



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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification



WAC results for sample: TP02-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	0.425	3	5	6
2	LOI (loss on ignition)	%	2.47	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.007	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-	-
7	pH	pH	7.89	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg		-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	0.005	0.5	2	25
10	barium	mg/kg	0.0168	20	100	300
11	cadmium	mg/kg	<0.0008	0.04	1	5
12	chromium	mg/kg	<0.01	0.5	10	70
13	copper	mg/kg	0.0163	2	50	100
14	mercury	mg/kg	<0.0001	0.01	0.2	2
15	molybdenum	mg/kg	<0.03	0.5	10	30
16	nickel	mg/kg	0.0101	0.4	10	40
17	lead	mg/kg	<0.002	0.5	10	50
18	antimony	mg/kg	<0.01	0.06	0.7	5
19	selenium	mg/kg	<0.01	0.1	0.5	7
20	zinc	mg/kg	0.0172	4	50	200
21	chloride	mg/kg	<20	800	15,000	25,000
22	fluoride	mg/kg	<5	10	150	500
23	sulphate	mg/kg	<20	1,000	20,000	50,000
24	phenol index	mg/kg	<0.16	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	42.6	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	375	4,000	60,000	100,000

Key

	User supplied data
	Not applicable



Classification of sample: TP05-1.00

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP05-1.00	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.00 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
16%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 16% Wet Weight Moisture Correction applied (MC)

#	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								
1	TPH (C6 to C40) petroleum group				<10 mg/kg		<10	mg/kg	<0.001 %		<LOD
			TPH								
2	confirm TPH has NOT arisen from diesel or petrol				☑						
3	antimony { antimony trioxide }				<0.6 mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<LOD
	051-005-00-X	215-175-0	1309-64-4								
4	arsenic { arsenic pentoxide }				29.1 mg/kg	1.534	37.494	mg/kg	0.00375 %	✓	
	033-004-00-6	215-116-9	1303-28-2								
5	barium { barium sulphide }				49.2 mg/kg	1.233	50.978	mg/kg	0.0051 %	✓	
	016-002-00-X	244-214-4	21109-95-5								
6	cadmium { cadmium sulfate }				1.11 mg/kg	1.855	1.729	mg/kg	0.000173 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
7	copper { dicopper oxide; copper (I) oxide }				24.8 mg/kg	1.126	23.455	mg/kg	0.00235 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	18.7 mg/kg		15.708	mg/kg	0.00157 %	✓	
	082-001-00-6										
9	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	molybdenum { molybdenum(VI) oxide }				0.709 mg/kg	1.5	0.893	mg/kg	0.0000893 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
11	nickel { nickel sulfate }				28.7 mg/kg	2.637	63.565	mg/kg	0.00636 %	✓	
	028-009-00-5	232-104-9	7786-81-4								
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.28 mg/kg	1.405	1.511	mg/kg	0.000151 %	✓	
	034-002-00-8										
13	zinc { zinc sulphate }				75.9 mg/kg	2.469	157.432	mg/kg	0.0157 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]								
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				17.4 mg/kg	1.462	21.362	mg/kg	0.00214 %	✓	
		215-160-9	1308-38-9								



#	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							
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.6 mg/kg	1.923	<1.154 mg/kg	<0.000115 %		<LOD
16	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
17	acenaphthylene	205-917-1	208-96-8		<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
18	acenaphthene	201-469-6	83-32-9		<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
19	fluorene	201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
20	phenanthrene	201-581-5	85-01-8		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
21	anthracene	204-371-1	120-12-7		<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
22	fluoranthene	205-912-4	206-44-0		<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
23	pyrene	204-927-3	129-00-0		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
24	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
25	chrysene	601-048-00-0	205-923-4	218-01-9	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
27	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
28	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
29	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
30	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
31	benzo[ghi]perylene	205-883-8	191-24-2		<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
32	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
34	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
35	toluene	601-021-00-3	203-625-9	108-88-3	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
36	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
37	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
38	pH		PH		8.45 pH		8.45 pH	8.45 pH		
39	o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]	<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
Total:								0.0387 %		



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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification



WAC results for sample: TP05-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	0.458	3	5	6
2	LOI (loss on ignition)	%	2.17	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.007	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-	-
7	pH	pH	8.45	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg		-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	0.0095	0.5	2	25
10	barium	mg/kg	0.0346	20	100	300
11	cadmium	mg/kg	<0.0008	0.04	1	5
12	chromium	mg/kg	<0.01	0.5	10	70
13	copper	mg/kg	0.0134	2	50	100
14	mercury	mg/kg	<0.0001	0.01	0.2	2
15	molybdenum	mg/kg	0.0334	0.5	10	30
16	nickel	mg/kg	0.0104	0.4	10	40
17	lead	mg/kg	<0.002	0.5	10	50
18	antimony	mg/kg	<0.01	0.06	0.7	5
19	selenium	mg/kg	<0.01	0.1	0.5	7
20	zinc	mg/kg	<0.01	4	50	200
21	chloride	mg/kg	<20	800	15,000	25,000
22	fluoride	mg/kg	<5	10	150	500
23	sulphate	mg/kg	<20	1,000	20,000	50,000
24	phenol index	mg/kg	<0.16	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	52.9	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	1060	4,000	60,000	100,000

Key

	User supplied data
	Not applicable



Classification of sample: TP06-1.00

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP06-1.00	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
1.00 m	
Moisture content:	
22%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 22% Wet Weight Moisture Correction applied (MC)

#	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								
1	TPH (C6 to C40) petroleum group				<10 mg/kg		<10	mg/kg	<0.001 %		<LOD
			TPH								
2	confirm TPH has NOT arisen from diesel or petrol				☒						
3	antimony { antimony trioxide }				<0.6 mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<LOD
	051-005-00-X	215-175-0	1309-64-4								
4	arsenic { arsenic pentoxide }				17.1 mg/kg	1.534	20.459	mg/kg	0.00205 %	✓	
	033-004-00-6	215-116-9	1303-28-2								
5	barium { barium sulphide }				59.5 mg/kg	1.233	57.246	mg/kg	0.00572 %	✓	
	016-002-00-X	244-214-4	21109-95-5								
6	cadmium { cadmium sulfate }				1.12 mg/kg	1.855	1.62	mg/kg	0.000162 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
7	copper { dicopper oxide; copper (I) oxide }				15.1 mg/kg	1.126	13.261	mg/kg	0.00133 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	22.1 mg/kg		17.238	mg/kg	0.00172 %	✓	
	082-001-00-6										
9	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	molybdenum { molybdenum(VI) oxide }				0.539 mg/kg	1.5	0.631	mg/kg	0.0000631 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
11	nickel { nickel sulfate }				24.1 mg/kg	2.637	49.564	mg/kg	0.00496 %	✓	
	028-009-00-5	232-104-9	7786-81-4								
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.1 mg/kg	1.405	1.205	mg/kg	0.000121 %	✓	
	034-002-00-8										
13	zinc { zinc sulphate }				77.3 mg/kg	2.469	148.884	mg/kg	0.0149 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]								
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				26 mg/kg	1.462	29.64	mg/kg	0.00296 %	✓	
		215-160-9	1308-38-9								



#	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							
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.6 mg/kg	1.923	<1.154 mg/kg	<0.000115 %		<LOD
16	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
17	acenaphthylene	205-917-1	208-96-8		<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
18	acenaphthene	201-469-6	83-32-9		<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
19	fluorene	201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
20	phenanthrene	201-581-5	85-01-8		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
21	anthracene	204-371-1	120-12-7		<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
22	fluoranthene	205-912-4	206-44-0		<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
23	pyrene	204-927-3	129-00-0		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
24	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
25	chrysene	601-048-00-0	205-923-4	218-01-9	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
27	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
28	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
29	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
30	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
31	benzo[ghi]perylene	205-883-8	191-24-2		<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
32	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
34	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
35	toluene	601-021-00-3	203-625-9	108-88-3	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
36	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
37	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
38	pH		PH		7.26 pH		7.26 pH	7.26 pH		
39	o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]	<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
Total:								0.0352 %		



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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification



WAC results for sample: TP06-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	0.695	3	5	6
2	LOI (loss on ignition)	%	3.29	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.007	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-	-
7	pH	pH	7.26	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg		-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	<0.005	0.5	2	25
10	barium	mg/kg	0.0054	20	100	300
11	cadmium	mg/kg	<0.0008	0.04	1	5
12	chromium	mg/kg	<0.01	0.5	10	70
13	copper	mg/kg	0.0117	2	50	100
14	mercury	mg/kg	<0.0001	0.01	0.2	2
15	molybdenum	mg/kg	<0.03	0.5	10	30
16	nickel	mg/kg	<0.004	0.4	10	40
17	lead	mg/kg	<0.002	0.5	10	50
18	antimony	mg/kg	<0.01	0.06	0.7	5
19	selenium	mg/kg	<0.01	0.1	0.5	7
20	zinc	mg/kg	<0.01	4	50	200
21	chloride	mg/kg	<20	800	15,000	25,000
22	fluoride	mg/kg	<5	10	150	500
23	sulphate	mg/kg	<20	1,000	20,000	50,000
24	phenol index	mg/kg	<0.16	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	59.8	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	200	4,000	60,000	100,000

Key

	User supplied data
	Not applicable



Classification of sample: TP08-1.00

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP08-1.00	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.00 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
18%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#	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								
1	TPH (C6 to C40) petroleum group				<10 mg/kg		<10	mg/kg	<0.001 %		<LOD
			TPH								
2	confirm TPH has NOT arisen from diesel or petrol				☒						
3	antimony { antimony trioxide }				<0.6 mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<LOD
	051-005-00-X	215-175-0	1309-64-4								
4	arsenic { arsenic pentoxide }				14.6 mg/kg	1.534	18.364	mg/kg	0.00184 %	✓	
	033-004-00-6	215-116-9	1303-28-2								
5	barium { barium sulphide }				50 mg/kg	1.233	50.573	mg/kg	0.00506 %	✓	
	016-002-00-X	244-214-4	21109-95-5								
6	cadmium { cadmium sulfate }				0.946 mg/kg	1.855	1.439	mg/kg	0.000144 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
7	copper { dicopper oxide; copper (I) oxide }				16 mg/kg	1.126	14.772	mg/kg	0.00148 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	20.8 mg/kg		17.056	mg/kg	0.00171 %	✓	
	082-001-00-6										
9	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	molybdenum { molybdenum(VI) oxide }				0.396 mg/kg	1.5	0.487	mg/kg	0.0000487 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
11	nickel { nickel sulfate }				24.8 mg/kg	2.637	53.62	mg/kg	0.00536 %	✓	
	028-009-00-5	232-104-9	7786-81-4								
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.55 mg/kg	1.405	1.786	mg/kg	0.000179 %	✓	
	034-002-00-8										
13	zinc { zinc sulphate }				67.2 mg/kg	2.469	136.068	mg/kg	0.0136 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]								
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				23.1 mg/kg	1.462	27.685	mg/kg	0.00277 %	✓	
		215-160-9	1308-38-9								



#	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							
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.6 mg/kg	1.923	<1.154 mg/kg	<0.000115 %		<LOD
16	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
17	acenaphthylene	205-917-1	208-96-8		<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
18	acenaphthene	201-469-6	83-32-9		<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
19	fluorene	201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
20	phenanthrene	201-581-5	85-01-8		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
21	anthracene	204-371-1	120-12-7		<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
22	fluoranthene	205-912-4	206-44-0		<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
23	pyrene	204-927-3	129-00-0		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
24	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
25	chrysene	601-048-00-0	205-923-4	218-01-9	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
27	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
28	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
29	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
30	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
31	benzo[ghi]perylene	205-883-8	191-24-2		<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
32	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
34	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
35	toluene	601-021-00-3	203-625-9	108-88-3	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
36	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
37	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
38	pH		PH		7.6 pH		7.6 pH	7.6 pH		
39	o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]	<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
Total:								0.0334 %		



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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification



WAC results for sample: TP08-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	0.441	3	5	6
2	LOI (loss on ignition)	%	2.56	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.007	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-	-
7	pH	pH	7.6	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg		-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	<0.005	0.5	2	25
10	barium	mg/kg	0.0056	20	100	300
11	cadmium	mg/kg	<0.0008	0.04	1	5
12	chromium	mg/kg	<0.01	0.5	10	70
13	copper	mg/kg	0.0109	2	50	100
14	mercury	mg/kg	<0.0001	0.01	0.2	2
15	molybdenum	mg/kg	<0.03	0.5	10	30
16	nickel	mg/kg	<0.004	0.4	10	40
17	lead	mg/kg	<0.002	0.5	10	50
18	antimony	mg/kg	<0.01	0.06	0.7	5
19	selenium	mg/kg	<0.01	0.1	0.5	7
20	zinc	mg/kg	<0.01	4	50	200
21	chloride	mg/kg	<20	800	15,000	25,000
22	fluoride	mg/kg	<5	10	150	500
23	sulphate	mg/kg	<20	1,000	20,000	50,000
24	phenol index	mg/kg	<0.16	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	<30	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	139	4,000	60,000	100,000

Key

	User supplied data
	Not applicable



Classification of sample: TP11-1.00

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP11-1.00	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.00 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
18%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#	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								
1	TPH (C6 to C40) petroleum group				<10 mg/kg		<10	mg/kg	<0.001 %		<LOD
			TPH								
2	confirm TPH has NOT arisen from diesel or petrol				☑						
3	antimony { antimony trioxide }				<0.6 mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<LOD
	051-005-00-X	215-175-0	1309-64-4								
4	arsenic { arsenic pentoxide }				17.1 mg/kg	1.534	21.508	mg/kg	0.00215 %	✓	
	033-004-00-6	215-116-9	1303-28-2								
5	barium { barium sulphide }				55.7 mg/kg	1.233	56.339	mg/kg	0.00563 %	✓	
	016-002-00-X	244-214-4	21109-95-5								
6	cadmium { cadmium sulfate }				0.806 mg/kg	1.855	1.226	mg/kg	0.000123 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
7	copper { dicopper oxide; copper (I) oxide }				10.9 mg/kg	1.126	10.063	mg/kg	0.00101 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	39.4 mg/kg		32.308	mg/kg	0.00323 %	✓	
	082-001-00-6										
9	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	molybdenum { molybdenum(VI) oxide }				0.472 mg/kg	1.5	0.581	mg/kg	0.0000581 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
11	nickel { nickel sulfate }				21.3 mg/kg	2.637	46.052	mg/kg	0.00461 %	✓	
	028-009-00-5	232-104-9	7786-81-4								
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8										
13	zinc { zinc sulphate }				99.6 mg/kg	2.469	201.672	mg/kg	0.0202 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]								
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				18.6 mg/kg	1.462	22.292	mg/kg	0.00223 %	✓	
		215-160-9	1308-38-9								



#	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								
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.6 mg/kg	1.923	<1.154 mg/kg	<0.000115 %			<LOD
16	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %			<LOD
17	acenaphthylene	205-917-1	208-96-8		<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %			<LOD
18	acenaphthene	201-469-6	83-32-9		<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %			<LOD
19	fluorene	201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
20	phenanthrene	201-581-5	85-01-8		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %			<LOD
21	anthracene	204-371-1	120-12-7		<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %			<LOD
22	fluoranthene	205-912-4	206-44-0		<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %			<LOD
23	pyrene	204-927-3	129-00-0		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %			<LOD
24	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %			<LOD
25	chrysene	601-048-00-0	205-923-4	218-01-9	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
26	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %			<LOD
27	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %			<LOD
28	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %			<LOD
29	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %			<LOD
30	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %			<LOD
31	benzo[ghi]perylene	205-883-8	191-24-2		<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %			<LOD
32	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %			<LOD
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %			<LOD
34	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
35	toluene	601-021-00-3	203-625-9	108-88-3	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
36	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
37	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %			<LOD
38	pH		PH		7.02 pH		7.02 pH	7.02 pH			
39	o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]	<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %			<LOD
Total:									0.0406 %		



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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification



WAC results for sample: TP11-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	0.549	3	5	6
2	LOI (loss on ignition)	%	3	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.007	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-	-
7	pH	pH	7.02	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg		-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	<0.005	0.5	2	25
10	barium	mg/kg	0.267	20	100	300
11	cadmium	mg/kg	<0.0008	0.04	1	5
12	chromium	mg/kg	<0.01	0.5	10	70
13	copper	mg/kg	0.01	2	50	100
14	mercury	mg/kg	<0.0001	0.01	0.2	2
15	molybdenum	mg/kg	<0.03	0.5	10	30
16	nickel	mg/kg	0.0063	0.4	10	40
17	lead	mg/kg	0.0038	0.5	10	50
18	antimony	mg/kg	<0.01	0.06	0.7	5
19	selenium	mg/kg	<0.01	0.1	0.5	7
20	zinc	mg/kg	0.144	4	50	200
21	chloride	mg/kg	<20	800	15,000	25,000
22	fluoride	mg/kg	<5	10	150	500
23	sulphate	mg/kg	<20	1,000	20,000	50,000
24	phenol index	mg/kg	<0.16	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	72.3	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	183	4,000	60,000	100,000

Key

	User supplied data
	Not applicable



Classification of sample: TP13-1.00

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP13-1.00	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.00 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
20%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 20% Wet Weight Moisture Correction applied (MC)

#	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							
1	TPH (C6 to C40) petroleum group				66.8 mg/kg		53.44 mg/kg	0.00534 %	✓	
			TPH							
2	confirm TPH has NOT arisen from diesel or petrol				☒					
3	antimony { antimony trioxide }				<0.6 mg/kg	1.197	<0.718 mg/kg	<0.0000718 %		<LOD
	051-005-00-X	215-175-0	1309-64-4							
4	arsenic { arsenic pentoxide }				18.2 mg/kg	1.534	22.333 mg/kg	0.00223 %	✓	
	033-004-00-6	215-116-9	1303-28-2							
5	barium { barium sulphide }				65.7 mg/kg	1.233	64.832 mg/kg	0.00648 %	✓	
	016-002-00-X	244-214-4	21109-95-5							
6	cadmium { cadmium sulfate }				1.32 mg/kg	1.855	1.958 mg/kg	0.000196 %	✓	
	048-009-00-9	233-331-6	10124-36-4							
7	copper { dicopper oxide; copper (I) oxide }				11.5 mg/kg	1.126	10.358 mg/kg	0.00104 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	21 mg/kg		16.8 mg/kg	0.00168 %	✓	
	082-001-00-6									
9	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
10	molybdenum { molybdenum(VI) oxide }				0.305 mg/kg	1.5	0.366 mg/kg	0.0000366 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
11	nickel { nickel sulfate }				21.7 mg/kg	2.637	45.773 mg/kg	0.00458 %	✓	
	028-009-00-5	232-104-9	7786-81-4							
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.03 mg/kg	1.405	1.158 mg/kg	0.000116 %	✓	
	034-002-00-8									
13	zinc { zinc sulphate }				114 mg/kg	2.469	225.2 mg/kg	0.0225 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				21.6 mg/kg	1.462	25.256 mg/kg	0.00253 %	✓	
		215-160-9	1308-38-9							



#	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							
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.6 mg/kg	1.923	<1.154 mg/kg	<0.000115 %		<LOD
16	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
17	acenaphthylene	205-917-1	208-96-8		<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
18	acenaphthene	201-469-6	83-32-9		<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
19	fluorene	201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
20	phenanthrene	201-581-5	85-01-8		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
21	anthracene	204-371-1	120-12-7		<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
22	fluoranthene	205-912-4	206-44-0		<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
23	pyrene	204-927-3	129-00-0		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
24	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
25	chrysene	601-048-00-0	205-923-4	218-01-9	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
27	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
28	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
29	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
30	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
31	benzo[ghi]perylene	205-883-8	191-24-2		<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
32	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
34	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
35	toluene	601-021-00-3	203-625-9	108-88-3	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
36	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
37	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
38	pH		PH		7.06 pH		7.06 pH	7.06 pH		
39	o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]	<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00534%)



