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total Of 17 PAH's	N	2800	mg/kg	0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20
PCB 28	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 52	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 90+101	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 118	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 153	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 138	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 180	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
Total PCBs (7 congeners)	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Single Stage WAC

Project: Halverstown

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-02702						
Chemtest Sample ID:	1580840						
Sample Ref:							
Sample ID:	TP3						
Sample Location:							
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	[A] 0.23	3	5	6
Loss On Ignition	2610	U	%	1.3	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.10	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0013	0.013	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	0.0024	0.024	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0009	0.0090	0.5	10	30
Nickel	1455	U	0.0005	0.0050	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	0.0048	0.048	0.1	0.5	7
Zinc	1455	U	0.012	0.12	4	50	200
Chloride	1220	U	1.3	13	800	15000	25000
Fluoride	1220	U	0.11	1.1	10	150	500
Sulphate	1220	U	2.8	28	1000	20000	50000
Total Dissolved Solids	1020	N	64	640	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.5	55	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: Halverstown

Chemtest Job No:	23-02702				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1580841						
Sample Ref:							
Sample ID:	TP9				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Location:							
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.29	3	5	6
Loss On Ignition	2610	U	%	1.7	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.026	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0020	0.020	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	0.0015	0.015	0.5	10	70
Copper	1455	U	0.0022	0.022	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0004	0.0041	0.5	10	30
Nickel	1455	U	0.0016	0.016	0.4	10	40
Lead	1455	U	0.0011	0.011	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	0.0044	0.043	0.1	0.5	7
Zinc	1455	U	0.010	0.10	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.25	2.5	10	150	500
Sulphate	1220	U	1.3	13	1000	20000	50000
Total Dissolved Solids	1020	N	30	300	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.5	65	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: Halverstown

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-02702						
Chemtest Sample ID:	1580842						
Sample Ref:							
Sample ID:	TP15						
Sample Location:							
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	[A] < 0.20	3	5	6
Loss On Ignition	2610	U	%	2.0	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.12	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0022	0.022	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	0.0010	0.010	0.5	10	70
Copper	1455	U	0.0020	0.020	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0008	0.0083	0.5	10	30
Nickel	1455	U	0.0012	0.012	0.4	10	40
Lead	1455	U	0.0014	0.014	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	0.0047	0.047	0.1	0.5	7
Zinc	1455	U	0.008	0.081	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.16	1.6	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	39	390	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.8	68	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.8

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: Halverstown

Chemtest Job No:	23-02702				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1580843						
Sample Ref:							
Sample ID:	TP26				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Location:							
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 3.2	3	5	6
Loss On Ignition	2610	U	%	3.0	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.028	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0017	0.017	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	0.0016	0.016	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0013	0.013	0.5	10	30
Nickel	1455	U	0.0006	0.0063	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	0.0044	0.043	0.1	0.5	7
Zinc	1455	U	0.008	0.076	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.12	1.2	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	55	540	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.3	63	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	27

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: Halverstown

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-02702						
Chemtest Sample ID:	1580844						
Sample Ref:							
Sample ID:	TP32						
Sample Location:							
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	[A] 0.90	3	5	6
Loss On Ignition	2610	U	%	1.8	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.079	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0015	0.015	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	0.0007	0.0074	0.5	10	70
Copper	1455	U	0.0010	0.010	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0006	0.0062	0.5	10	30
Nickel	1455	U	0.0006	0.0058	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	0.0041	0.041	0.1	0.5	7
Zinc	1455	U	0.004	0.041	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.12	1.2	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	42	420	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.9	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

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

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1580840		TP3			A	Amber Glass 250ml
1580840		TP3			A	Plastic Tub 500g
1580841		TP9			A	Amber Glass 250ml
1580841		TP9			A	Plastic Tub 500g
1580842		TP15			A	Amber Glass 250ml
1580842		TP15			A	Plastic Tub 500g
1580843		TP26			A	Amber Glass 250ml
1580843		TP26			A	Plastic Tub 500g
1580844		TP32			A	Amber Glass 250ml
1580844		TP32			A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Test Methods

SOP	Title	Parameters included	Method summary
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Appendix 3