WAC results for sample: TP13-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	0.921	3	5	6
2	LOI (loss on ignition)	%	4.01	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.007	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	16.2	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-	-
7	pH	pH	7.06	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg		-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	0.01	0.5	2	25
10	barium	mg/kg	0.0807	20	100	300
11	cadmium	mg/kg	<0.0008	0.04	1	5
12	chromium	mg/kg	0.0122	0.5	10	70
13	copper	mg/kg	0.0088	2	50	100
14	mercury	mg/kg	<0.0001	0.01	0.2	2
15	molybdenum	mg/kg	<0.03	0.5	10	30
16	nickel	mg/kg	0.0071	0.4	10	40
17	lead	mg/kg	0.0042	0.5	10	50
18	antimony	mg/kg	<0.01	0.06	0.7	5
19	selenium	mg/kg	<0.01	0.1	0.5	7
20	zinc	mg/kg	0.106	4	50	200
21	chloride	mg/kg	<20	800	15,000	25,000
22	fluoride	mg/kg	<5	10	150	500
23	sulphate	mg/kg	<20	1,000	20,000	50,000
24	phenol index	mg/kg	<0.16	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	59	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	156	4,000	60,000	100,000

Key

	User supplied data
	Not applicable



Classification of sample: TP14-1.00

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP14-1.00	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.00 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
12%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#	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								
1	TPH (C6 to C40) petroleum group				<10 mg/kg		<10	mg/kg	<0.001 %		<LOD
			TPH								
2	confirm TPH has NOT arisen from diesel or petrol				☒						
3	antimony { antimony trioxide }				<0.6 mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<LOD
	051-005-00-X	215-175-0	1309-64-4								
4	arsenic { arsenic pentoxide }				17.5 mg/kg	1.534	23.622	mg/kg	0.00236 %	✓	
	033-004-00-6	215-116-9	1303-28-2								
5	barium { barium sulphide }				56.1 mg/kg	1.233	60.895	mg/kg	0.00609 %	✓	
	016-002-00-X	244-214-4	21109-95-5								
6	cadmium { cadmium sulfate }				2.28 mg/kg	1.855	3.721	mg/kg	0.000372 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
7	copper { dicopper oxide; copper (I) oxide }				33.8 mg/kg	1.126	33.488	mg/kg	0.00335 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	20 mg/kg		17.6	mg/kg	0.00176 %	✓	
	082-001-00-6										
9	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	molybdenum { molybdenum(VI) oxide }				1.98 mg/kg	1.5	2.614	mg/kg	0.000261 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
11	nickel { nickel sulfate }				40.5 mg/kg	2.637	93.971	mg/kg	0.0094 %	✓	
	028-009-00-5	232-104-9	7786-81-4								
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				3.41 mg/kg	1.405	4.216	mg/kg	0.000422 %	✓	
	034-002-00-8										
13	zinc { zinc sulphate }				89.2 mg/kg	2.469	193.83	mg/kg	0.0194 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]								
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				31.3 mg/kg	1.462	40.257	mg/kg	0.00403 %	✓	
		215-160-9	1308-38-9								



#	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							
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.6 mg/kg	1.923	<1.154 mg/kg	<0.000115 %		<LOD
16	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
17	acenaphthylene	205-917-1	208-96-8		<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
18	acenaphthene	201-469-6	83-32-9		<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
19	fluorene	201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
20	phenanthrene	201-581-5	85-01-8		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
21	anthracene	204-371-1	120-12-7		<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
22	fluoranthene	205-912-4	206-44-0		<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
23	pyrene	204-927-3	129-00-0		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
24	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
25	chrysene	601-048-00-0	205-923-4	218-01-9	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
27	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
28	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
29	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
30	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
31	benzo[ghi]perylene	205-883-8	191-24-2		<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
32	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
34	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
35	toluene	601-021-00-3	203-625-9	108-88-3	0.0013 mg/kg		0.0011 mg/kg	0.000000114 %	✓	
36	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
37	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
38	pH		PH		8.4 pH		8.4 pH	8.4 pH		
39	o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]	<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
Total:								0.0487 %		



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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinand:

toluene: (conc.: 1.14e-07%)



WAC results for sample: TP14-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	0.474	3	5	6
2	LOI (loss on ignition)	%	2.39	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	0.0013	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-	-
7	pH	pH	8.4	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg		-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	<0.005	0.5	2	25
10	barium	mg/kg	0.0255	20	100	300
11	cadmium	mg/kg	<0.0008	0.04	1	5
12	chromium	mg/kg	<0.01	0.5	10	70
13	copper	mg/kg	0.0063	2	50	100
14	mercury	mg/kg	<0.0001	0.01	0.2	2
15	molybdenum	mg/kg	<0.03	0.5	10	30
16	nickel	mg/kg	<0.004	0.4	10	40
17	lead	mg/kg	<0.002	0.5	10	50
18	antimony	mg/kg	<0.01	0.06	0.7	5
19	selenium	mg/kg	<0.01	0.1	0.5	7
20	zinc	mg/kg	<0.01	4	50	200
21	chloride	mg/kg	<20	800	15,000	25,000
22	fluoride	mg/kg	<5	10	150	500
23	sulphate	mg/kg	171	1,000	20,000	50,000
24	phenol index	mg/kg	<0.16	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	31.5	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	902	4,000	60,000	100,000

Key

	User supplied data
	Not applicable



Classification of sample: TP15-1.00

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP15-1.00	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.00 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
12%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#	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								
1	TPH (C6 to C40) petroleum group				<10 mg/kg		<10	mg/kg	<0.001 %		<LOD
			TPH								
2	confirm TPH has NOT arisen from diesel or petrol				☒						
3	antimony { antimony trioxide }				<0.6 mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<LOD
	051-005-00-X	215-175-0	1309-64-4								
4	arsenic { arsenic pentoxide }				14.8 mg/kg	1.534	19.977	mg/kg	0.002 %	✓	
	033-004-00-6	215-116-9	1303-28-2								
5	barium { barium sulphide }				71.6 mg/kg	1.233	77.72	mg/kg	0.00777 %	✓	
	016-002-00-X	244-214-4	21109-95-5								
6	cadmium { cadmium sulfate }				2.67 mg/kg	1.855	4.357	mg/kg	0.000436 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
7	copper { dicopper oxide; copper (I) oxide }				23.6 mg/kg	1.126	23.382	mg/kg	0.00234 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	20.5 mg/kg		18.04	mg/kg	0.0018 %	✓	
	082-001-00-6										
9	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	molybdenum { molybdenum(VI) oxide }				1.69 mg/kg	1.5	2.231	mg/kg	0.000223 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
11	nickel { nickel sulfate }				46.2 mg/kg	2.637	107.197	mg/kg	0.0107 %	✓	
	028-009-00-5	232-104-9	7786-81-4								
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2.34 mg/kg	1.405	2.893	mg/kg	0.000289 %	✓	
	034-002-00-8										
13	zinc { zinc sulphate }				100 mg/kg	2.469	217.298	mg/kg	0.0217 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]								
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				15.7 mg/kg	1.462	20.193	mg/kg	0.00202 %	✓	
		215-160-9	1308-38-9								



#	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							
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.6 mg/kg	1.923	<1.154 mg/kg	<0.000115 %		<LOD
16	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
17	acenaphthylene	205-917-1	208-96-8		<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
18	acenaphthene	201-469-6	83-32-9		<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
19	fluorene	201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
20	phenanthrene	201-581-5	85-01-8		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
21	anthracene	204-371-1	120-12-7		<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
22	fluoranthene	205-912-4	206-44-0		<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
23	pyrene	204-927-3	129-00-0		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
24	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
25	chrysene	601-048-00-0	205-923-4	218-01-9	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
27	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
28	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
29	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
30	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
31	benzo[ghi]perylene	205-883-8	191-24-2		<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
32	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
34	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
35	toluene	601-021-00-3	203-625-9	108-88-3	0.0024 mg/kg		0.0021 mg/kg	0.000000217 %	✓	
36	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
37	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
38	pH		PH		8.33 pH		8.33 pH	8.33 pH		
39	o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]	<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinand:

toluene: (conc.: 2.17e-07%)



WAC results for sample: TP15-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	0.497	3	5	6
2	LOI (loss on ignition)	%	2.85	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	0.0024	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-	-
7	pH	pH	8.33	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg		-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	<0.005	0.5	2	25
10	barium	mg/kg	0.0245	20	100	300
11	cadmium	mg/kg	<0.0008	0.04	1	5
12	chromium	mg/kg	<0.01	0.5	10	70
13	copper	mg/kg	0.0076	2	50	100
14	mercury	mg/kg	<0.0001	0.01	0.2	2
15	molybdenum	mg/kg	<0.03	0.5	10	30
16	nickel	mg/kg	<0.004	0.4	10	40
17	lead	mg/kg	<0.002	0.5	10	50
18	antimony	mg/kg	<0.01	0.06	0.7	5
19	selenium	mg/kg	<0.01	0.1	0.5	7
20	zinc	mg/kg	<0.01	4	50	200
21	chloride	mg/kg	<20	800	15,000	25,000
22	fluoride	mg/kg	<5	10	150	500
23	sulphate	mg/kg	220	1,000	20,000	50,000
24	phenol index	mg/kg	<0.16	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	40.2	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	1080	4,000	60,000	100,000

Key

	User supplied data
	Not applicable



Appendix A: Classifier defined and non EU CLP determinands

• **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

• **confirm TPH has NOT arisen from diesel or petrol**

Description/Comments: Chapter 3, section 4b requires a positive confirmation for benzo[a]pyrene to be used as a marker in evaluating Carc. 1B; H350 (HP 7) and Muta. 1B; H340 (HP 11)

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

• **barium sulphide** (EC Number: 244-214-4, CAS Number: 21109-95-5)

EU CLP index number: 016-002-00-X

Description/Comments:

Additional Hazard Statement(s): EUH031 >= 0.8 %

Reason for additional Hazards Statement(s):

14 Dec 2015 - EUH031 >= 0.8 % hazard statement sourced from: WM3, Table C12.2

• **lead compounds with the exception of those specified elsewhere in this Annex (worst case)**

EU CLP index number: 082-001-00-6

Description/Comments: Worst Case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following CLP protocols, considers lead compounds from smelting industries, flue dust and similar to be Carcinogenic category 1A

Additional Hazard Statement(s): Carc. 1A; H350

Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html (worst case lead compounds). Review date 29/09/2015

• **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

• **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

• **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

• **coronene** (EC Number: 205-881-7, CAS Number: 191-07-1)

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.

Data source: <http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en>

Data source date: 16 Jun 2014

Hazard Statements: STOT SE 2; H371

• **pH** (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

Appendix B: Rationale for selection of metal species

antimony {antimony trioxide}

Worst case scenario.

arsenic {arsenic pentoxide}

Arsenic pentoxide used as most hazardous species.



barium {barium sulphide}

Chromium VI at limits of detection. Barium sulphide used as the next most hazardous species. No chromate present.

cadmium {cadmium sulfate}

Cadmium sulphate used as the most hazardous species.

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected.

lead {lead compounds with the exception of those specified elsewhere in this Annex (worst case)}

Chromium VI at limits of detection. Lead compounds used as the next most hazardous species. No chromate present.

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight.

nickel {nickel sulfate}

Chromium VI at limits of detection. Nickel sulphate used as the next most hazardous species. No chromate present.

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil.

zinc {zinc sulphate}

Chromium VI at limits of detection. Zinc sulphate used as the next most hazardous species. No chromate present.

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

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments.

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1.NI - Jan 2021

HazWasteOnline Classification Engine Version: 2024.110.6022.11160 (19 Apr 2024)

HazWasteOnline Database: 2024.110.6022.11160 (19 Apr 2024)



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

19th ATP - Regulation (EU) 2023/1434 of 25 April 2023

20th ATP - Regulation (EU) 2023/1435 of 2 May 2023

21st ATP - Regulation (EU) 2024/197 of 19 October 2023

Appendix 9

Survey Data

Survey Data

Location	Irish Transverse Mercator		Elevation	Irish National Grid	
	Easting	Northing		Easting	Northing
Cable Percussive Boreholes					
BH01	724993.482	719396.264	22.06	325069.968	219366.845
BH02	725029.726	719349.921	21.36	325106.220	219320.493
BH03	725073.100	719378.678	20.38	325149.603	219349.256
BH04	725129.671	719367.930	20.11	325206.186	219338.506
BH05	725142.992	719402.178	19.80	325219.510	219372.762
BH06	725231.057	719398.722	20.98	325307.594	219369.306
Trial Pits					
TP01	725002.307	719396.973	21.87	325078.795	219367.555
TP02	725044.268	719404.599	20.91	325120.764	219375.183
TP03	725093.279	719412.146	20.22	325169.786	219382.732
TP04	725120.840	719416.102	20.11	325197.353	219386.689
TP05	725144.297	719418.825	19.88	325220.815	219389.412
TP06	725008.210	719372.882	21.71	325084.699	219343.458
TP07	725046.252	719375.100	20.89	325122.749	219345.677
TP08	725102.220	719381.090	20.17	325178.729	219351.669
TP09	725149.121	719387.378	19.85	325225.640	219357.959
TP10	725013.959	719349.647	21.75	325090.450	219320.218
TP11	725047.019	719353.067	21.13	325123.517	219323.639
TP12	725103.766	719363.682	20.24	325180.276	219334.257
TP13	725149.732	719368.623	20.05	325226.252	219339.199
TP14	725216.582	719378.421	20.96	325293.116	219349.000
TP15	725217.661	719419.930	19.74	325294.195	219390.518
Dynamic Probes					
DP01	725023.812	719383.798	21.19	325100.304	219354.377
DP02	725069.443	719395.112	20.40	325145.945	219365.694
DP03	725119.672	719395.741	20.03	325196.185	219366.323
DP04	725075.994	719359.098	20.49	325152.498	219329.672



	Site Investigations Ltd The Grange 12th Lock Road Lucan Co. Dublin T: 01 6108768 e: info@siteinvestigations.ie	Contract No:	6234	Client:	Dún Laoghaire Rathdown County Council	Legend Key  Locations By Type - CP  Locations By Type - DP  Locations By Type - TP
		Contract Name:	Old Connaught Avenue	Engineer:	-	
		Location:	Bray, Co. Dublin	Scale:	1:1000	
		Title:	Site Plan	Drawn By:	SL	

Appendix B. Design Calculations



Pumping Station Design Calculations - Pumps & Pressure Pipelines

Pumping Station - Sewer Network Collection

Key

c	Calculated
d	Designer Chosen
s	Employer or Standard Specified

Parameter	Reference	Unit	Current Application	LAP Extents
			Phase #1 Values	Phase #2 Values

1.0 - Hydraulic Load Assessment

1.1 - Population equivalent

d	Number of units	-	271	3569
d	Total area of development	ha	6.934	40
d	Type of development	-	Residential	Residential
s	Residential occupancy rate	IW-TEC-800-01, Section 6.2.1	2.7	2.7
c	Population equivalent [P]	PE	731.7	9636

1.2 - Design Flows

s	Water consumption per capita [G]	IW-TEC-800-01, Section 6.2.2	l/d	150	150
s	Peaking factor domestic [P _{fDom}]	IW-TEC-800-01, Section 6.2.5	-	6	2.5
c	Domestic flow		l/d	109755	1445445
c	Peaked domestic flow		l/d	658530	3613613
c	Peak domestic flow		l/s	7.62	41.82
c	Commercial & industrial dry weather flow	Section 6.2.6	l/s	0	0
s	Commercial peaking factor	Section 6.2.7	-	0	0
c	Peaked commercial & industrial flow		l/s	0	0
s	Infiltration allowance (new property or new industrial)	IW-TEC-800-01, Section 6.2.4	-	10%	10%
c	Infiltration [I]	IW-TEC-800-01, Section 6.2.4	l/d	10976	144545
c	Infiltration [I]		l/s		
c	Dry weather flow [DWF]		l/s	1.27	16.73
c	Dry weather flow [DWF]		m3/d	110	1445
c	Formula A	IW-TEC-800-01, Section 6.2.10.2.1	l/s	12.79	168.41
c	Design foul flow		l/s	7.62	41.82

1.3 Misconnections and Future Flows

s	Misconnection allowance [SW]		-	3%	3%
c	Misconnection allowance [SW] (2 year)		l/s	9.21	53.11
c	Misconnection allowance [SW] (5 year)		l/s	11.80	68.05
c	Misconnection allowance [SW] (30 year)		l/s	17.27	99.64
c	Design flow (2yr)		l/s	16.83	94.94
c	Design flow (30yr)		l/s	24.89	141.46
c	Design flow (2yr) +20% CC	IW-TEC-800-13, Section 8.2	l/s	18.67	105.56
c	Design flow (30yr) + 20% CC	IW-TEC-800-13, Section 8.2	l/s	28.35	161.39
s	Design return period against surcharge	IW-TEC-800-01, Section 5.4	-	2.00	2.00
s	Design return period against Internal flooding	IW-TEC-800-01, Section 5.4	-	30.00	30.00

2.0 - Pumping Station Sizing and Geometry

2.1 - Rising Main Details

d	Length		m	470	470
d	Nominal bore (internal diameter)		m	0.100	0.200
d	Invert at discharge point		mOD	16.530	16.530
d	Residual head at discharge point		m	0.50	0.50
c	Flow velocity	IW-TEC-800-02, Section 11.2.2	m/s	0.97	1.33
s	Anticipated Colebrook-White roughness coefficient, k_s	IW-TEC-800-02, Section 11.2.1	mm	0.15	0.3

2.2a - Wet Well: Sizing and Geometry

d	number of pumps, n		-	1	1
c	pump capacity, Q		L/s	7.62	41.82
s	pump cycles, N _{max}	IW-TEC-800-02, Section 7.12	1/hr	10	10
c	pump cycle time, T _{min}		sec	360	360
c	volume of operating band, V _{min}		m ³	0.69	3.76
d	sump length		m	3.00	3.00
d	sump width		m	2.00	2.00
c	sump area		m ²	6.00	6.00
s	depth of nominal operating band	IW-TEC-800-02, Section 7.12	m	0.200	0.627
d	ground level at pumping station		mOD	22.000	22.000
d	inlet invert level		mOD	21.000	21.000
c	free fall from inlet to pump cut-in, ΔH		m	7.55	7.12
c	free fall from inlet invert to pump cut-out		m	7.75	7.75
d	liquid level at duty cut-out (LWL)		mOD	13.250	13.250
c	liquid level at duty cut-in (HWL)		mOD	13.450	13.877
d	pump sump floor level		mOD	12.850	12.850
c	liquid depth at duty cut-out (LWL)		m	0.40	0.40

Appendix C. Preliminary Pump Selection



S.No	Description		Unit
1	Design basis		
	Wet Well		
	Wet well Cover Level	22.000	mOD
	Proposed wet well Floor Level	12.850	mOD
	Incoming sewer level (IL)	14.277	mOD
	Top Water Level	21.35	mOD
	Cover Level	22	mOD
	Discharge pipe IL	20.5	mOD
	Discharge Pipework		
	DN100 Ductile Iron	100	mm
	Rising Main		
	PE100 SDR17 OD110		
	ID	96.8	mm
	Assumption:		
	Pump Stop	13.35	m
	Pump Start	13.95	m
	Highest Point	20.5	mOD
	Total flow	27.432	m ³ /hr
		0.008	m ³ /s
	Total No. of Pumps	2	Nos
	Pumping Arrangement	D/S	
	Each pump flow	0.008	m ³ /s
	Rising Main Pipework Length		
	Pump Discharge Line DN100	28.45	m
	Rising Main PE100 SDR17 OD110	450	m
2	Velocity Assessment		
	Flow per duty pump (Q)	0.008	m ³ /s
	No. of Duty Pumps	1	Nos
	Flow in the discharge header pipe sections	0.008	m ³ /s
	Each Pump Discharge Line - DN100		
	Pipe Size (DN)	100	mm
		0.1	m
	Pipe Area (A)	0.008	m ²
	Velocity (V)	0.97	m/s
	Rising Main PE100 SDR17 OD110		
	Pipe Size (DN)	96.8	mm
		0.0968	m
	Pipe Area (A)	0.007	m ²
	Velocity (V)	1.04	m/s
2	Static Head		
	Maximum	7.10	m
	Minimum	6.50	m

4	Pipe Friction Loss (Hf)			
	Pump Discharge Line: DN100			
	Using Darcy-Weisbach			
	$h_f = f_D \frac{L}{D} \frac{V^2}{2g}$			
	Friction Factor		0.04	
	L/D		284.50	
	V ² /2g		0.0480	
	Friction Loss (hf) for DN100 Pipework		0.61	m
	Rising Main PE100 SDR17 OD110			
	Using Darcy-Weisbach			
	Friction Factor		0.03	
	L/D		4648.76	
	V ² /2g		0.0546	
	Friction Loss (hf) for PE100 SDR17 OD110		6.78	m
5	Minor Head Losses (Hm)			
	Component	K Coefficient	Nos	
	DN100 Check Valve	2.00	1	
	DN100 Gate Valve	0.17	2	
	90° Bend	0.75	2	
	Each Pump Discharge Line K Coefficient		3.84	
	DN100 Equal Tee	0.20	2	
	90° Bend	0.75	2	
	DN100 Gate Valve	0.17	1	
	Rising Main PE100 SDR17 OD110		2.07	
	Minor Loss at Pump Discharge Line		0.18	
	Minor Loss at Rising Main		0.11	
	Total minor head loss (Hm)		0.30	m
6	Total dynamic head (TDH)			
	Total dynamic head (TDH)		Hs+Hf+Hm	m
	Calculated TDH		14.79	m
7	Recommended Pump Head			
	Considering margin for design tolerance		10%	
	Selected pump duty head		16	m
8	Pump Duty Point			
	Flow per pump		0.008	m ³ /s
			7.62	LPS
			27.432	m ³ /hr
	Required Pump Head		16	m

Project Name: OLD CONNAUGHT LRD				
S.No	Description		Unit	Notes
1	Design basis			
	Wet Well			
	Wet well Cover Level	22.000	mOD	
	Proposed wet well Floor Level	12.850	mOD	
	Incoming sewer level (IL)	14.277	mOD	
	Top Water Level	21.35	mOD	
	Cover Level	22	mOD	
	Discharge pipe IL	20.5	mOD	
	Discharge Pipework			
	DN100 Ductile Iron	200	mm	
	Rising Main			
	PE100 SDR17 OD225			
	ID	198.2	mm	
	Assumption:			
	Pump Stop	13.35	m	
	Pump Start	13.95	m	
	Highest Point	20.45	mOD	
	Total flow	55.51	LPS	
	Total flow	199.836	m ³ /hr	
		0.056	m ³ /s	
	Total No. of Pumps	2	Nos	
	Pumping Arrangement	D/S		
	Each pump flow	0.056	m ³ /s	
	Rising Main Pipework Length			
	Pump Discharge Line DN200	28.45	m	
	Rising Main PE100 SDR17 OD225	450	m	
2	Velocity Assessment			
	Flow per duty pump (Q)	0.056	m ³ /s	
	No. of Duty Pumps	1	No	
	Flow in the discharge header pipe sections	0.056	m ³ /s	
	Each Pump Discharge Line - DN200			
	Pipe Size (DN)	200	mm	
		0.2	m	
	Pipe Area (A)	0.031	m ²	
	Velocity (V)	1.77	m/s	
	Rising Main PE100 SDR17 OD225			
	Pipe Size (DN)	198.2	mm	
		0.1982	m	
	Pipe Area (A)	0.031	m ²	
	Velocity (V)	1.80	m/s	
2	Static Head			
	Maximum	7.10	m	
	Minimum	6.50	m	

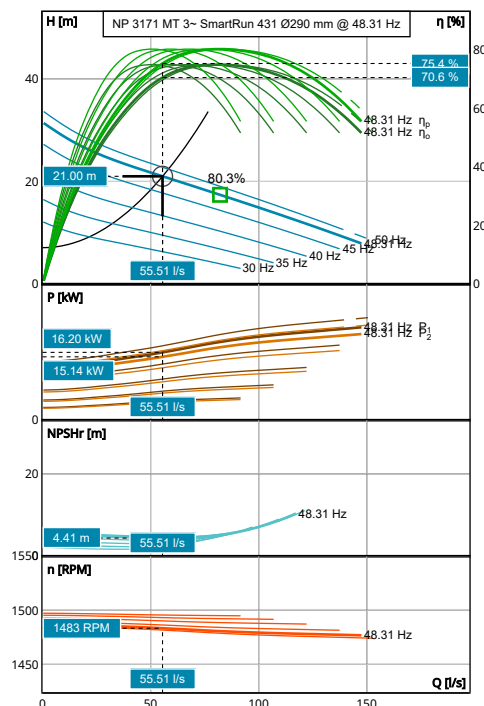
4	Pipe Friction Loss (Hf)			
	Pump Discharge Line: DN100			
	Using Darcy-Weisbach			
	$h_f = f_D \frac{L}{D} \frac{V^2}{2g}$			
	Friction Factor	0.04		
	L/D	142.25		
	V ² /2g	0.1591		
	Friction Loss (hf) for DN100 Pipework	1.01	m	
	Rising Main PE100 SDR17 OD110			
	Using Darcy-Weisbach			
	Friction Factor	0.03		
	L/D	2270.43		
	V ² /2g	0.1650		
	Friction Loss (hf) for PE100 SDR17 OD110	10.00	m	
5	Minor Head Losses (Hm)			
	Component	K Coefficient	Nos	
	DN100 Check Valve	2.00	1	
	DN100 Gate Valve	0.17	2	
	90° Bend	0.75	2	
	Each Pump Discharge Line K Coefficient		3.84	
	DN100 Equal Tee	0.20	2	
	90° Bend	0.75	2	
	DN100 Gate Valve	0.17	1	
	Rising Main PE100 SDR17 OD110		2.07	
	Minor Loss at Pump Discharge Line		0.61	
	Minor Loss at Rising Main		0.34	
	Total minor head loss (Hm)		0.95	m
6	Total dynamic head (TDH)			
	Total dynamic head (TDH)		Hs+Hf+Hm	m
	Calculated TDH		19.07	m
7	Recommended Pump Head			
	Considering margin for design tolerance		10%	
	Selected pump duty head		21	m
8	Pump Duty Point			
	Flow per pump		0.056	m ³ /s
			55.51	LPS
			199.836	m ³ /hr
	Required Pump Head		21	m

Pump Duty		55.51	LPS
		21	m
Static Head (Max)		7.10	m
Selected pump is Xylem " NP 3171 MT 3~SmartRun 431"			

NP 3171 MT 3~ SmartRun 431 | Configuration Summary



Patented self cleaning semi opened channel impeller, ideal for pumping in wastewater applications. Modular based design with high adaptation grade. Equipped with a user-friendly intelligent control unit, pre-programmed for wastewater pumping used for pumping station with one or two pumps.



Curve: ISO 9906

Nominal (mean) data shown. Under- and over-performance from this data should be expected due to standard manufacturing tolerances. Please consult your local Flygt representative for additional performance guarantees.

GENERAL

Explosion Proof	Impeller Diameter
No	290 mm
Max. Pumped Media Temp.	
40 °C	

MATERIAL AND COATING

Impeller Material
Grey Cast Iron
Volute Material
Grey Cast Iron

MOTOR

Rated Voltage	Motor Efficiency Class
400 V	Premium (IE3)
Coupling	Rated Power
Y	22 kW

INSTALLATION

Installation Type
P - Semi-Permanent, Wet

NP 3171 MT 3~ SmartRun 431 | Product Details

Description

N 3171

Flygt Exporior

Patented self cleaning semi opened channel impeller, ideal for pumping in wastewater applications. Modular based design with high adaptation grade. Equipped with a user-friendly intelligent control unit, pre-programmed for wastewater pumping used for pumping station with one or two pumps.

The Flygt N-series are equipped with the Flygt invented N-technology with its innovative self-cleaning impeller. Solid objects entering the pump will pass through the impeller between the impeller vanes. If an object gets caught on the leading edge of one of the vanes, it will slide along the backswept shape towards the perimeter of the inlet where it will be guided by a relief groove through the pump housing. This ensures a high sustained total efficiency over time. Due to the mechanical self-cleaning design, a sludge concentration of solids up to 8% can easily be pumped. The pump can easily be installed in either permanently or temporary submerged, or horizontally or vertically dry installations.

Flexible and Modular Design

The modular hydraulic design enables customization of the hydraulics to meet the requirements of many applications.

- Replaceable wear ring in two materials, gray iron or Hard Iron, for different operation conditions
- Hardened gray iron impeller for typical wastewater applications
- Hard-Iron impeller for heavy duty wastewater applications containing abrasive and corrosive content
- Chopper ring intended for tough wastewater applications where cutting is required due to long fibres and solid concentrations up to 10-12%
- Stainless steel impeller for special applications that require duplex stainless steel

Robust and Reliable

- Short shaft overhang reduces shaft deflection and increases seal and bearing life
- Class H Motor designed for submersible use. Heat is concentrated to the stator core for improved cooling properties.
- The Plug-in seal with Active Seal system eliminates the risk associated with incorrect installation and careless handling. All in one unit. Available in Tungsten carbide (WCCR) or Silicone carbide (SiC) depending on pumped media.
- Motor cable SUBCAB® specially developed for submersible use
- Offers flexible cooling systems, e.g. closed-loop cooling system, media cooled or external cooling that allows full motor potential in dry installations.
- Premium brand bearings, greased for life, ensures a minimum of 50 000 hours of duty
- Leakage sensor and motor temperature sensor as standard

The N 3171 is available with the following options:

- ATEX, FM, CSA-approvals
- Premium efficiency motors
- Hard Iron hydraulic design
- Stainless Steel hydraulic design
- Vibration-sensor, extended motor temperature sensors, additional leakage-sensor, current-sensor and pump memory
- Compatible with SmartRun® Wastewater pump controller
- Compatible with MAS 801 monitoring system

Product Features

- State-of-the-art wastewater pump with N-technology
- Sustained high efficiency pumping with energy savings up to 25%
- Flexible and modular design
- Robust and reliable

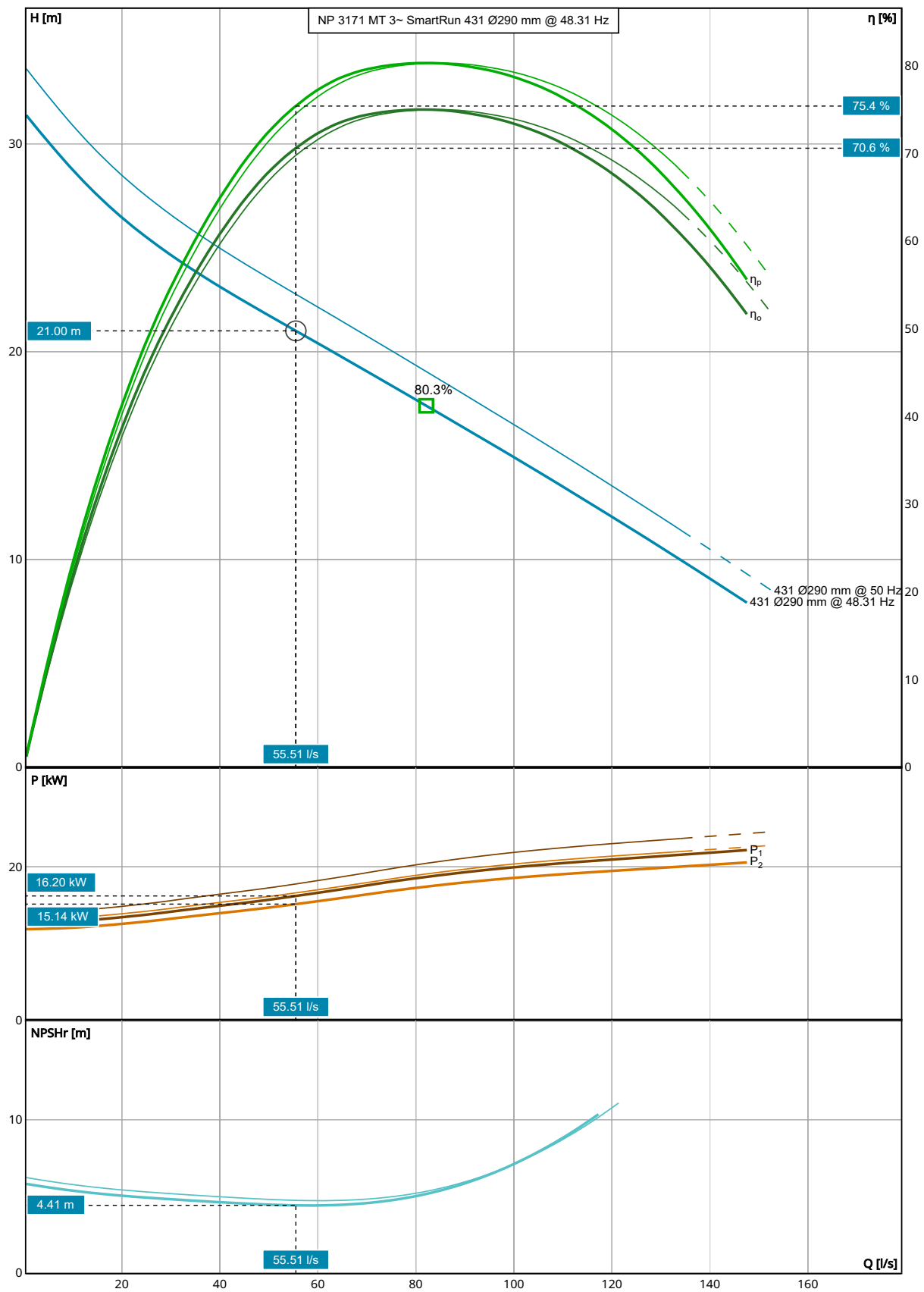
Construction Materials

Impeller Material	Volute Material	Stator Cover Material
Grey Cast Iron	Grey Cast Iron	-

Motor

Rated Power	Number Of Phases	Start Current Ratio	Motor Issue
22 kW	3	7.4	10
Motor Denomination	Rated Motor Speed	Insulation Class	Locked Rotor Code
25-32-4IE	1,475 RPM	H	H
Motor Efficiency Class	Rated Voltage	Approval	Max starts per hour
Premium (IE3)	400 V	STD	30
Version Code	Rated Current	Total moment of inertia	Power Factor 100%
800	39 A	0.28 kgm ²	0.88
Frequency	Start Current	Type of duty	Power Factor 75%
50 Hz	288 A	S1	0.84
Max P2 (1x)	Starting Current, Direct Starting	Stator Variant	Power Factor 50%
20.57 kW	288 A	2	0.74
Number Of Poles	Starting Current, Star Delta	Motor Module	Efficiency 100%
4	96 A	161	93.2 %
			Efficiency 75%
			93.9 %
			Efficiency 50%
			93.9 %
			Cooling Jacket
			-

NP 3171 MT 3~ SmartRun 431 | Hydraulic Data & Performance Curve



Curve: ISO 9906

Nominal (mean) data shown. Under- and over-performance from this data should be expected due to standard manufacturing tolerances. Please consult your local Flygt representative for additional performance guarantees.

Selection

Series	Curve Code
Exporior	431
Name	Impeller Diameter
NP 3171 MT 3~ SmartRun 431	290 mm
Frequency	Inlet Diameter
50 Hz	200 mm
Total Flow	Outlet Diameter
55.51 l/s	150 mm
Total Head	Number Of Vanes
21 m	2
Pump Flow	
55.51 l/s	
Pump Head	
21 m	
System Type	
Single Pump	
Operating Pumps	
1	
Standby Pumps	
+1 Standby Pump	

Design Point

Flow	Shaft power (P2)
55.51 l/s	15.14 kW
Head	NPSHR
21 m	4.41 m
Overall Efficiency (η_o)	Speed
70.6 %	1,483 RPM
Pump Efficiency (η_p)	Static Head
75.4 %	7.1 m
Input Power (P1)	
16.2 kW	

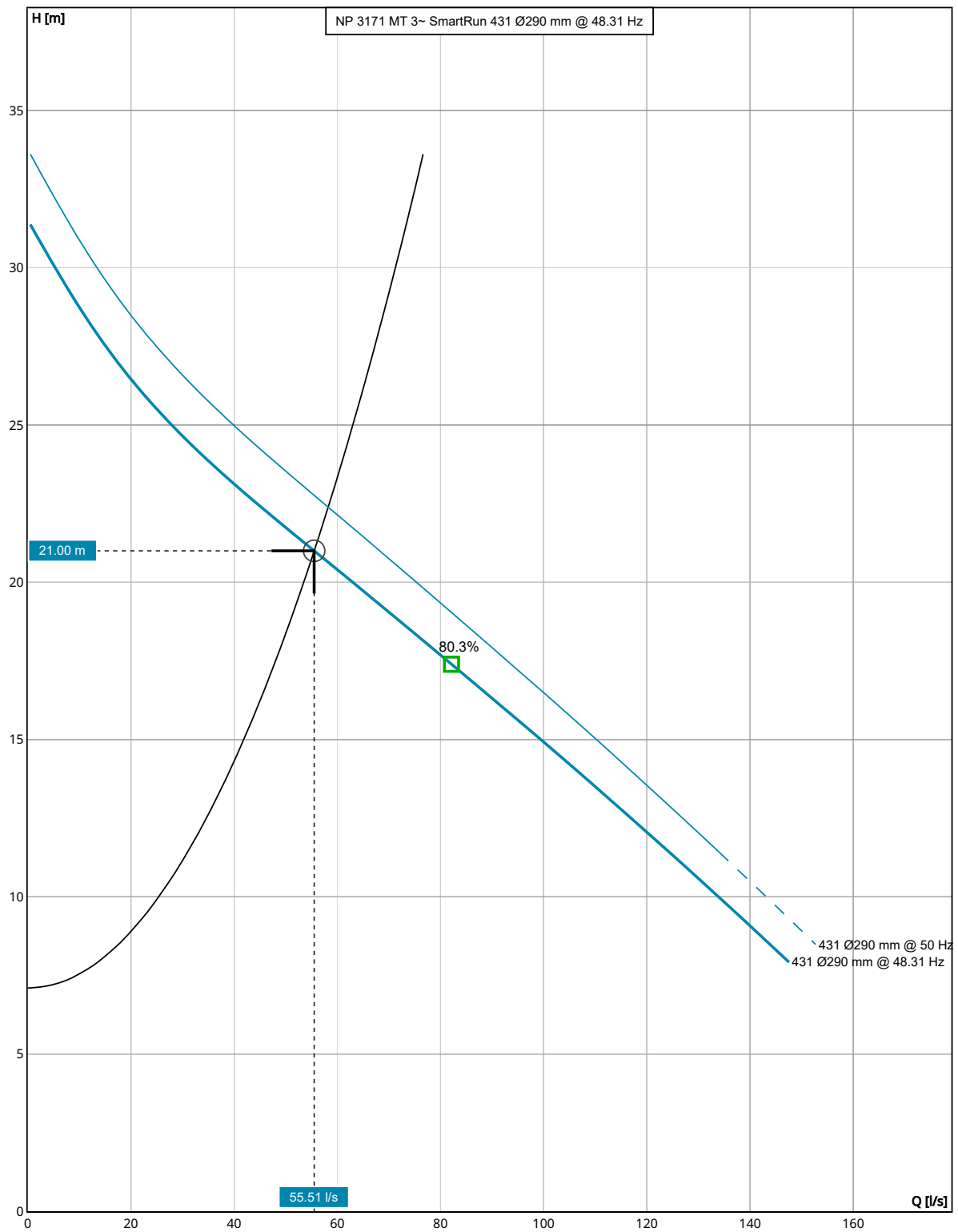
Fluid and Operating Conditions

Fluid Type	Density
Water, raw water (susp.s <10ppm)	998.24 kg/m ³
Fluid Temperature	Dynamic Viscosity
20 °C	0.001 Pa·s
Specific Gravity	Fluid Vapor Pressure
1	23.39 mbar
	Atmospheric Pressure
	1,013.53 mbar
	Elevation
	0 m
	Ambient Temperature
	20 °C
	NPSH Available
	10.13 m
	Submergence
	0 m

Design Curve

Rated Speed	BEP Flow
48.31 Hz	82.13 l/s
Max Flow	BEP Head
147.54 l/s	17.39 m
H@QMin	Max P2
31.38 m	20.57 kW
H@QMax	Specific Energy
7.92 m	0.04 kWh/m ³
BEP	
80.31 %	