Waste Classification Report

HazWasteOnline™

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

a) understand the origin of the waste
b) select the correct List of Waste code(s)
c) confirm that the list of determinands, results and sampling plan are fit for purpose
d) select and justify the chosen metal species (Appendix B)
e) correctly apply moisture correction and other available corrections
f) add the meta data for their user-defined substances (Appendix A)
g) check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

HMMVA-RUOAH-IZTKI

Job name

23-001-01 Halverstown

Description/Comments

5 No. composite samples from 5 No. Trial Pits in a greenfield site.

Project

23-001-01

Site

Halverstown

Classified by

Name:
Austin Hynes
Date:
14 Feb 2023 11:05 GMT
Telephone:
+353 (0)21 4345366

Company:
O'Callaghan Moran & Associates
Unit 15 Melbourne Business Park,
Model Farm Road
Cork

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification: **CERTIFIED**

Course	Date
Hazardous Waste Classification	06 Oct 2022

Next 3 year Refresher due by Oct 2025

Purpose of classification

7 - Disposal of Waste

Address of the waste

Lands at Halverstown, Naas, Co. Kilare **Post Code** NA

SIC for the process giving rise to the waste

41202 Construction of domestic buildings

Description of industry/producer giving rise to the waste

Site Investigation

Description of the specific process, sub-process and/or activity that created the waste

Excavation

Description of the waste

Soil and Stone

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	TP3	0.5	Non Hazardous		3
2	TP9	0.5	Non Hazardous		6
3	TP15	0.5	Non Hazardous		9
4	TP26	0.5	Non Hazardous		12
5	TP32	0.5	Non Hazardous		15

Related documents

#	Name	Description
1	OCM Waste Stream Updated 2021	waste stream template used to create this Job

Report

Created by: Austin Hynes

Created date: 14 Feb 2023 11:05 GMT

Classification of sample: TP3

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP3
Sample Depth:
0.5 m
Moisture content:
13%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<**LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7.1 mg/kg	1.32	8.296 mg/kg	0.00083 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.9 mg/kg	1.142	1.921 mg/kg	0.000192 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		14 mg/kg	1.462	18.108 mg/kg	0.00181 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		13 mg/kg	1.126	12.953 mg/kg	0.0013 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	36 mg/kg	1.56	49.693 mg/kg	0.00319 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.08 mg/kg	1.353	0.0958 mg/kg	0.00000958 %	✓	
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		0.7 mg/kg	1.5	0.929 mg/kg	0.0000929 %	✓	
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		32 mg/kg	2.976	84.284 mg/kg	0.00843 %	✓	
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.57 mg/kg	2.554	1.288 mg/kg	0.000129 %	✓	
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		120 mg/kg	2.774	294.6 mg/kg	0.0295 %	✓	
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
16		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
17		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
18		ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
19		xylene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
20		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<**LOD**
		006-007-00-5											
21		naphthalene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
22		acenaphthylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-917-1	208-96-8									
23		acenaphthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			201-469-6	83-32-9									
24		fluorene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			201-695-5	86-73-7									
25		phenanthrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			201-581-5	85-01-8									
26		anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			204-371-1	120-12-7									
27		fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-912-4	206-44-0									
28		pyrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			204-927-3	129-00-0									
29		benzo[a]anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
30		chrysene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
31		benzo[b]fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
32		benzo[k]fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
33		benzo[a]pyrene; benzo[def]chrysene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
34		indeno[123-cd]pyrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-893-2	193-39-5									
35		dibenz[a,h]anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
36		benzo[ghi]perylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-883-8	191-24-2									
37		phenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
38		polychlorobiphenyls; PCB				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		602-039-00-4	215-648-1	1336-36-3									
										Total:	0.047 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP9