NP 3171 MT 3~ SmartRun 431 | Duty Analysis

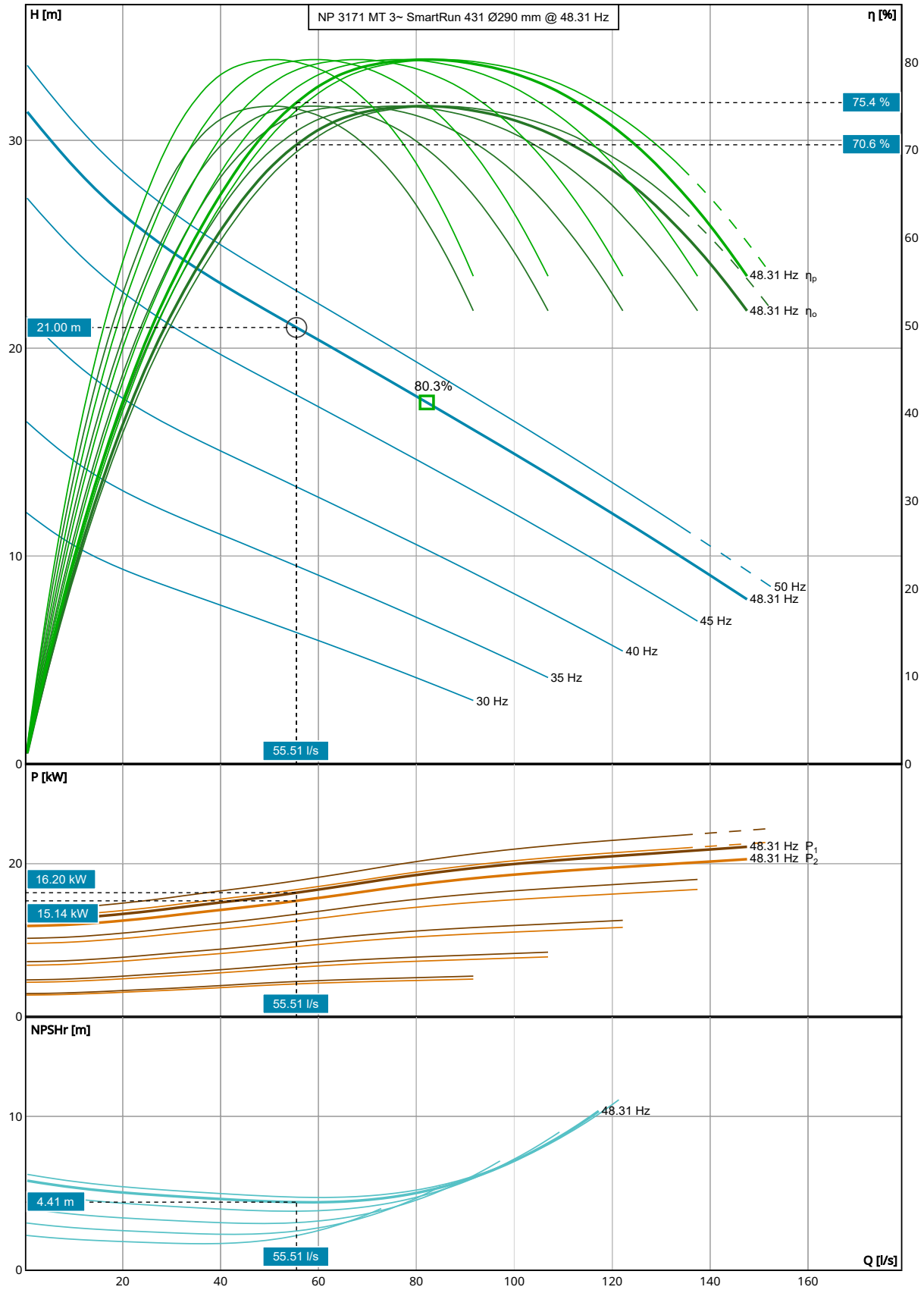


Curve: ISO 9906

Nominal (mean) data shown. Under- and over-performance from this data should be expected due to standard manufacturing tolerances. Please consult your local Flygt representative for additional performance guarantees.

Name	Q (1x) [l/s]	H (1x) [m]	P2 (1x) [kW]	Q [l/s]	H [m]	P2 [kW]	η_p [%]	SE [kWh/m³]	NPSHr [m]
DP @ 1x	58.22	22.39	16.85	58.22	22.39	16.85	75.74	0.09	4.72

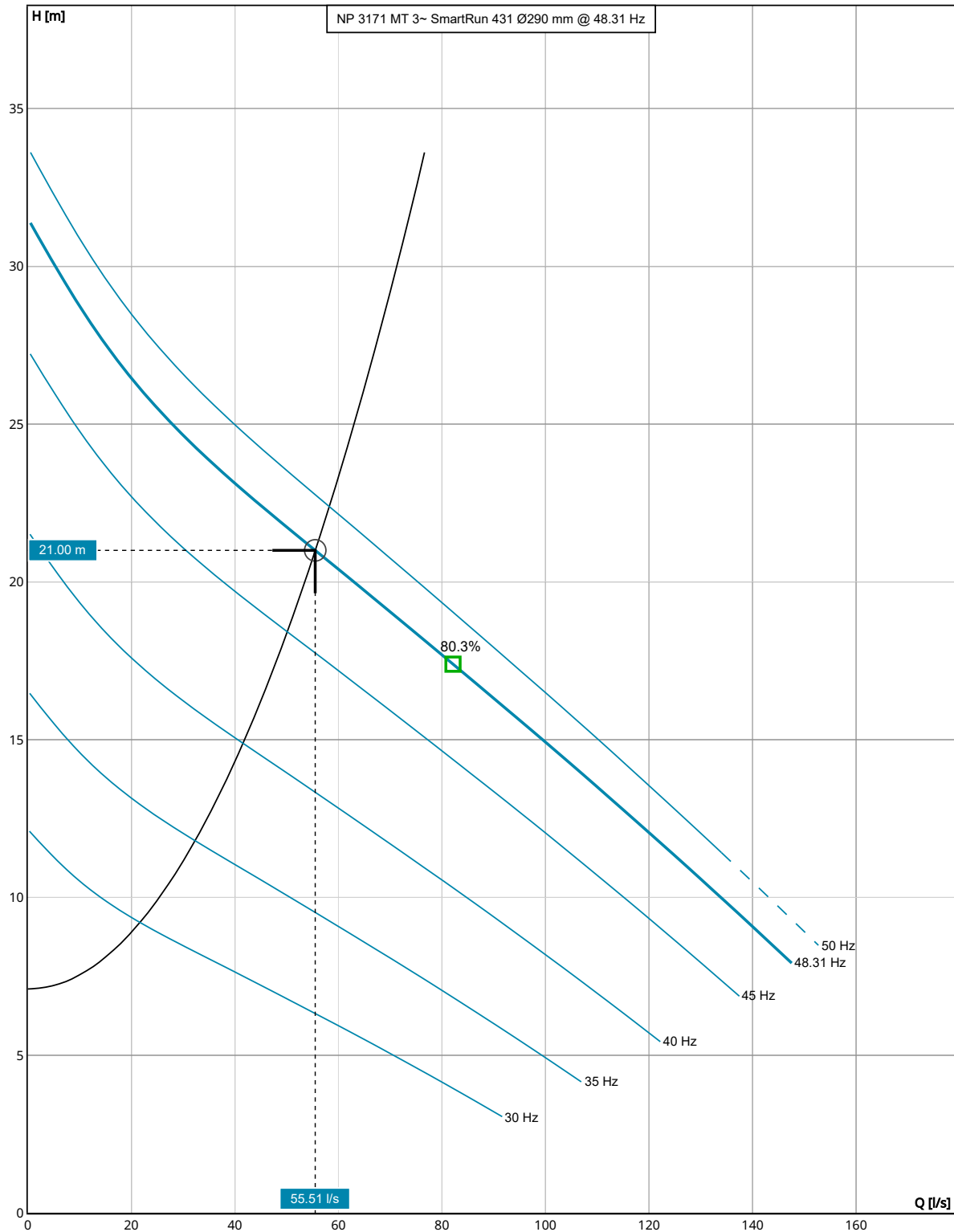
NP 3171 MT 3~ SmartRun 431 | Variable Speed Curve



Curve: ISO 9906

Nominal (mean) data shown. Under- and over-performance from this data should be expected due to standard manufacturing tolerances. Please consult your local Flygt representative for additional performance guarantees.

NP 3171 MT 3~ SmartRun 431 | Variable Speed Analysis



Nominal (mean) data shown. Under- and over-performance from this data should be expected due to standard manufacturing tolerances. Please consult your local Flygt representative for additional performance guarantees.

Name	Speed	Q (1x) [l/s]	H (1x) [m]	P2 (1x) [kW]	Q [l/s]	H [m]	P2 [kW]	η_p [%]	SE [kWh/m³]	NPSHr [m]
DP @ 1x	30 Hz	21.64	9.21	3.25	21.64	9.21	3.25	59.99	0.04	1.82
DP @ 1x	35 Hz	32.28	11.8	5.43	32.28	11.8	5.43	68.72	0.05	2.38
DP @ 1x	40 Hz	41.55	14.89	8.34	41.55	14.89	8.34	72.6	0.06	3.05

Project:
Old Connaught

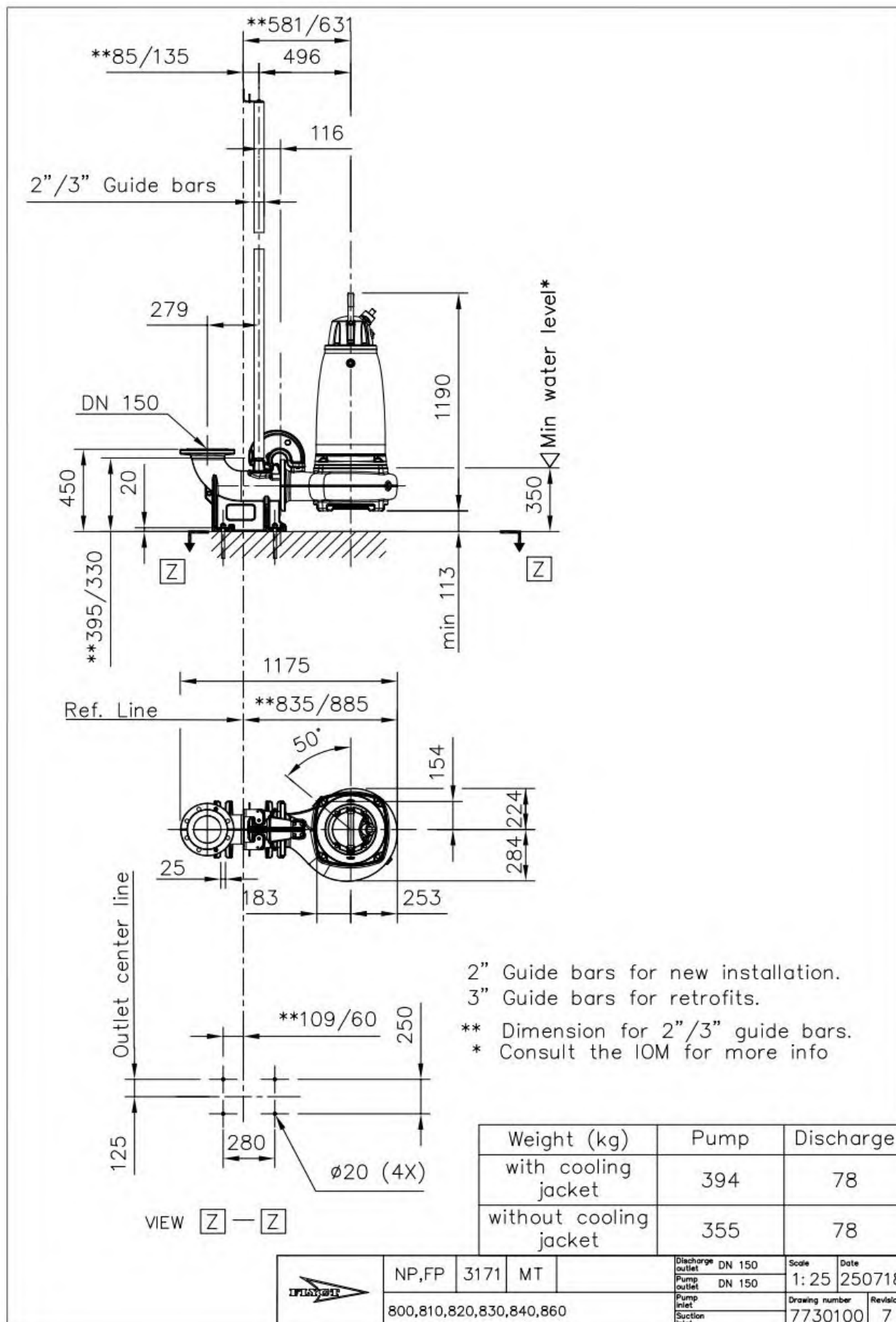
Created By:
Maheswaran Boompani

Created On:
9/14/26

Last Update:
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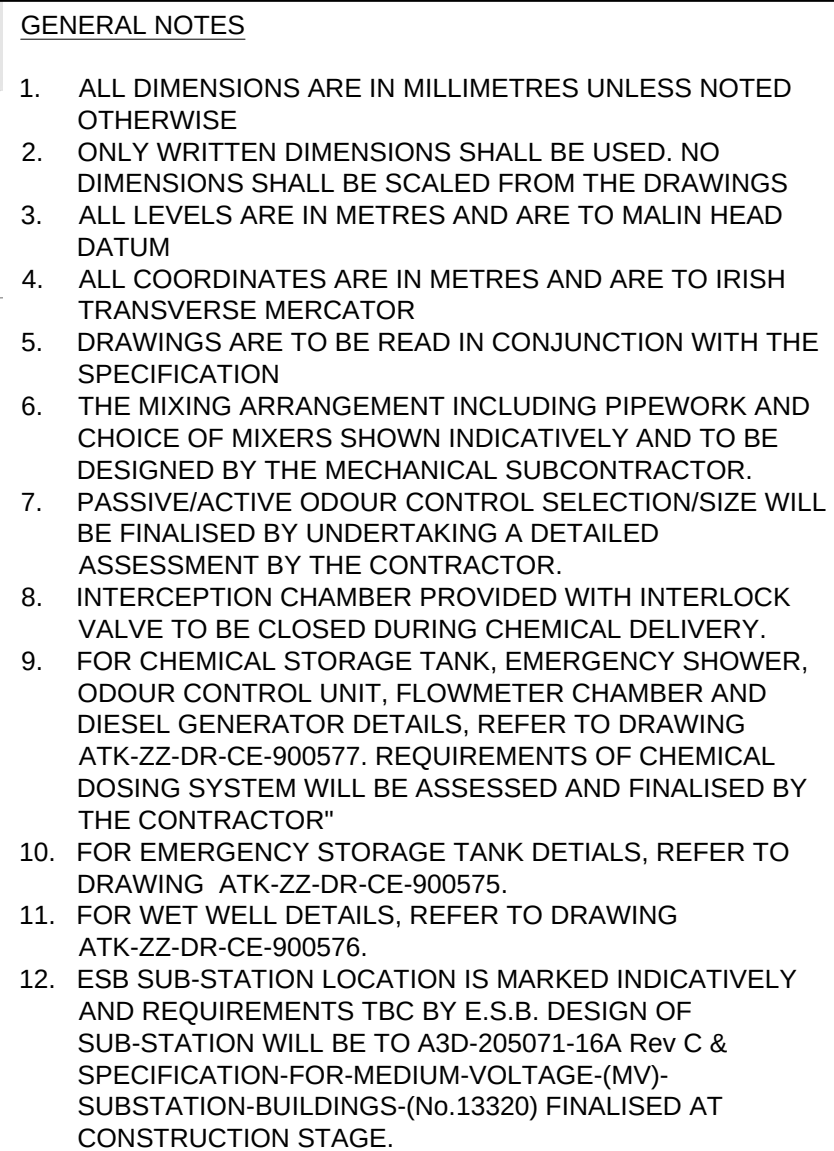
DP @ 1x	45 Hz	50.1	18.42	12.12	50.1	18.42	12.12	74.58	0.07	3.83
DP @ 1x	50 Hz	58.22	22.39	16.85	58.22	22.39	16.85	75.74	0.09	4.72

NP 3171 MT 3~ SmartRun 431 | Dimensional Data & Drawing



Appendix D. Drawings





1 OLD CONNA WASTE WATER PUMPING STATION

Scale:- 1:150

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Risk Level	
	- Atkins Base Line - Low Risk
	Atkins Sensitive - Medium Risk
	Atkins Private - High Risk
	Client Critical - Already Marked

REFERENCE:	
1.	5194276-EWE-DR-11701
2.	5194276-EWE-DR-11703
3.	5194276-EWE-DR-11704
4.	5194276-EWE-DR-11705
5.	5194276-EWE-DR-11706
6.	5194276-EWE-DR-11707
7.	5194276-EWE-DR-11708
8.	5194276-EWE-DR-11709

P02	ISSUED FOR PLANNING	PM	15.09.26	JPR	GH	GH			
P01	ISSUED FOR PLANNING	PM	09.09.26	PS	GH	GH			
Rev	Description	By	Date	Chk'd	Rev'd	Auth			



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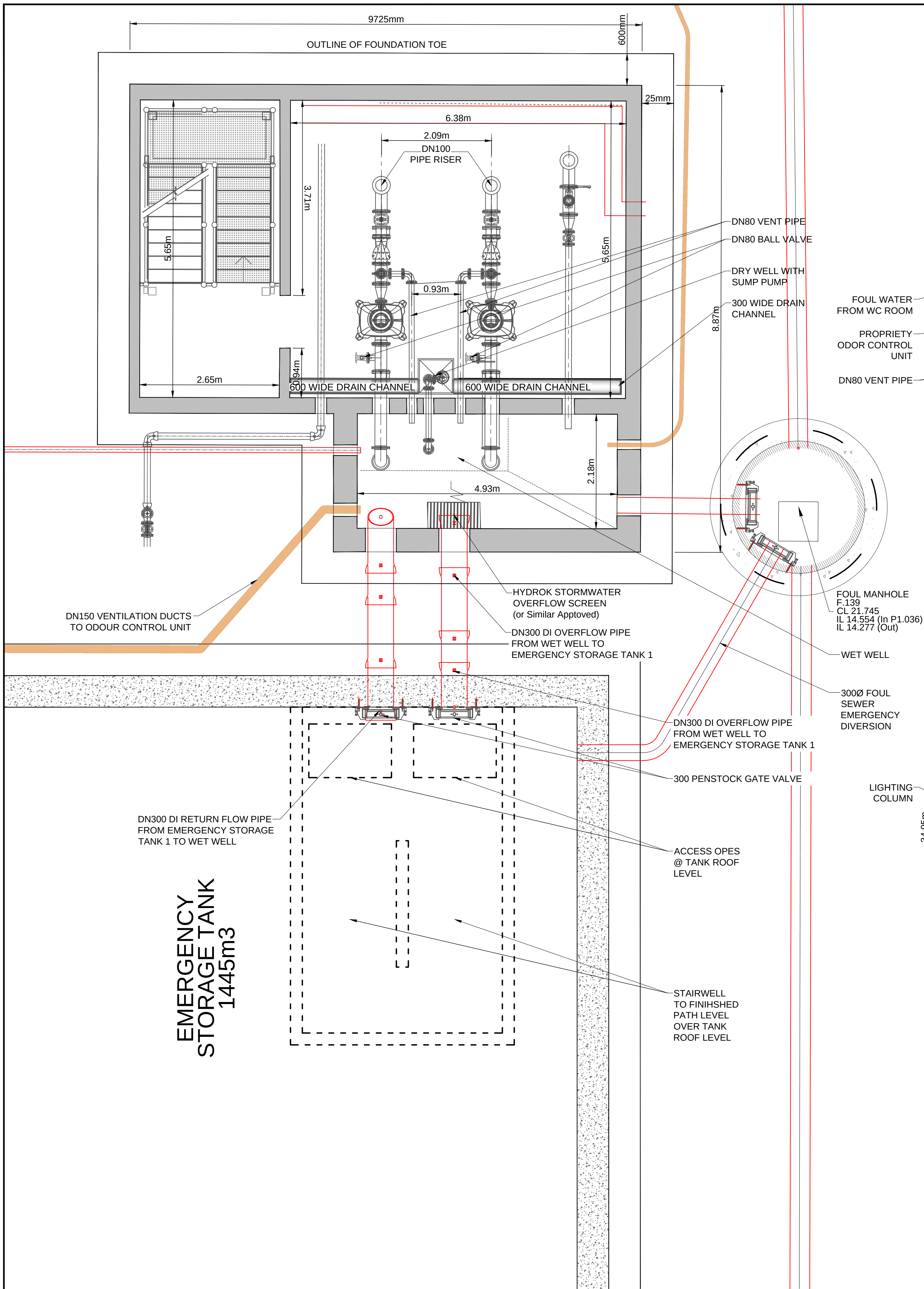
Client	CASCADE
Project	CASTLETHORN OLD CONNAUGHT UCL
Project	OLD CONNAUGHT PHASE A1 LRD