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP9
Sample Depth:
0.5 m
Moisture content:
16%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 16% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<**LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7.3	mg/kg	1.32	8.309	mg/kg	0.000831 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.7	mg/kg	1.142	1.674	mg/kg	0.000167 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		19	mg/kg	1.462	23.939	mg/kg	0.00239 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		16	mg/kg	1.126	15.529	mg/kg	0.00155 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	28	mg/kg	1.56	37.651	mg/kg	0.00241 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.07	mg/kg	1.353	0.0817	mg/kg	0.00000817 %	✓	
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<0.5	mg/kg	1.5	<0.75	mg/kg	<0.000075 %		<**LOD**
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		34	mg/kg	2.976	87.235	mg/kg	0.00872 %	✓	
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.65	mg/kg	2.554	1.431	mg/kg	0.000143 %	✓	
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		93	mg/kg	2.774	222.41	mg/kg	0.0222 %	✓	
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
16		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
17		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
18		ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
19		xylene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
20		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<**LOD**
		006-007-00-5											
21		naphthalene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
22		acenaphthylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-917-1	208-96-8									
23		acenaphthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			201-469-6	83-32-9									
24		fluorene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			201-695-5	86-73-7									
25		phenanthrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			201-581-5	85-01-8									
26		anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			204-371-1	120-12-7									
27		fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-912-4	206-44-0									
28		pyrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			204-927-3	129-00-0									
29		benzo[a]anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
30		chrysene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
31		benzo[b]fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
32		benzo[k]fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
33		benzo[a]pyrene; benzo[def]chrysene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
34		indeno[123-cd]pyrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-893-2	193-39-5									
35		dibenz[a,h]anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
36		benzo[ghi]perylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-883-8	191-24-2									
37		phenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
38		polychlorobiphenyls; PCB				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		602-039-00-4	215-648-1	1336-36-3									
										Total:	0.0402 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP15

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP15
Sample Depth:
0.5 m
Moisture content:
9.8%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.8% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<**LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.7 mg/kg	1.32	11.664 mg/kg	0.00117 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.9 mg/kg	1.142	1.977 mg/kg	0.000198 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		19 mg/kg	1.462	25.291 mg/kg	0.00253 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		17 mg/kg	1.126	17.432 mg/kg	0.00174 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	29 mg/kg	1.56	41.197 mg/kg	0.00264 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.07 mg/kg	1.353	0.0863 mg/kg	0.00000863 %	✓	
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1 mg/kg	1.5	1.366 mg/kg	0.000137 %	✓	
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		37 mg/kg	2.976	100.293 mg/kg	0.01 %	✓	
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.77 mg/kg	2.554	1.791 mg/kg	0.000179 %	✓	
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		120 mg/kg	2.774	303.185 mg/kg	0.0303 %	✓	
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
16		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
17		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
18		ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
19		xylene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
20		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<**LOD**
		006-007-00-5											
21		naphthalene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
22		acenaphthylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-917-1	208-96-8									
23		acenaphthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			201-469-6	83-32-9									
24		fluorene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			201-695-5	86-73-7									
25		phenanthrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			201-581-5	85-01-8									
26		anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			204-371-1	120-12-7									
27		fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-912-4	206-44-0									
28		pyrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			204-927-3	129-00-0									
29		benzo[a]anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
30		chrysene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
31		benzo[b]fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
32		benzo[k]fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
33		benzo[a]pyrene; benzo[def]chrysene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
34		indeno[123-cd]pyrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-893-2	193-39-5									
35		dibenz[a,h]anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
36		benzo[ghi]perylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-883-8	191-24-2									
37		phenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
38		polychlorobiphenyls; PCB				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		602-039-00-4	215-648-1	1336-36-3									
										Total:	0.0506 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP26

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP26
Sample Depth:
0.5 m
Moisture content:
27%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 27% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<**LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7.4 mg/kg	1.32	7.693 mg/kg	0.000769 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.3 mg/kg	1.142	1.169 mg/kg	0.000117 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		16 mg/kg	1.462	18.413 mg/kg	0.00184 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14 mg/kg	1.126	12.411 mg/kg	0.00124 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	30 mg/kg	1.56	36.846 mg/kg	0.00236 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.07 mg/kg	1.353	0.0746 mg/kg	0.00000746 %	✓	
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		0.6 mg/kg	1.5	0.709 mg/kg	0.0000709 %	✓	
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		28 mg/kg	2.976	65.618 mg/kg	0.00656 %	✓	
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.59 mg/kg	2.554	1.186 mg/kg	0.000119 %	✓	
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		81 mg/kg	2.774	176.934 mg/kg	0.0177 %	✓	
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
16		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
17		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
18		ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
19		xylene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
20		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<**LOD**
		006-007-00-5											
21		naphthalene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
22		acenaphthylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-917-1	208-96-8									
23		acenaphthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			201-469-6	83-32-9									
24		fluorene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			201-695-5	86-73-7									
25		phenanthrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			201-581-5	85-01-8									
26		anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			204-371-1	120-12-7									
27		fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-912-4	206-44-0									
28		pyrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			204-927-3	129-00-0									
29		benzo[a]anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
30		chrysene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
31		benzo[b]fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
32		benzo[k]fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
33		benzo[a]pyrene; benzo[def]chrysene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
34		indeno[123-cd]pyrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-893-2	193-39-5									
35		dibenz[a,h]anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
36		benzo[ghi]perylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-883-8	191-24-2									
37		phenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
38		polychlorobiphenyls; PCB				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		602-039-00-4	215-648-1	1336-36-3									
										Total:	0.0324 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP32

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP32
Sample Depth:
0.5 m
Moisture content:
13%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<**LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.7 mg/kg	1.32	11.334 mg/kg	0.00113 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.2 mg/kg	1.142	2.224 mg/kg	0.000222 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		20 mg/kg	1.462	25.868 mg/kg	0.00259 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		17 mg/kg	1.126	16.938 mg/kg	0.00169 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	47 mg/kg	1.56	64.877 mg/kg	0.00416 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.1 mg/kg	1.353	0.12 mg/kg	0.000012 %	✓	
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.6 mg/kg	1.5	2.124 mg/kg	0.000212 %	✓	
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		37 mg/kg	2.976	97.453 mg/kg	0.00975 %	✓	
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.9 mg/kg	2.554	2.034 mg/kg	0.000203 %	✓	
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		130 mg/kg	2.774	319.15 mg/kg	0.0319 %	✓	
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
16		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
17		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
18		ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
19		xylene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
20		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<**LOD**
		006-007-00-5											
21		naphthalene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
22		acenaphthylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-917-1	208-96-8									
23		acenaphthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			201-469-6	83-32-9									
24		fluorene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			201-695-5	86-73-7									
25		phenanthrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			201-581-5	85-01-8									
26		anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			204-371-1	120-12-7									
27		fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-912-4	206-44-0									
28		pyrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			204-927-3	129-00-0									
29		benzo[a]anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
30		chrysene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
31		benzo[b]fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
32		benzo[k]fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
33		benzo[a]pyrene; benzo[def]chrysene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
34		indeno[123-cd]pyrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-893-2	193-39-5									
35		dibenz[a,h]anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
36		benzo[ghi]perylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
			205-883-8	191-24-2									
37		phenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
38		polychlorobiphenyls; PCB				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		602-039-00-4	215-648-1	1336-36-3									
										Total:	0.0535 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non EU CLP determinands

chromium(III) oxide (worst case) (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

EU CLP index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

EU CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

polychlorobiphenyls; PCB (EC Number: 215-648-1, CAS Number: 1336-36-3)

EU CLP index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans; POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Additional Hazard Statement(s): Carc. 1A; H350
Reason for additional Hazards Statement(s):
29 Sep 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

Appendix B: Rationale for selection of metal species

antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings (edit as required)

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required)

boron {diboron trioxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass (edit as required)

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass (edit as required)

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case species based on hazard statements/molecular weight (edit as required)

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

selenium {nickel selenate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1.NI - Jan 2021
HazWasteOnline Classification Engine Version: 2023.25.5511.10206 (25 Jan 2023)
HazWasteOnline Database: 2023.25.5511.10206 (25 Jan 2023)

This classification utilises the following guidance and legislation:
WM3 v1.1.NI - Waste Classification - 1st Edition v1.1.NI - Jan 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
17th ATP - Regulation (EU) 2021/849 of 11 March 2021
18th ATP - Regulation (EU) 2022/692 of 16 February 2022

Appendix 14

Environmental Laboratory Results (Water)

Report_22-47891

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-47891-1
Initial Date of Issue:	10-Jan-2023
Client	IGSL
Client Address:	M7 Business Park Naas County Kildare Ireland
Contact(s):	Darren Keogh
Project	Halverstown

Quotation No.:		**Date Received:**	14-Dec-2022
Order No.:		**Date Instructed:**	19-Dec-2022
No. of Samples:	5		
Turnaround (Wkdays):	8	**Results Due:**	04-Jan-2023
Date Approved:	10-Jan-2023		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Water