Purpose		FOR PLANNING			
Title		PROPOSED PUMP STATION & EMERGENCY 24hr STORAGE TANK SITE LAYOUT PLAN			
Original Scale	Drawn	Checked	Reviewed	Authorised	
1:200 at A1	PM	PS	PS	GH	
1:400 at A3	Date 31.09.26	Date 31.09.26	Date 31.09.26	Date 31.09.26	
Status	Drawing Number				Rev
S4	ATK-ZZ-ZZ-DR-CE-900572				P02

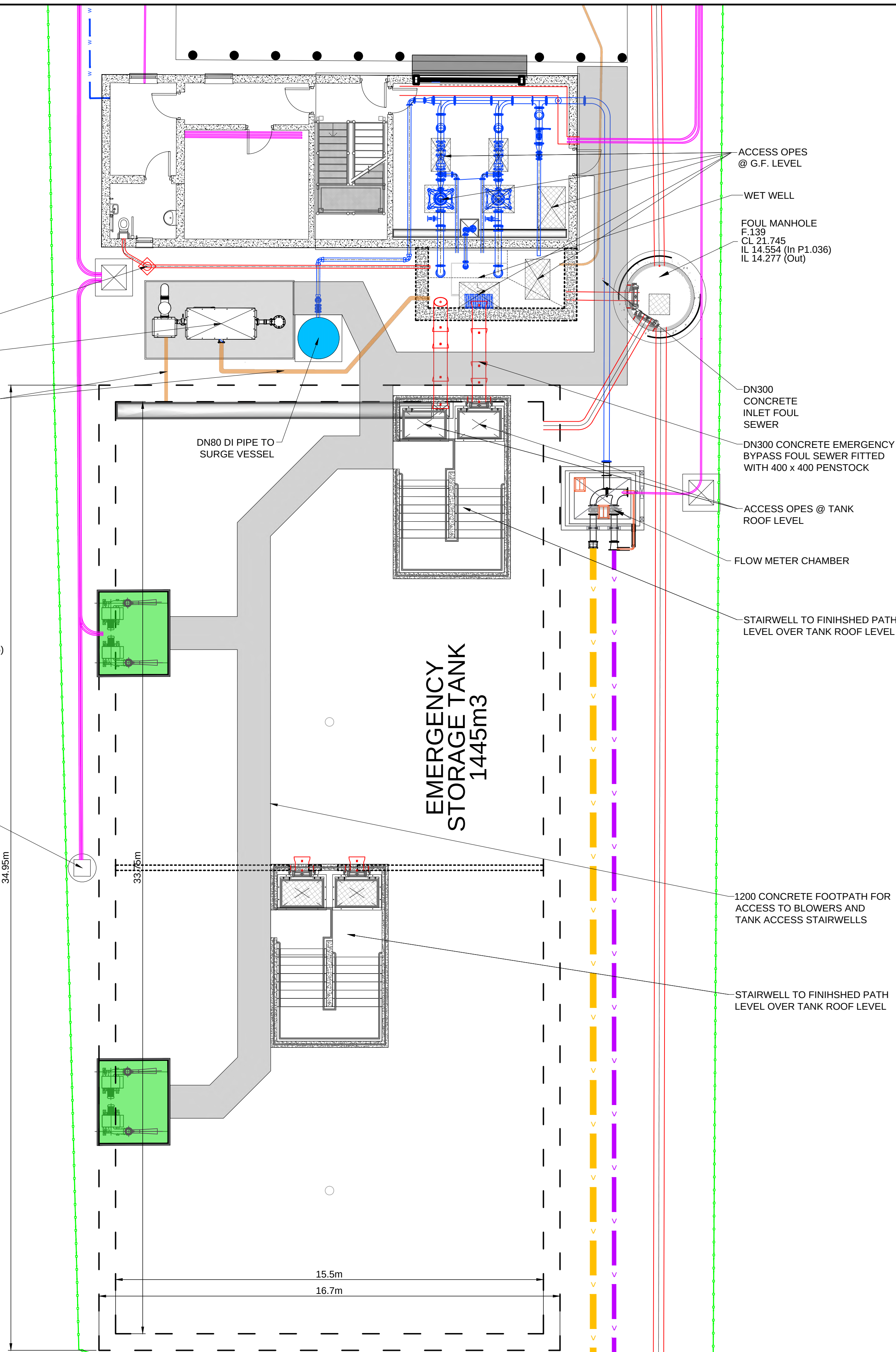
100
0 10
A1

DO NOT SCALE

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Date: Sep 15, 2026 - 5:42pm
Plotted by: SHEER8400



1 WASTE WATER PUMPING STATION DRYWELL FLOOR PLAN
Scale:- 1:150



2 WASTE WATER PUMPING STATION GROUND FLOOR PLAN
Scale:- 1:100

- GENERAL NOTES
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE
 2. ONLY WRITTEN DIMENSIONS SHALL BE USED. NO DIMENSIONS SHALL BE SCALED FROM THE DRAWINGS
 3. ALL LEVELS ARE IN METRES AND ARE TO MALIN HEAD DATUM
 4. ALL COORDINATES ARE IN METRES AND ARE TO IRISH TRANSVERSE MERCATOR
 5. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATION
 6. THE MIXING ARRANGEMENT INCLUDING PIPEWORK AND CHOICE OF MIXERS SHOWN INDICATIVELY AND TO BE DESIGNED BY THE MECHANICAL SUBCONTRACTOR.
 7. PASSIVE/ACTIVE ODOUR CONTROL SELECTION/SIZE WILL BE FINALISED BY UNDERTAKING A DETAILED ASSESSMENT BY THE CONTRACTOR.
 8. INTERCEPTION CHAMBER PROVIDED WITH INTERLOCK VALVE TO BE CLOSED DURING CHEMICAL DELIVERY.
 9. FOR CHEMICAL STORAGE TANK, EMERGENCY SHOWER, ODOUR CONTROL UNIT, FLOWMETER CHAMBER AND DIESEL GENERATOR DETAILS, REFER TO DRAWING ATK-ZZ-ZZ-DR-CE-900577. REQUIREMENTS OF CHEMICAL DOSING SYSTEM WILL BE ASSESSED AND FINALISED BY THE CONTRACTOR"
 10. FOR EMERGENCY STORAGE TANK DETAILS, REFER TO DRAWING ATK-ZZ-ZZ-DR-CE-900575.
 11. FOR WET WELL DETAILS, REFER TO DRAWING ATK-ZZ-ZZ-DR-CE-900576.
 12. SUB-STATION LOCATION IS MARKED INDICATIVELY AND REQUIREMENTS TBC BY E.S.B. DESIGN OF SUB-STATION WILL BE TO A3D-205071-16A Rev C & SPECIFICATION-FOR-MEDIUM-VOLTAGE-(MV)-SUBSTATION-BUILDINGS-(No.13320) FINALISED AT CONSTRUCTION STAGE.

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- REFERENCE:
1. ATK-ZZ-ZZ-DR-CE-900572
 2. ATK-ZZ-ZZ-DR-CE-900574
 3. ATK-ZZ-ZZ-DR-CE-900575
 4. ATK-ZZ-ZZ-DR-CE-900576
 5. ATK-ZZ-ZZ-DR-CE-900577
 6. ATK-ZZ-ZZ-DR-CE-900578
 7. ATK-ZZ-ZZ-DR-CE-900579
 8. ATK-ZZ-ZZ-DR-CE-900580

Risk Level	- Atkins Base Line - Low Risk
	Atkins Sensitive - Medium Risk
	Atkins Private - High Risk
	Client Critical - Already Marked

Rev	Description	By	Date	Chk'd	Rev'd	Auth
P02	ISSUED FOR PLANNING	PM	15.09.26	IPR	GH	GH
P01	ISSUED FOR PLANNING	PM	09.09.26	PS	GH	GH

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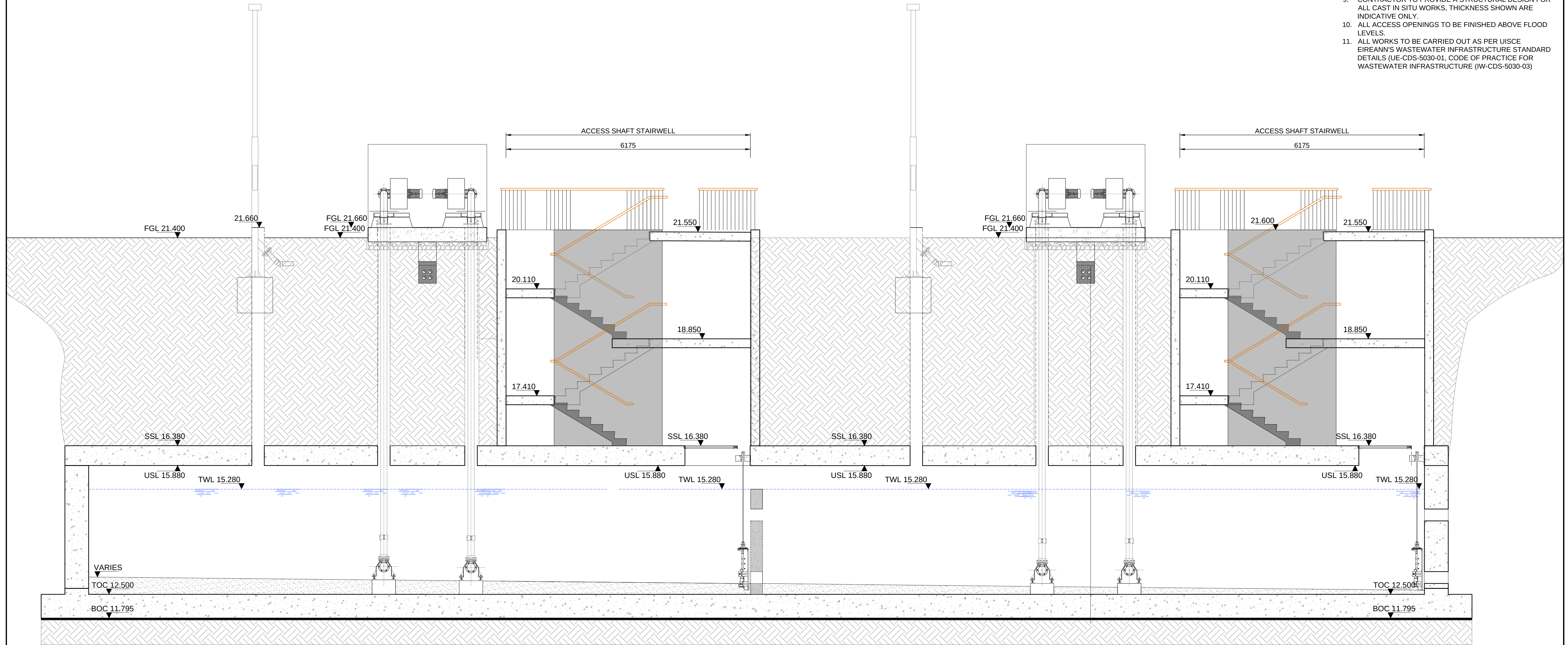
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Client
CASTLETHORN OLD CONNAUGHT UCL

Project
OLD CONNAUGHT PHASE A1 LRD

Purpose		FOR PLANNING				
Title		PROPOSED PUMP STATION & EMERGENCY 24hr STORAGE TANK DETAILED LAYOUT PLAN				
Original Scale		Drawn	Checked	Reviewed	Authorised	
1:XXX at A1 1:XXX at A3		PM	PS	PS	GH	
Date		31.09.26	Date	31.09.26	Date	31.09.26
Status	Drawing Number	Rev				
S4	ATK-ZZ-ZZ-DR-CE-900573	P02				



A SECTION
900575 SCALE 1:50

- ## GENERAL NOTES
1. ALL DIMENSIONS ARE IN MILLIMETRES & ALL LEVELS ARE IN METERS TO ORDINANCE DATUM UNLESS NOTED OTHERWISE
 2. ONLY WRITTEN DIMENSIONS SHALL BE USED. NO DIMENSIONS SHALL BE SCALED FROM THE DRAWINGS
 3. ALL LEVELS ARE IN METRES AND ARE TO MALIN HEAD DATUM
 4. ALL COORDINATES ARE IN METRES AND ARE TO IRISH TRANSVERSE MERCATOR 1995 WITH ETRS89 DATUM COORDINATE SYSTEM.
 5. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATION
 6. DRAIN AND VENT LINES IN PUMP WILL BE FINISHED AS PER PUMP MANUFACTURER'S RECOMMENDATIONS.
 7. WETWELL BENCHING TO BE CONFIRMED BY THE PUMP SUPPLIER.
 8. FOR SUPERSTRUCTURE DETAILS, REFER ARCHITECTURAL DRAWINGS ATK-ZZ-ZZ-DR-CE-900574
 9. CONTRACTOR TO PROVIDE A STRUCTURAL DESIGN FOR ALL CAST IN SITU WORKS, THICKNESS SHOWN ARE INDICATIVE ONLY.
 10. ALL ACCESS OPENINGS TO BE FINISHED ABOVE FLOOD LEVELS.
 11. ALL WORKS TO BE CARRIED OUT AS PER UIISCE EIREANN'S WASTEWATER INFRASTRUCTURE STANDARD DETAILS (UE-CDS-5030-01, CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE (IW-CDS-5030-03))

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Risk Level	- Atkins Base Line - Low Risk
	Atkins Sensitive - Medium Risk
	Atkins Private - High Risk
	Client Critical - Already Marked

P02	ISSUED FOR PLANNING	PM	15.09.26	IPR	GH
P01	ISSUED FOR PLANNING	PM	09.09.26	PS	GH
Rev	Description	By	Date	Chk'd	Rev'd

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Client	CASTLETHORN OLD CONNAUGHT UCL
Project	OLD CONNAUGHT PHASE A1 LRD

Purpose		FOR PLANNING					
Title		PROPOSED PUMP STATION & EMERGENCY 24hr STORAGE TANK CROSS-SECTIONS SHEET 1					
Original Scale		Drawn	Checked	Reviewed	Authorised		
AS SHOWN		PM	PS	PS	GH		
		Date 31.09.26	Date 31.09.26	Date 31.09.26	Date 31.09.26		
Status	Drawing Number					Rev	
S4	ATK-ZZ-ZZ-DR-CE-900575					P02	



- ### GENERAL NOTES
1. ALL DIMENSIONS ARE IN MILLIMETRES & ALL LEVELS ARE IN METERS TO ORDINANCE DATUM UNLESS NOTED OTHERWISE
 2. ONLY WRITTEN DIMENSIONS SHALL BE USED. NO DIMENSIONS SHALL BE SCALED FROM THE DRAWINGS
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THAN THE PROJECT:

Risk Level	
-	Atkins Base Line - Low Risk
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	Atkins Private - High Risk
	Client Critical - Already Marked

P02	ISSUED FOR PLANNING	PM	15.09.26	IPR	GH
P01	ISSUED FOR PLANNING	PM	09.09.26	PS	GH
Rev	Description	By	Date	Chk'd	Rev'd
				Auth	

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Fax (+353) 01 810 8001	Fax (+353) 021 429 0360	Fax (+353) 091 779 830

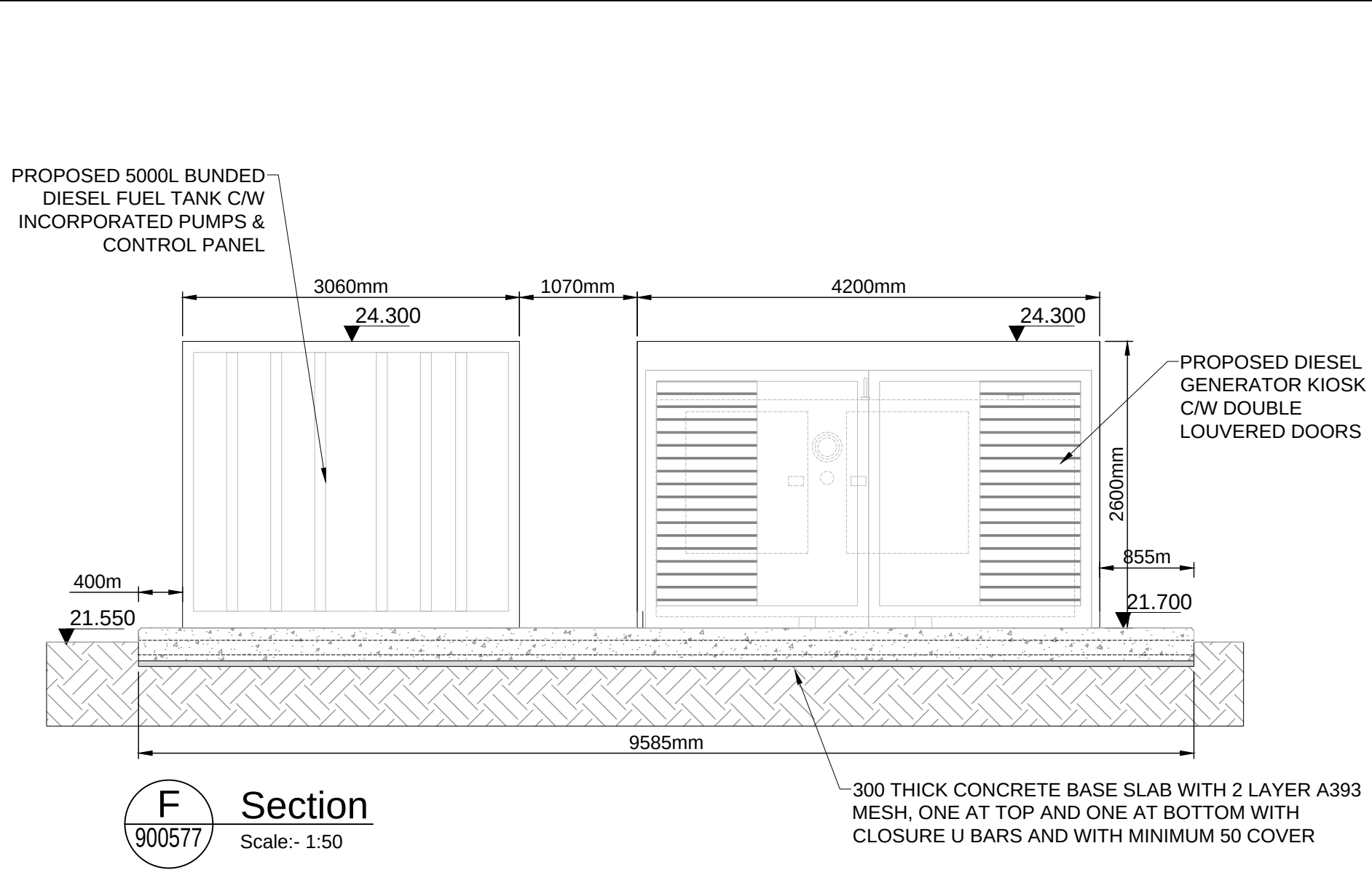
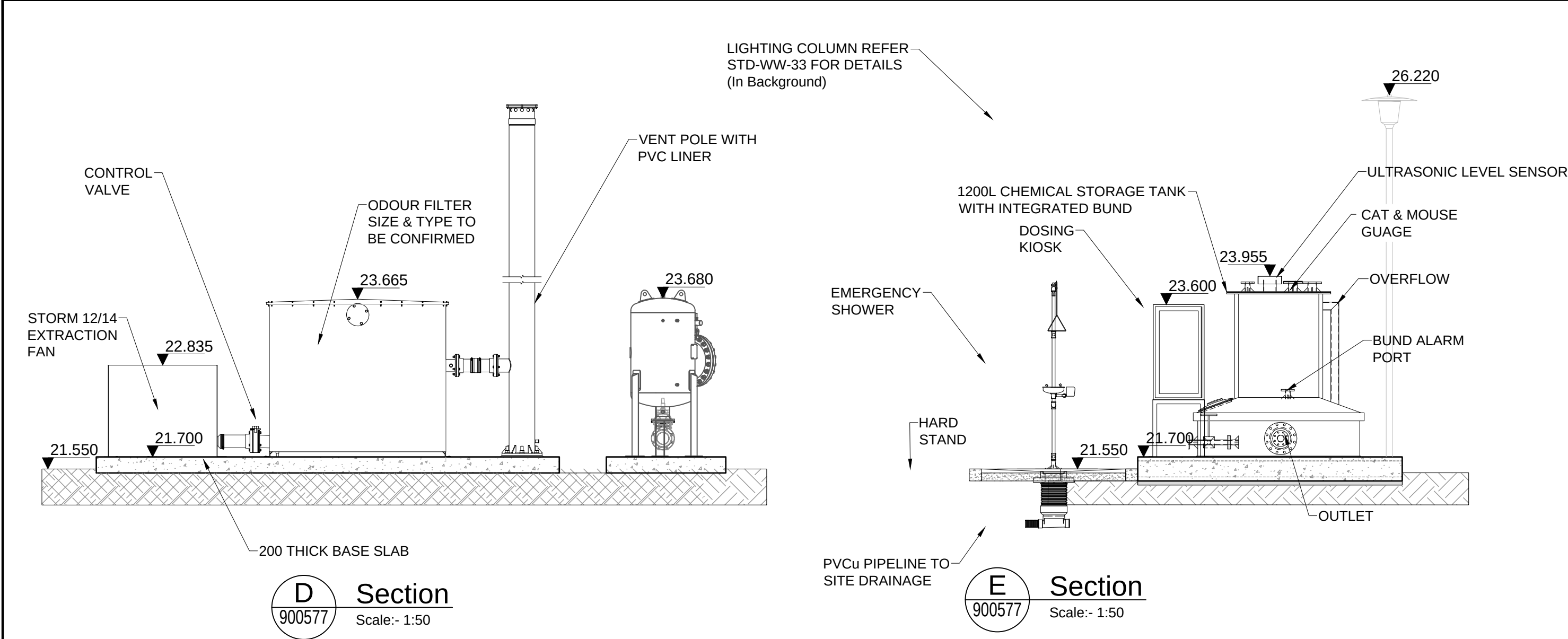
Client	CASTLETHORN OLD CONNAUGHT UCL
Project	OLD CONNAUGHT PHASE A1 LRD