Project: Halverstown

Client: IGSL			**Chemtest Job No.:**		22-47891	22-47891	22-47891	22-47891	22-47891
Quotation No.:			**Chemtest Sample ID.:**		1564373	1564375	1564377	1564378	1564379
Order No.:			Client Sample Ref.:		Stream Start	Stream End	BH03	BH12	BH103
			Client Sample ID.:		WS1(1)	WS2(1)	WSBH03	WSBH12	WSBH103
			Sample Type:		WATER	WATER	WATER	WATER	WATER
			Top Depth (m):		0.5	0.7	1.3	0.98	2.2
			Date Sampled:		02-Dec-2022	02-Dec-2022	02-Dec-2022	02-Dec-2022	02-Dec-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
pH	U	1010		N/A	[B] 8.3	[B] 7.9	[B] 7.6	[B] 7.4	[B] 7.5
Dissolved Oxygen	N	1150	mg O2/l	0.50	9.5	9.2	8.5	8.2	8.5
Dissolved CO2	N	1160	mg/l	0.60	[B] 3.8	[B] 10	[B] 19	[B] 29	[B] 22
Alkalinity (Total)	U	1220	mg/l	10	[B] 400	[B] 390	[B] 340	[B] 370	[B] 340
Orthophosphate as PO4	U	1220	mg/l	0.050	[B] 0.097	[B] 0.081	[B] 0.065	[B] 0.064	[B] 0.064
Sulphur	N	1220	mg/l	1.0	[B] 15	[B] 15	[B] 7.3	[B] 22	[B] 4.3
Cyanide (Total)	U	1300	mg/l	0.050	[B] < 0.050	[B] < 0.050	[B] < 0.050	[B] < 0.050	[B] < 0.050
Cyanide (Free)	U	1300	mg/l	0.050	[B] < 0.050	[B] < 0.050	[B] < 0.050	[B] < 0.050	[B] < 0.050
Sulphide	U	1325	mg/l	0.050	[B] < 0.050	[B] < 0.050	[B] < 0.050	[B] < 0.050	[B] < 0.050
Calcium (Dissolved)	U	1455	mg/l	2.00	[B] 120	[B] 120	[B] 77	[B] 110	[B] 87
Total Hardness as CaCO3	U	1270	mg/l	15	[B] 360	[B] 360	[B] 230	[B] 360	[B] 270
Aluminium (Dissolved)	N	1455	µg/l	5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0
Arsenic (Dissolved)	U	1455	µg/l	0.20	[B] 0.78	[B] 0.76	[B] 0.38	[B] 0.44	[B] 0.35
Boron (Dissolved)	U	1455	µg/l	10.0	[B] 26	[B] 27	[B] 29	[B] 22	[B] 32
Barium (Dissolved)	U	1455	µg/l	5.00	[B] 48	[B] 46	[B] 38	[B] 91	[B] 72
Beryllium (Dissolved)	U	1455	µg/l	1.00	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Cadmium (Dissolved)	U	1455	µg/l	0.11	[B] < 0.11	[B] < 0.11	[B] < 0.11	[B] < 0.11	[B] < 0.11
Chromium (Dissolved)	U	1455	µg/l	0.50	[B] 7.1	[B] 7.9	[B] 0.89	[B] 0.54	[B] 8.8
Copper (Dissolved)	U	1455	µg/l	0.50	[B] 2.1	[B] 1.9	[B] 2.4	[B] 3.5	[B] 1.2
Iron (Dissolved)	N	1455	µg/l	5.0	[B] 9.3	[B] 8.3	[B] 5.9	[B] 8.7	[B] 5.0
Mercury (Dissolved)	U	1455	µg/l	0.05	[B] < 0.05	[B] < 0.05	[B] < 0.05	[B] < 0.05	[B] < 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	[B] 0.57	[B] 0.58	[B] 450	[B] 170	[B] 1.3
Nickel (Dissolved)	U	1455	µg/l	0.50	[B] 1.9	[B] 2.0	[B] 9.6	[B] 7.0	[B] 1.2
Lead (Dissolved)	U	1455	µg/l	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	[B] 5.6	[B] 5.7	[B] 7.6	[B] 8.8	[B] 1.8
Vanadium (Dissolved)	U	1455	µg/l	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Zinc (Dissolved)	U	1455	µg/l	2.5	[B] < 2.5	[B] 2.7	[B] 3.4	[B] 9.4	[B] < 2.5
Chromium (Total)	N	1455	µg/l	0.50	[B] 9.9	[B] 11	[B] 15	[B] 33	[B] 24
Low-Level Chromium (Hexavalent)	U	1495	µg/l	0.10	[B] 4.6	[B] 5.2	[B] 0.41	[B] 0.27	[B] 6.1
Dissolved Organic Carbon	U	1610	mg/l	2.0	3.7	3.4	3.6	5.5	< 2.0
Dissolved Methane	N	1630	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.057
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10

Results - Water

Project: Halverstown

Client: IGSL			**Chemtest Job No.:**		22-47891	22-47891	22-47891	22-47891	22-47891
Quotation No.:			**Chemtest Sample ID.:**		1564373	1564375	1564377	1564378	1564379
Order No.:			Client Sample Ref.:		Stream Start	Stream End	BH03	BH12	BH103
			Client Sample ID.:		WS1(1)	WS2(1)	WSBH03	WSBH12	WSBH103
			Sample Type:		WATER	WATER	WATER	WATER	WATER
			Top Depth (m):		0.5	0.7	1.3	0.98	2.2
			Date Sampled:		02-Dec-2022	02-Dec-2022	02-Dec-2022	02-Dec-2022	02-Dec-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	[B] < 10	[B] < 10	[B] < 10	[B] < 10	[B] < 10
Dichlorodifluoromethane	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
Chloromethane	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
Vinyl Chloride	N	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
Bromomethane	U	1760	µg/l	5	[BC] < 5	[BC] < 5	[BC] < 5	[BC] < 5	[BC] < 5
Chloroethane	U	1760	µg/l	2.0	[BC] < 2.0	[BC] < 2.0	[BC] < 2.0	[BC] < 2.0	[BC] < 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
Bromochloromethane	U	1760	µg/l	5	[BC] < 5	[BC] < 5	[BC] < 5	[BC] < 5	[BC] < 5
Trichloromethane	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
Tetrachloromethane	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
Benzene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	[BC] < 2.0	[BC] < 2.0	[BC] < 2.0	[BC] < 2.0	[BC] < 2.0
Trichloroethene	N	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
Dibromomethane	U	1760	µg/l	10	[BC] < 10	[BC] < 10	[BC] < 10	[BC] < 10	[BC] < 10
Bromodichloromethane	U	1760	µg/l	5	[BC] < 5	[BC] < 5	[BC] < 5	[BC] < 5	[BC] < 5
cis-1,3-Dichloropropene	N	1760	µg/l	10	[BC] < 10	[BC] < 10	[BC] < 10	[BC] < 10	[BC] < 10
Toluene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	[BC] < 10	[BC] < 10	[BC] < 10	[BC] < 10	[BC] < 10
1,1,2-Trichloroethane	U	1760	µg/l	10	[BC] < 10	[BC] < 10	[BC] < 10	[BC] < 10	[BC] < 10
Tetrachloroethene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	[BC] < 2.0	[BC] < 2.0	[BC] < 2.0	[BC] < 2.0	[BC] < 2.0
Dibromochloromethane	U	1760	µg/l	10	[BC] < 10	[BC] < 10	[BC] < 10	[BC] < 10	[BC] < 10

Results - Water

Project: Halverstown

Client: IGSL			**Chemtest Job No.:**		22-47891	22-47891	22-47891	22-47891	22-47891
Quotation No.:			**Chemtest Sample ID.:**		1564373	1564375	1564377	1564378	1564379
Order No.:			Client Sample Ref.:		Stream Start	Stream End	BH03	BH12	BH103
			Client Sample ID.:		WS1(1)	WS2(1)	WSBH03	WSBH12	WSBH103
			Sample Type:		WATER	WATER	WATER	WATER	WATER
			Top Depth (m):		0.5	0.7	1.3	0.98	2.2
			Date Sampled:		02-Dec-2022	02-Dec-2022	02-Dec-2022	02-Dec-2022	02-Dec-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
1,2-Dibromoethane	U	1760	µg/l	5	[BC] < 5	[BC] < 5	[BC] < 5	[BC] < 5	[BC] < 5
Chlorobenzene	N	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	[BC] < 2.0	[BC] < 2.0	[BC] < 2.0	[BC] < 2.0	[BC] < 2.0
Ethylbenzene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
m & p-Xylene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
o-Xylene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
Styrene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
Tribromomethane	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
Isopropylbenzene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
Bromobenzene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	[BC] < 50	[BC] < 50	[BC] < 50	[BC] < 50	[BC] < 50
N-Propylbenzene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
N-Butylbenzene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	[BC] < 50	[BC] < 50	[BC] < 50	[BC] < 50	[BC] < 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	[BC] < 2.0	[BC] < 2.0	[BC] < 2.0	[BC] < 2.0	[BC] < 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0	[BC] < 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: Halverstown