Purpose		FOR PLANNING				
Title		PROPOSED PUMP STATION & EMERGENCY 24hr STORAGE TANK CROSS-SECTIONS SHEET 2				
Original Scale		Drawn	Checked	Reviewed	Authorised	
AS SHOWN		PM	PS	PS	GH	
		Date 31.09.26	Date 31.09.26	Date 31.09.26	Date 31.09.26	
Status	Drawing Number					Rev
S4	ATK-ZZ-ZZ-DR-CE-900576					P02

A1

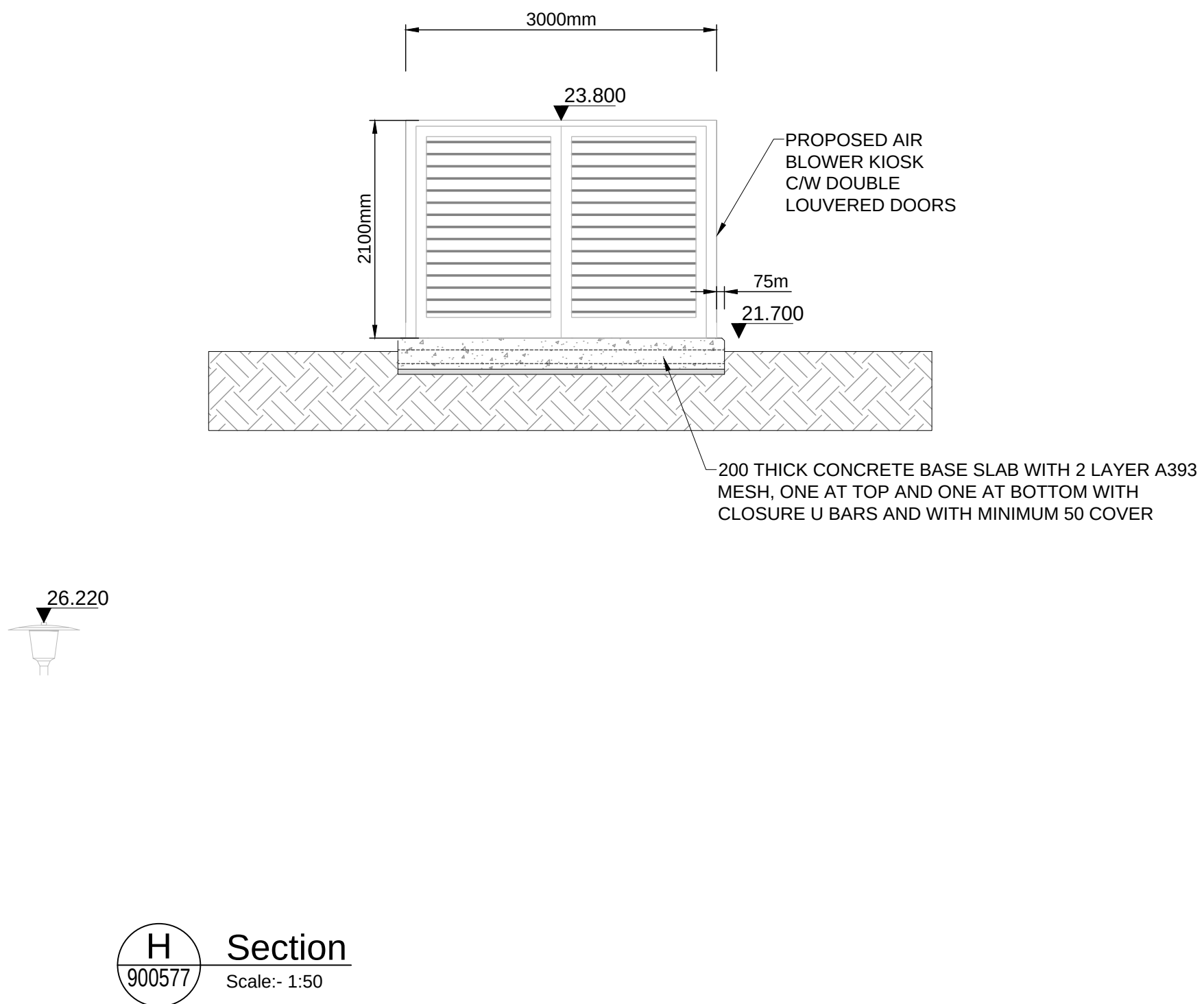
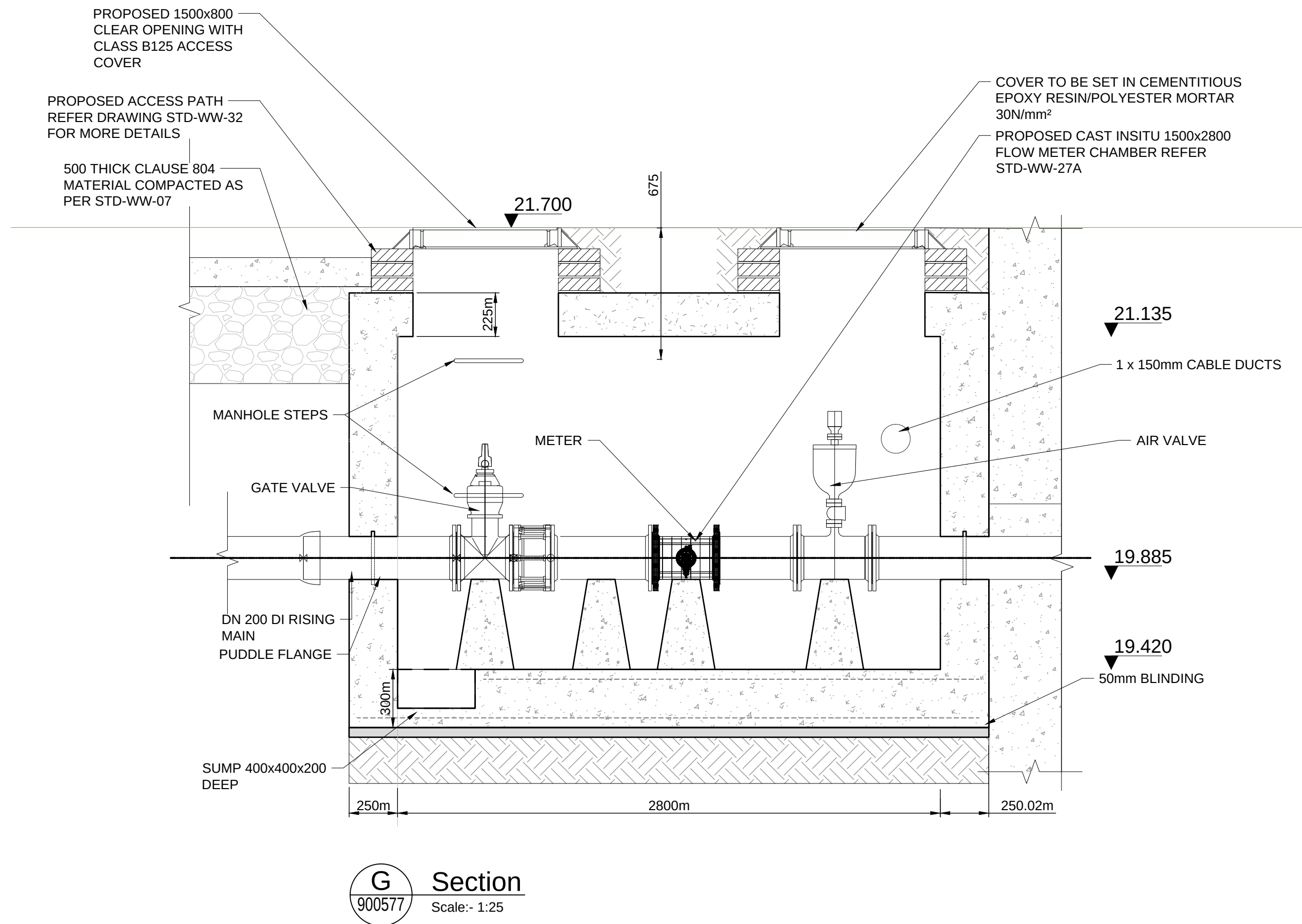
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Date: Sep 15, 2026 - 5:43pm
Printed by: SHEP8400



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Risk Level	- Atkins Base Line - Low Risk
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	Client Critical - Already Marked

Rev	Description	By	Date	Chk'd	Rev'd	Auth
P02	ISSUED FOR PLANNING	PM	15.09.26	IPR	GH	GH
P01	ISSUED FOR PLANNING	PM	09.09.26	PS	GH	GH

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Client
CASTLETHORN OLD CONNAUGHT UCL

Project
OLD CONNAUGHT PHASE A1 LRD

Purpose FOR PLANNING					
Title PROPOSED PUMP STATION & EMERGENCY 24hr STORAGE TANK CROSS-SECTIONS SHEET 2					
Original Scale AS SHOWN	Drawn PM	Checked PS	Reviewed PS	Authorised GH	
Date 31.09.26	Date 31.09.26	Date 31.09.26	Date 31.09.26	Date 31.09.26	
Status	Drawing Number				Rev
S4	ATK-ZZ-ZZ-DR-CE-900576				P02

A1

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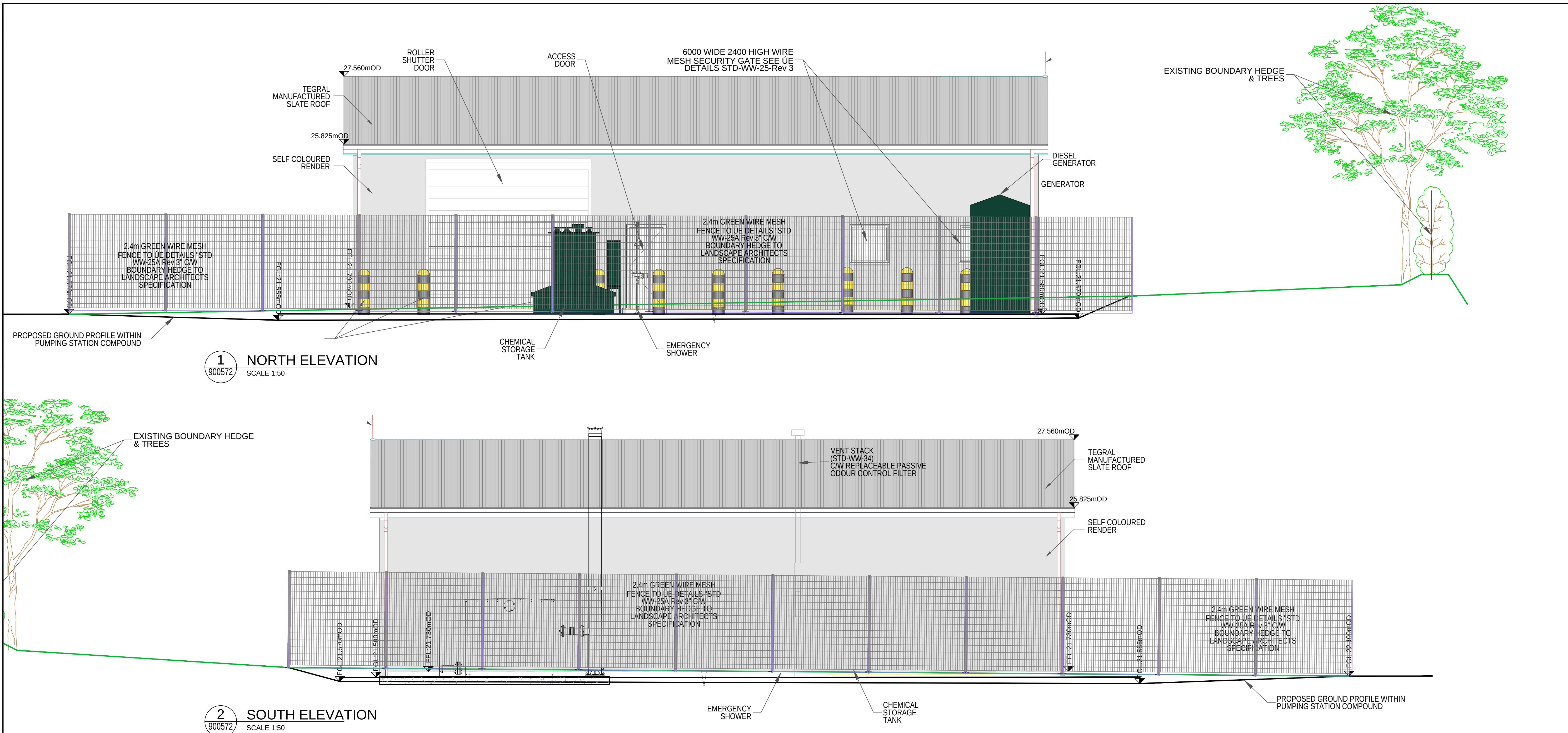
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P01	ISSUED FOR PLANNING	PM	09.09.26	PS	GH	GH

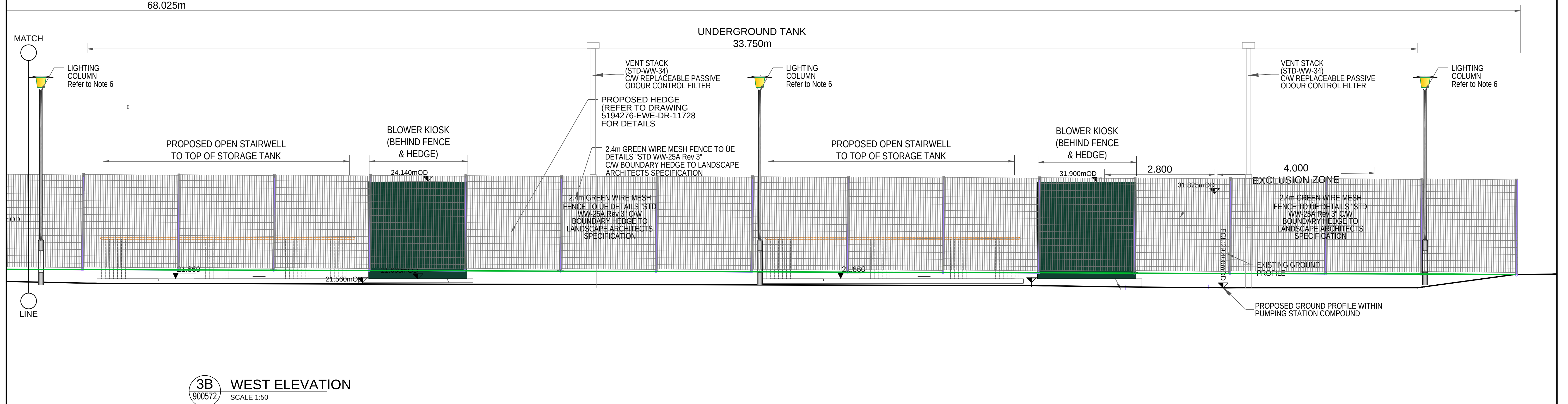
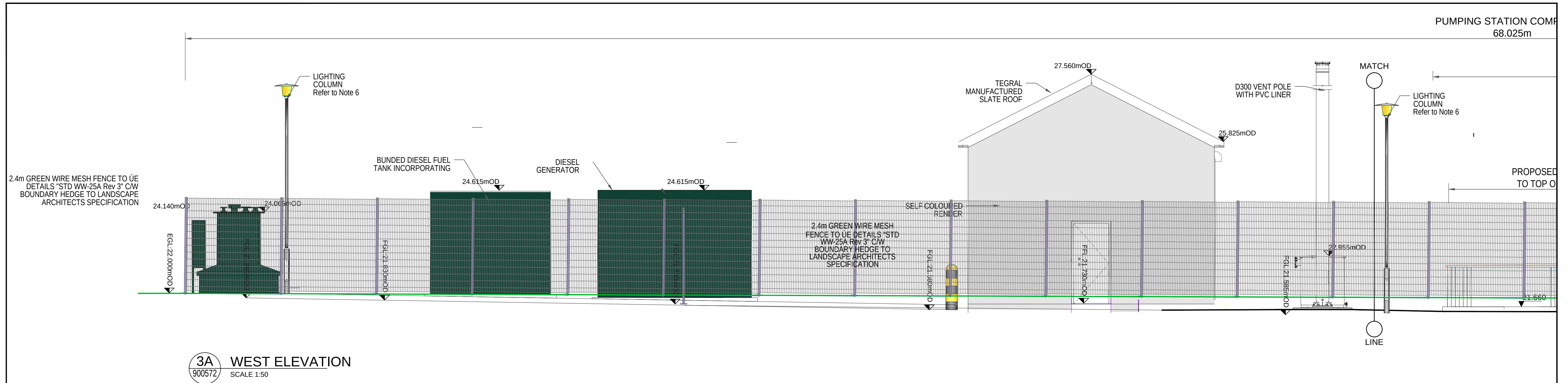
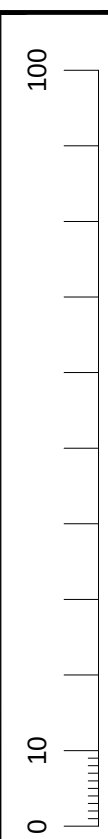


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1st Floor Technology House Parkmore Technology Park, Galway Tel : (+353) 091 786 950 Fax : (+353) 091 779 830