Client: IGSL			**Chemtest Job No.:**		22-47891	22-47891	22-47891	22-47891	22-47891
Quotation No.:			**Chemtest Sample ID.:**		1564373	1564375	1564377	1564378	1564379
Order No.:			Client Sample Ref.:		Stream Start	Stream End	BH03	BH12	BH103
			Client Sample ID.:		WS1(1)	WS2(1)	WSBH03	WSBH12	WSBH103
			Sample Type:		WATER	WATER	WATER	WATER	WATER
			Top Depth (m):		0.5	0.7	1.3	0.98	2.2
			Date Sampled:		02-Dec-2022	02-Dec-2022	02-Dec-2022	02-Dec-2022	02-Dec-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	U	1800	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Acenaphthylene	U	1800	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Acenaphthene	U	1800	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10

Results - Water

Project: Halverstown

Client: IGSL			**Chemtest Job No.:**		22-47891	22-47891	22-47891	22-47891	22-47891
Quotation No.:			**Chemtest Sample ID.:**		1564373	1564375	1564377	1564378	1564379
Order No.:			Client Sample Ref.:		Stream Start	Stream End	BH03	BH12	BH103
			Client Sample ID.:		WS1(1)	WS2(1)	WSBH03	WSBH12	WSBH103
			Sample Type:		WATER	WATER	WATER	WATER	WATER
			Top Depth (m):		0.5	0.7	1.3	0.98	2.2
			Date Sampled:		02-Dec-2022	02-Dec-2022	02-Dec-2022	02-Dec-2022	02-Dec-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Fluorene	U	1800	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Phenanthrene	U	1800	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Anthracene	U	1800	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Fluoranthene	U	1800	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Pyrene	U	1800	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Benzo[a]anthracene	U	1800	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Chrysene	U	1800	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Benzo[b]fluoranthene	U	1800	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Benzo[k]fluoranthene	U	1800	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Benzo[a]pyrene	U	1800	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Indeno(1,2,3-c,d)Pyrene	U	1800	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Dibenz(a,h)Anthracene	U	1800	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Benzo[g,h,i]perylene	U	1800	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Total Of 16 PAH's	U	1800	µg/l	2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0
PCB 81	N	1815	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 77	N	1815	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 105	N	1815	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 114	N	1815	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	N	1815	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 123	N	1815	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 126	N	1815	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 156	N	1815	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 157	N	1815	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 167	N	1815	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 169	N	1815	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 189	N	1815	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (12 Congeners)	N	1815	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Resorcinol	U	1920	mg/l	0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050
Phenol	U	1920	mg/l	0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050
Cresols	U	1920	mg/l	0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050
Xylenols	U	1920	mg/l	0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050
1-Naphthol	N	1920	mg/l	0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050
Trimethylphenols	U	1920	mg/l	0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050	[B] < 0.0050
Total Phenols	U	1920	mg/l	0.030	[B] < 0.030	[B] < 0.030	[B] < 0.030	[B] < 0.030	[B] < 0.030

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1564373	Stream Start	WS1(1)		02-Dec-2022	BC	Coloured Winchester 1000ml
1564375	Stream End	WS2(1)		02-Dec-2022	BC	Coloured Winchester 1000ml
1564377	BH03	WSBH03		02-Dec-2022	BC	Coloured Winchester 1000ml
1564378	BH12	WSBH12		02-Dec-2022	BC	Coloured Winchester 1000ml
1564379	BH103	WSBH103		02-Dec-2022	BC	Coloured Winchester 1000ml

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1150	Dissolved Oxygen	Dissolved Oxygen (DO)	Electrometric determination (on site preferred), using oxygen sensitive membrane electrode.
1160	Aggressive Dissolved CO2	Aggressive Dissolved CO2	Titration
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1270	Total Hardness of Waters	Total hardness	Calculation applied to calcium and magnesium results, expressed as mg l-1 CaCO3 equivalent.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1325	Sulphide in Waters	Sulphides	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using N,N–dimethyl-pphenylenediamine.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1495	Low Level Hexavalent Chromium in Waters	Chromium [VI]	Colorimetric determination of hexavalent chromium expressed as Cr (VI) µg/l in water, using Ion Chromatography and UV-visible spectrophotometry.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Waters by GC-MS	ICES7 PCB congeners	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Appendix 15

Geotechnical Laboratory Results (Rock)

(Diametrial) POINT LOAD STRENGTH INDEX TEST DATA

Contract: Halverstown

Contract no. 24330

Sample Type: Core

Date of test: 31/05/2023

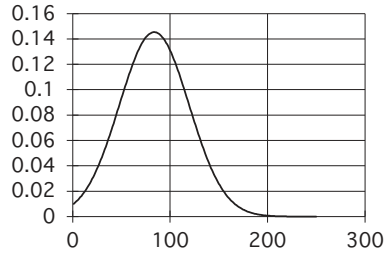
RC No.	Depth m	D (Diameter) mm	P (failure load) kN	F	Is (index strength) Mpa	Is(50) (index strength) Mpa	*UCS MPa	Type	Orienation
RC02	15.4	78	29.0	1.222	4.77	5.83	117	d	//
	17.0	78	26.2	1.222	4.31	5.26	105	d	//
	18.5	78	24.0	1.222	3.95	4.82	96	d	//
	19.5	78	19.4	1.222	3.19	3.90	78	d	//
RC03	9.9	78	18.5	1.222	3.04	3.71	74	d	//
	11.0	78	2.8	1.222	0.47	0.57	11	d	//
	11.6	78	21.6	1.222	3.54	4.33	87	d	//
	12.7	78	23.0	1.222	3.78	4.62	92	d	//
	14.0	78	22.0	1.222	3.62	4.42	88	d	//
RC04	13.0	78	30.9	1.222	5.08	6.20	124	d	//
	13.3	78	3.0	1.222	0.49	0.60	12	d	//
	15.1	78	30.0	1.222	4.93	6.02	120	d	//
	16.0	78	20.6	1.222	3.39	4.14	83	d	//

Statistical Summary Data	Is(50)	UCS*
Number of Samples Tested	13	13
Minimum	0.57	11
Average	4.19	84
Maximum	6.20	124
Standard Dev.	1.78	36
Upper 95% Confidence Limit	7.68	153.65
Lower 95% Confidence Limit	0.69	13.77

Comments:

*UCS taken as k x Point Load Is(50): k= 20

*UCS Normal Distribution Curve



Abbreviations	
i	irregular
a	axial
b	block
d	diametral

approx. orientation to planes of weakness/bedding

U	unknown
P	perpendicular
//	parallel

Appendix 16

Exploratory Hole Location Plans

2022 Investigation

DWG01 – DWG05

2023 Investigation

Additional Works

24330 - Halverstown

Exploratory Hole Location Plan - DWG 01

24330 - Halverstown

Exploratory Hole Location Plan - DWG 02

24330 - Halverstown

Exploratory Hole Location Plan - DWG 03

24330 - Halverstown

Exploratory Hole Location Plan - DWG 04

24330 - Halverstown

Exploratory Hole Location Plan - DWG 05


24330 - Halverstown
Additional Works - Exploratory Hole Location Plan
Legend
Rotary Open Hole
Rotary Drillhole
Soakaway Pit
Trial Pit
Trial Pit / Rotary Open Hole
TP01
RO01
BRE SA01
RC01A
RC01
TP02
RO02
BRE SA02
TP06
RO06
RC02
TP05
RO05
TP/RO07
RO03
TP03
BRE SA03
TP04
RO04
RC03
RO08
TP08
BRE SA06
BRE SA04
TP09
RO09
TP10
RO10
RC04
BRE SA05
Google Earth
300 m
N