Client	CASTLETHORN OLD CONNAUGHT UCL
Project	OLD CONNAUGHT PHASE A1 LRD

Purpose		FOR PLANNING					
Title		PROPOSED PUMP STATION & EMERGENCY 24hr STORAGE TANK BOUNDARY ELEVATIONS SHEET 1					
Original Scale		Drawn	Checked	Reviewed	Authorised		
1:XXX at A1		PM	PS	PS	GH		
1:XXX at A3		Date 31.09.26	Date 31.09.26	Date 31.09.26	Date 31.09.26		
Status	Drawing Number					Rev	
S4	ATK-ZZ-ZZ-DR-CE-900578					P01	





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P01	ISSUED FOR PLANNING	PM	09.09.26	PS	GH	GH	
Rev	Description	By	Date	Chk'd	Rev'd	Auth	



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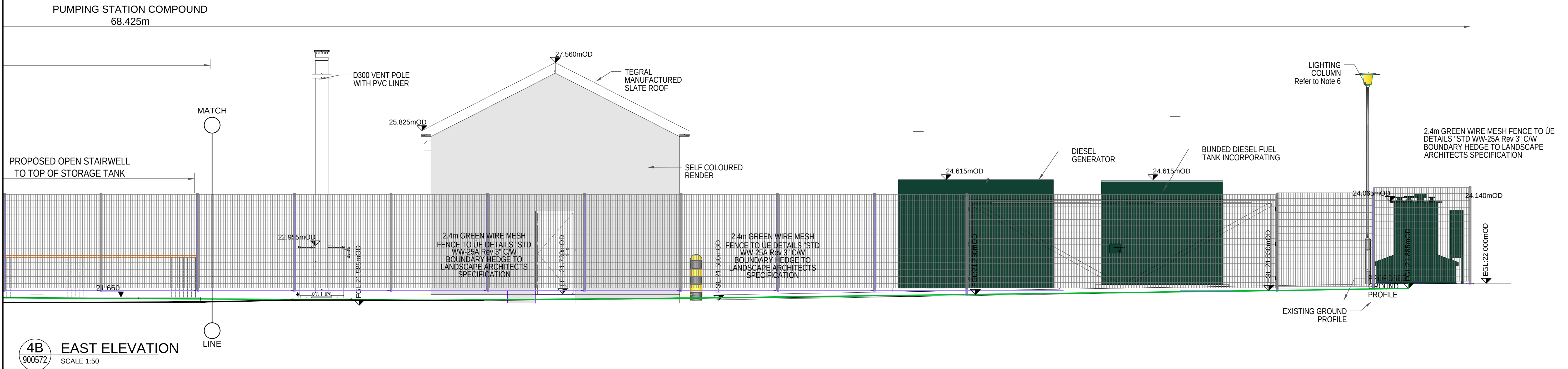
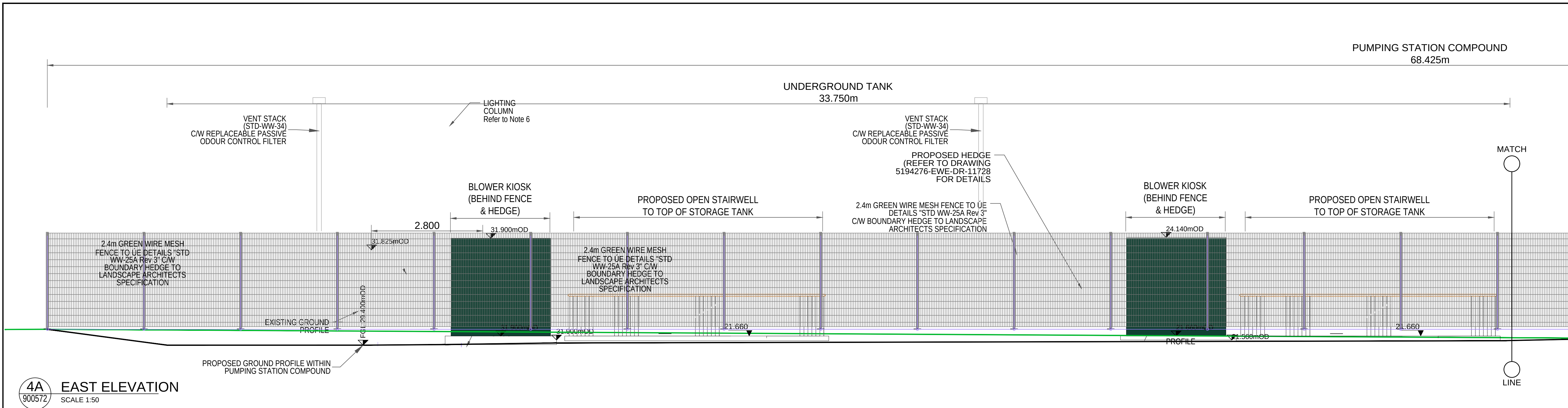
Client	CASCADE
Project	CASTLETHORN OLD CONNAUGHT UCL
	OLD CONNAUGHT PHASE A1 LRD

Purpose					FOR PLANNING				
Title PROPOSED PUMP STATION & EMERGENCY 24hr STORAGE TANK BOUNDARY ELEVATIONS SHEET 2									
Original Scale			Drawn	Checked	Reviewed	Authorised			
AS SHOWN			PM	PS	PS	GH			
Date 31.09.26			Date 31.09.26	Date 31.09.26	Date 31.09.26	Date 31.09.26			
Status	Drawing Number					Rev			
S4	ATK-ZZ-ZZ-DR-CE-900579					P01			

A1

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Rev	Description	By	Date	Chk'd	Rev'd	Auth
P01	ISSUED FOR PLANNING	PM	09.09.26	PS	GH	GH

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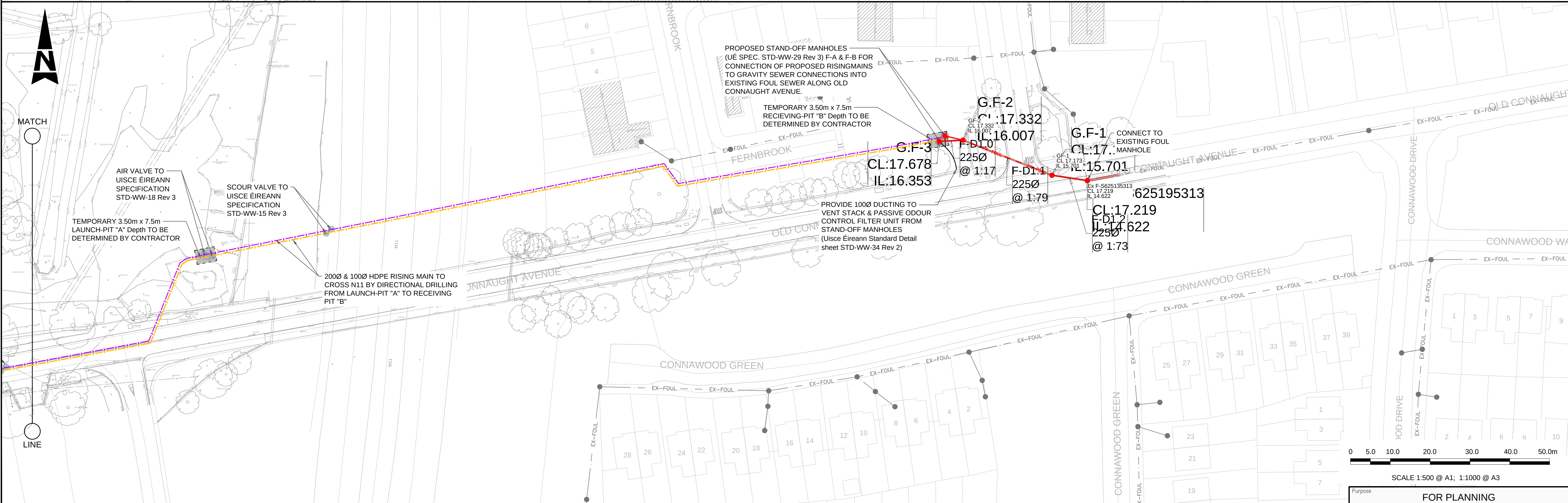
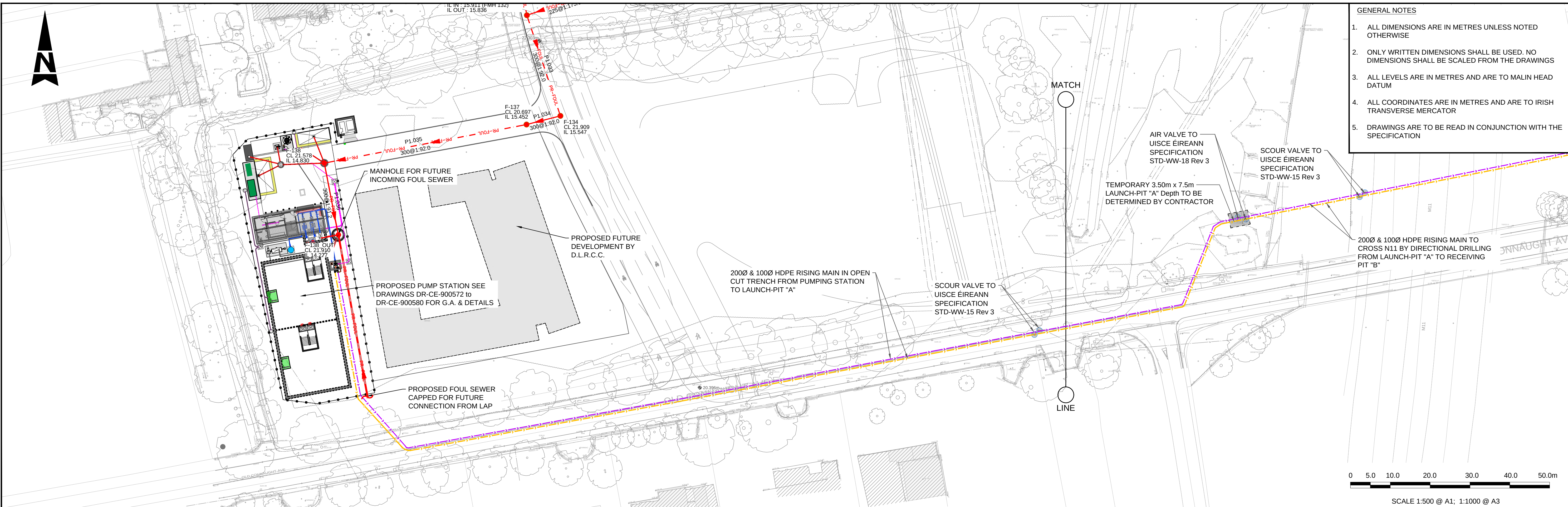
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1st Floor Technology House
Parkmore Technology Park, Galway
Tel (+353) 091 786 050 Fax (+353) 091 779 830

Client
CASTLETHORN OLD CONNAUGHT UCL

Project
OLD CONNAUGHT PHASE A1 LRD

Purpose		FOR PLANNING					
Title		PROPOSED PUMP STATION & EMERGENCY 24hr STORAGE TANK BOUNDARY ELEVATIONS SHEET 3					
Original Scale		Drawn	Checked	Reviewed	Authorised		
1:XXX at A1 1:XXX at A3		PM	PS	PS	GH		
Date		31.09.26	Date	31.09.26	Date	31.09.26	Date
Status		Drawing Number		Rev			
S4		ATK-ZZ-ZZ-DR-CE-900580		P01			



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Original Scale	Drawn	Checked	Reviewed	Authorised																																																																		
1: 500 at A1	PM	PS	PS	GH																																																																		
1:1000 at A3	Date 22.06.26	Date 22.06.26	Date 22.06.26	Date 22.06.26																																																																		
Status	Drawing Number	Rev																																																																				
S4	ATK-ZZ-ZZ-DR-CE-900581	P03																																																																				

A1

DO NOT SCALE

File: ATK-ZZ-ZZ-DR-CE-900582.dwg
Date: Sep 15, 2026 - 5:47pm
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Risk Level

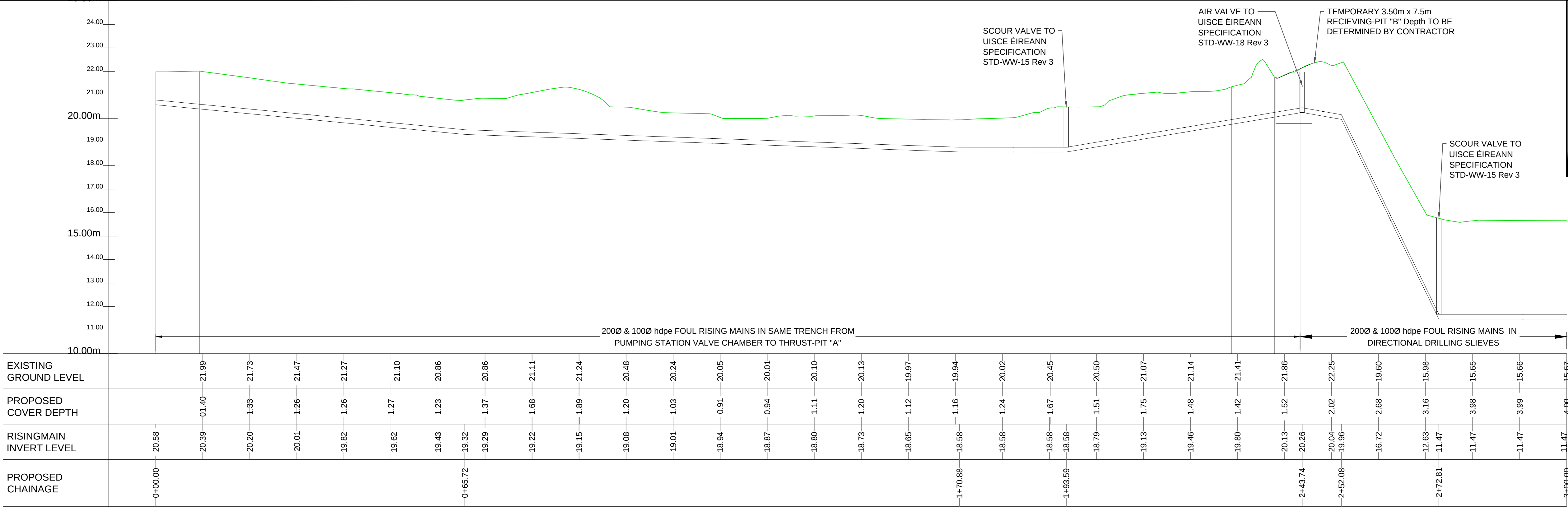
- Atkins Base Line - Low Risk

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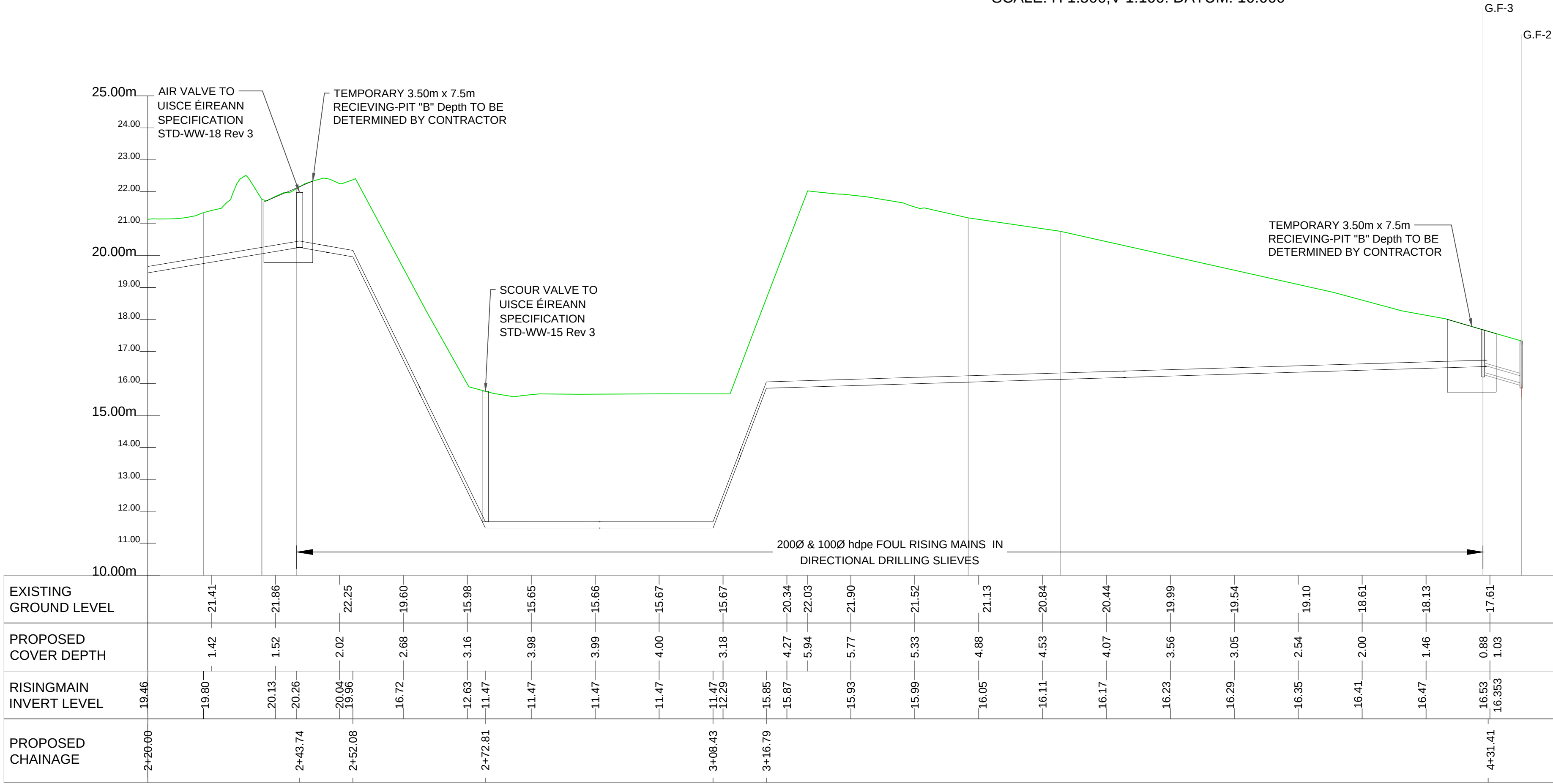
Client Critical - Already Marked

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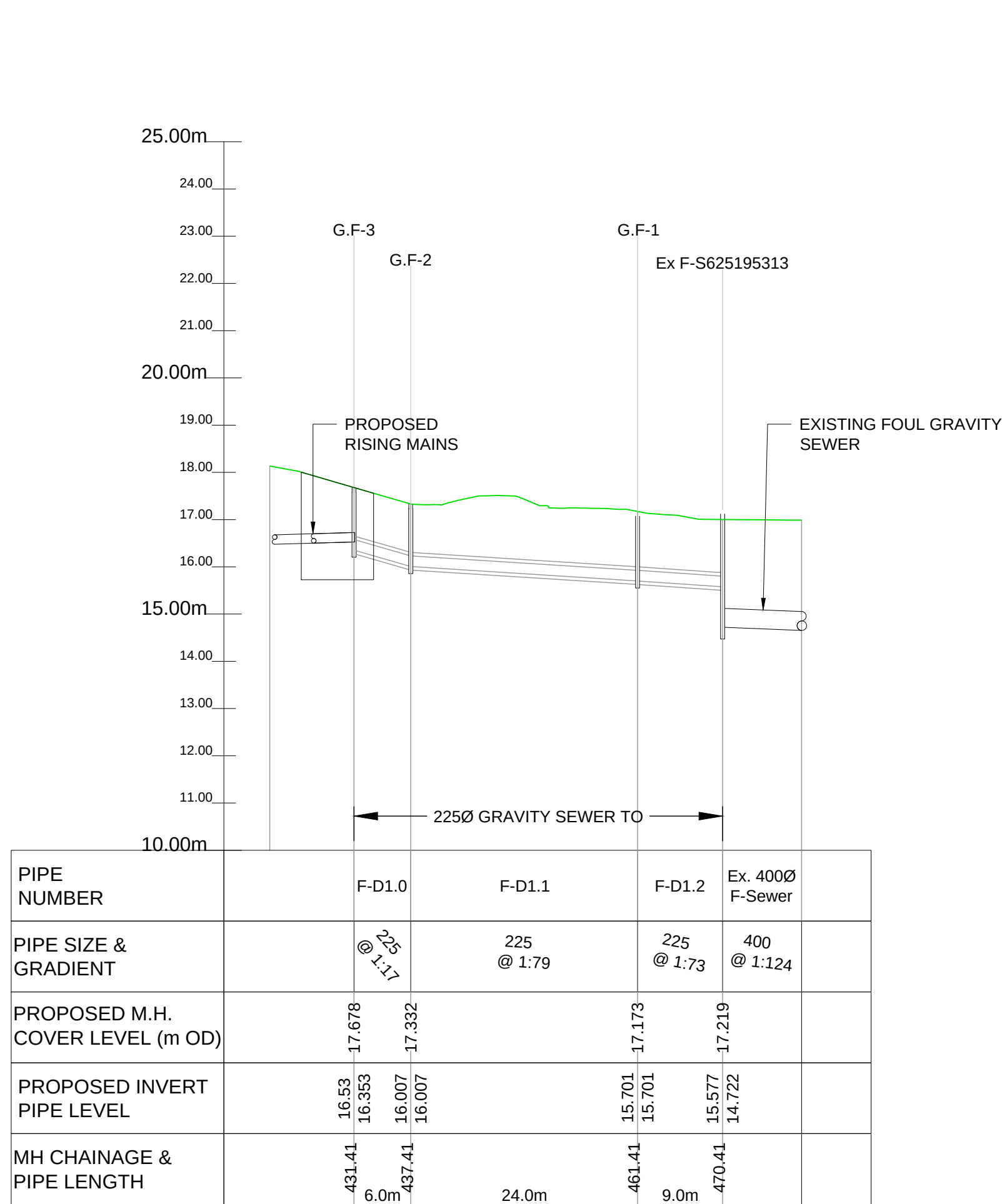


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1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE
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FOUL RISINGMAIN CH 0+00.00 TO 3+00.00M
SCALE: H 1:500,V 1:100. DATUM: 10.000



FOUL RISINGMAIN CH 2+50.00M TO 4+09.00M
SCALE: H 1:500,V 1:100. DATUM: 10.000



GRAVITY DISCHARGE SEWER
SCALE: H 1:500,V 1:100. DATUM: 10.000



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Client	CASTLETHORN OLD CONNAUGHT UCL
Project	OLD CONNAUGHT PHASE A1 LRD

Purpose	FOR PLANNING
Title	PROPOSED FOUL RISING MAINS & PUMPING STATION LONG-SECTIONS
Original Scale	1:1000 H 1: 100 V
Drawn	PM
Checked	PS
Reviewed	PS
Authorised	GH
Date	22.06.26
Date	22.06.26
Date	22.06.26
Date	22.06.26
Status	S4
Drawing Number	ATK-ZZ-ZZ-DR-CE-900581
Rev	P01

Appendix E. Site Investigations (Castlethorn Lands)



IGSL Limited

Atkins

**Ground Investigation for
Old Connaught South Dublin
Phase 1**

Factual Report

Report No. 26458

June 2026



Report



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FOREWORD

The following conditions and notes on the geotechnical site investigation procedures should be read in conjunction with this report.

Standards

The ground investigation works for this project have been carried out by IGSL in accordance with Eurocode 7 - Part 2: Ground Investigation & Testing (EN 1997-2:2007). This has been used together with complementary documents such as BS 5930:2015 and BS 1377 (Parts 1 to 9) and the following European Norms:

- EN 1997-2 Eurocode 7: 2007 – Geotechnical Design – Part 2: Ground Investigation & Testing
- EN ISO 22475-1:2006 Geotechnical Investigation and Sampling – Sampling Methods & Groundwater Measurements
- EN ISO 14688-1:2018 Geotechnical Investigation and Testing – Identification and Classification of Soil, Part 1: Identification and Description
- EN ISO 14688-2:2018 Geotechnical Investigation and Testing – Identification and Classification of Soil, Part 2: Classification Principles
- EN ISO 14689-1:2018 Geotechnical Investigation and Testing - Identification & Classification of Rock, Part 1: Identification & Description

Reporting

This report has been prepared for Atkins and the information should not be used without prior written permission of either party. IGSL Ltd accepts no responsibility or liability for this document being used other than for the purposes for which it was intended. No responsibility can be held by IGSL Ltd for ground conditions between exploratory hole locations.

The engineering logs provide ground profiles and configuration of strata relevant to the investigation depths achieved and caution should be taken when extrapolating between exploratory points. No liability is accepted for ground conditions extraneous to the investigation points. Unless specifically stated, no account has been taken of possible subsidence due to mineral extraction, mining works or karstification below or close to the site.

Boring Procedures

Unless otherwise stated, 'shell and auger' or cable percussive boring technique has been employed as defined by Section 6.3 of IS EN ISO 22475-1:2006. The boring operations, sampling and in-situ testing complies with the recommendations of IS EN 1997-2:2007 and BS 1377:1990 and EN ISO 22476-3:2005+A1:2011. The shell and auger boring technique allows for continuous sampling in clay and silt above the water table and sand and gravel below the water table (Table 2 of IS EN ISO 22475-1:2006).

It is highlighted that some disturbance and variations is unavoidable in particular ground (e.g. blowing sands, gravel / cobble dominant glacial deposits etc). Attention is drawn to this condition, whenever it is suspected. Where cobbles and boulders are recorded, no conclusion should be drawn concerning the size, presence, lithological nature, or numbers per unit volume of ground.

Rotary Drilling Procedures

Rotary drilling methods are used to recover very heavily over-consolidated glacial till and bedrock samples in line with Section 3.5 of IS EN 1997-2:2007 and IS EN ISO 22475-1. Open hole drilling methods (odex or symmetrix) are utilized to advance the drillholes through granular dominant superficial deposits, with coring in hard ('cemented') fine grained or cohesive glacial deposits and bedrock.

In-Situ Testing

Standard penetration tests are conducted by IGSL strictly in accordance with Section 4.6 of IS EN 1997-2:2007. The SPT equipment (hammer energy test) has been calibrated in accordance with EN ISO 22476-3:2005+A1:2011 and the Energy Ratio (E_r) is defined as the ratio of the actual energy E_{meas} (measured energy during calibration) delivered to the drive weight assembly into the drive rod below the anvil, to the theoretical energy (E_{theor}) as calculated from the drive weight assembly. The measured number of blows (N) reported on the engineering logs are uncorrected. In sands, the energy losses due to rod length and the effect of the overburden pressure should be taken into account (see IS EN ISO 22476-3:2005+A1:2011).

Groundwater

The depth of entry of any influx of groundwater is recorded during the course of boring or drilling operations. However, the normal rate of boring does not usually permit the recording of an equilibrium level for any one water strike. Where possible drilling is suspended for a period of twenty minutes to monitor the subsequent rise in water level. Groundwater conditions observed in the borings or pits are those appertaining to the period of investigation. It should be noted however, that groundwater levels are subject to diurnal, seasonal and climatic variations and can also be affected by drainage conditions, tidal variations etc.

Soil Sampling

Three categories of sampling methods are outlined in EN ISO 22475-1:2006. The categories are referenced A, B and C for any given ground conditions and are shown in Tables 1 and 2 of EN ISO 22475-1:2006. Reference should be made to EN 1997-2:2007 for guidelines on sample class and quality for strength and compressibility testing. Samples of quality classes 1 or 2 can only be obtained by using Category A sampling methods.

Where appropriate Class 1 thin wall undisturbed tube samples (UT100) are obtained in fine grained soils and strictly meet the requirements of EN 1997-2:2007 and EN ISO 22475-1:2006. Soil samples for laboratory tests are divided into five classes with respect to the soil properties that are assumed to remain unchanged during sampling, handling transport and storage. The minimum sample quality required for testing purposes to Eurocode 7 compatibility (EN 1997-2:2007) is shown in Table A.

Table A – Details of Sample Quality Requirements

EN 1997 Clause	Test	Minimum Sample Quality Class
5.5.3	Water Content	3
5.5.4	Bulk Density	2
5.5.5	Particle Density	N/S
5.5.6	Particle Size Analysis	N/S
5.5.7	Consistency Limits	4
5.5.8	Density Index	N/S
5.5.9	Soil Dispersivity	N/S
5.5.10	Frost Susceptibility	N/S
5.6.2	Organic Content	4
5.6.3	Carbonate Content	3
5.6.4	Sulphate Content	3
5.6.5	pH	3
5.6.6	Chloride Content	3
5.7	Strength Index	1
5.8	Strength Tests	1
5.9	Compressibility Tests	1
5.10	Compaction Tests	N/S
5.11	Permeability	2

N/S – not stated. Presume a representative sample of appropriate size.

Samples recovered from trial pits or trenches meet the requirements of IS EN ISO 22475-1. It is highlighted that unforeseen circumstances such as variations in geological strata may lead to lower quality sample classes being obtained.

Engineering Logging

Soil and rock identification is based on the examination of the samples recovered and conforms with IS EN ISO 14688-1:2018 and IS EN ISO 14689-1:2018. Rock weathering classification conforms to IS EN ISO 14689-1:2018 while discontinuities (bedding planes, joints, cleavages, faults etc) are classified in accordance with 4.3.3 of IS EN ISO 14689-1:2018. Rock mechanical indices (TCR, SCR, RQD) are defined in accordance with IS EN ISO 22475-1:2006.

Retention of Samples

After satisfactory completion of all the scheduled laboratory tests on any sample, the remaining material will be discarded. Unless a period of retention of samples is agreed, it is company policy to discard soil samples one month after submission of our final report.

1.0 Introduction and Objectives

Proposed construction works between Shankill and Bray in Co. Wicklow will include a new overbridge at the M11 motorway and an associated approach road on the western side of the M11. Ground investigation works have been carried out for the project and these have been segregated into two phases as follows:

Phase 1 – Approach Road

Phase 2 – Overbridge at M11

This report relates to the Phase 1 ground investigation that has been undertaken on behalf of Mountclare and Castlethorn in accordance with a technical specification prepared by Atkins. The objectives of the investigation were to ascertain the ground and groundwater conditions, and to produce a report which will assist in the geotechnical design of the project.

The site location is shown in Figure 1 with the area of the Phase 1 investigation approximately outlined in red.



Figure 1 – Site Location

This report presents the fieldwork data and the results of laboratory testing.

2.0 Scope of Works

The programme of exploratory works included the following:

- 3 no. cable percussive boreholes
- 3 no. rotary coreholes at borehole locations
- 5 no. mechanically excavated trial pits
- 2 no. window samples
- 2 no. dynamic probes at window sample locations
- 7 no. plate bearing tests
- 7 no. infiltration tests
- 1 no. inspection (slit) trench
- Groundwater monitoring of standpipes
- A programme of geotechnical, chemical and environmental laboratory testing

The exploratory hole locations are shown on the as-surveyed aerial plan in Appendix 12 of this report.

2.1 Cable Percussive Boreholes

Boreholes were constructed in 3 locations (BH01 to BH03) using a Dando 2000 rig equipped with 200 mm casing. The bored depths ranged from 7.9 to 11.8 metres below existing ground level (m BGL).

A hand dug inspection pit was excavated at each location prior to commencing drilling works and the locations were scanned for services using a CAT detection tool.

During the course of boring, in-situ Standard Penetration Tests (SPT) were undertaken at metre intervals. Samples were also recovered to assist in the visual description of recovered soils and to provide specimens for laboratory testing. In low strength soils, driven tube samples (U100) were obtained. Instances of groundwater ingress were recorded and monitored for a further 20 minutes to permit the water to rise.

The borehole records are presented in Appendix 1 of this report.

2.2 Rotary Coreholes

Rotary drilling was carried out at 3 locations (RC01 to RC03) adjacent to the cable percussive boreholes, using a Beretta T44 tracked rig. Symmetrex drilling was utilized in the soil deposits, with coring techniques used in the bedrock. The rotary drilling produced 78mm diameter cores. The holes extended to depths of 15 to 25 m BGL, with bedrock reached in RC01.

The retrieved cores were placed in 3m capacity timber boxes and transported to IGSL's laboratory in Naas, Co. Kildare.

The cores were then logged by an engineering geologist, including photography of the cores with a digital camera. Where rock is recovered, a graphic fracture log is also presented alongside the mechanical indices. This illustrates the fracture state of the rock cores and allows easy identification of highly fractured / non-intact zones and discontinuity spacings. It should be noted that no correction for dip of the joints has been made and that the spacings shown are successive joint / core intersections within the core.

Groundwater monitoring standpipes were installed in RC02 and RC03. The standpipes consisted of 50mm diameter pipe and incorporated pea gravel filter pack and bentonite seal. Standup covers were concreted in place and timber fence posts were placed around them.

The core log records are presented in Appendix 2, including the engineering geological descriptions, details of the bedding / discontinuities and mechanical indices (TCR, SCR and RQD's) for each core run and details of the installation. Core photographs are also presented in Appendix 2 and they illustrate the structure and fracture state of the bedrock.

2.3 Trial Pits

Trial pitting was performed at 5 locations (TP01 to TP05) using an 8.5-tonne tracked excavator. The trial pits were logged and sampled by an IGSL geotechnical engineer in accordance with BS 5930:2015 +A1:2020.

Hand shear vane tests (set of 3) were performed within the upper soils to permit an assessment of the in-situ shear strengths.

Pit sidewalls were assessed in terms of their short-term stability and any instances of groundwater ingress were recorded. Bulk soil samples were also recovered to provide specimens for laboratory testing.

The samples were placed in heavy duty polyethene bags and sealed before being transported to Naas for laboratory testing. For this project, environmental samples were obtained and placed in appropriate containers (tubs, jars and vials).

The trial pits were backfilled with the as-dug arisings and reinstated to the satisfaction of IGSL's site geotechnical engineer. The trial pit logs in Appendix 3 include descriptions of the soils encountered, groundwater conditions and stability of the pit sidewalls. Photographs of the open pits and spoil are also presented in Appendix 3.

2.4 Window Samples

Window samples were undertaken in 2 locations (WS01 and WS02) in order to obtain undisturbed samples of the upper soils for detailed examination and logging.

Window samples are advanced by driving a steel sampling tube under constant percussive effort. The soils enter the tube within a protective plastic liner, which is withdrawn after every metre of progress. The liners are then placed in wooden channel boxes.

The window sample records and photographs are presented in Appendix 4.

2.5 Dynamic Probes

Dynamic probes DP01 and DP02 were undertaken adjacent to corresponding window samples. The dynamic probe utilised by IGSL Ltd complies with the requirements of BS 1377, Part 9 (1990) and Eurocode 7: Part 3.

The super-heavy probe (DPSH) probe was used, comprising a 63.5 kg drop weight, 500mm drop height and a 45 mm diameter (90°) cone. In accordance with the standards, the number of blows required to drive the probe through each 100mm increment of penetration was recorded. Probing was terminated when blow counts, N_{100} values, exceeded 25, in order to avoid damage to equipment.

Detailed probe records are provided in Appendix 5 on which the blow counts are recorded both numerically and graphically.

2.6 Inspection (Slit) Trenches

Inspection trench ST01 was excavated towards the south of the site to investigate for the presence of buried utilities or services. Excavation comprised a combination of mini-digger and hand digging methods.

A photograph of the open trench and a detailed geological description of the soils encountered are included on the record in Appendix 6, although no buried services or utilities were encountered.

2.7 Plate Bearing Tests

Plate bearing tests were performed in 7 locations to obtain a measure of the moduli of subgrade reaction and equivalent in-situ CBR values. A 450 mm diameter plate was used in 5 locations (adjacent to the trial pits) and tests were performed in accordance with BS 1377 Part 9: 1990. "In-situ Tests". In 2 locations (marked CBR01 and CBR02 on site plan), the test was performed using a 300 mm diameter plate.

The maximum applied load was estimated on the basis of obtaining an accumulative displacement of at least 1.25 mm. The load was then applied in five approximately equal increments to the design load. To measure recovery the load was removed in three increments. A second phase of loading and unloading was performed to assess the benefits of further compaction.

The settlement under each increment was measured against time until movement had effectively ceased and the results are presented as graphs of applied pressure against settlement. Calculation of Modulus of Sub-grade Reaction (k) and CBR values are in accordance with NRA HD25-26/10 Volume7: Pavement Design and Maintenance.

The plate bearing test records are presented in Appendix 7.

2.8 Infiltration Tests

Infiltration tests were performed in seven locations (SA01 to SA07) to investigate the soakage characteristics of the overburden soils. Testing was performed in each test pit in accordance with BRE Digest 365 'Soakaway Design'.

To obtain a measure of the infiltration rate, water was poured into the test pit to ensure total saturation of the sub-soils. The infiltration rate is the volume of water dispersed per unit exposed area per unit of time, and is generally expressed as metres/minute or metres/second.

Two monitored stages were typically performed, during which records were taken of the fall in water level against time. The exceptions were tests SA01, 04, 05 and 07, where very low or negligible egress was measured during the initial test stage and further test stages were both impractical and unnecessary.

The infiltration test results are presented in numerical and graphical format in Appendix 8.

2.9 Groundwater Monitoring

Groundwater was recorded in all five trial pits and in six infiltration test locations. The depths ranged between 0.9 and 2.2m BGL. In the trial pits, water strikes were mostly rapid with strikes in the infiltration tests observed as seepage.

The boreholes and coreholes reported deeper strikes in the range 9.30m to 19.70m BGL, and the rate of ingress was reported as slow. Standpipes were installed in two of the coreholes (RC02 and RC03) and the site was revisited to measure the water levels.

The groundwater readings are presented in Appendix 9.

2.10 As-Built Survey

On completion of fieldworks, the location (x,y) and elevation (z) of each exploratory location was determined by detailed survey using GPS Realtime Kinetic survey instrument.

The Irish Transverse Mercator (ITM) survey co-ordinates and ground levels related to Malin Head Datum are presented on the exploratory hole records and these were used to plot the as-built locations on the site plans in Appendix 12 of this report.

3.0 Laboratory Testing

Geotechnical laboratory testing was performed at IGSL'S INAB accredited laboratory in accordance with BS1377; British Standard Methods of Test for Soils for Civil Engineering Purposes; British Standards Institute:1990. The schedule of the geotechnical testing contained:

- Moisture Content
- Atterberg Limits (Plasticity Index)
- Particle Size Distribution (PSD)
- Unconsolidated Undrained (UU) Triaxial
- Irregular Point Loads on rock core specimens

Chemical and environmental testing were performed by Eurofins Chemtest with the schedule including:

- BRE SD1 Sulphate Suite (Acid-Soluble Sulphate, Water-Soluble Sulphate, Total Sulphur, Water-Soluble Magnesium, Water-Soluble Chloride, Water-Soluble Nitrate, Water-Soluble Ammonium and pH)
- RILTA (WAC) Suite

Laboratory, chemical and environmental test results are segregated and presented as follows:

- Appendix 10 – Geotechnical Laboratory Testing
- Appendix 11 – Chemical and Environmental Testing

4.0 References

1. BS 5930:2015+A1:2020 Code of Practice for Site Investigations; British Standards Institute
2. Manual of Contract Documents for Highway Works, Volume 5, Section 3, Ground Investigation, Part 4: Specification
3. BRE Special Digest 1: 2005 – Concrete in aggressive ground
4. EN 1997-3; Eurocode 7: Geotechnical Design – Part 3: Design assisted by field testing; 1997
5. BS1377; British Standard Methods of Test for Soils for Civil Engineering Purposes; British Standards Institute;1990.
6. BRE Digest 365, September 1991, British Research Establishment
7. Manual of Contract Documents for Road Works, Volume 1: Specification for Road Works (March 2007)
8. Manual of Soil Laboratory Testing, Volume 3; K.H. Head
9. ISRM – Suggested Methods for Determining Point Load Strength
10. ISRM – Suggested Methods for Determining the Uniaxial Compressive Strength and Deformability of Rock Materials
11. TRL Report 447- Sulfate specification for structural backfills
12. CIRIA C580
13. Specification for Roadworks Series 600 – Specification for Roadworks

Appendix 1

Cable Percussive Borehole Records



GEOTECHNICAL BORING RECORD

REPORT NUMBER

26458

CONTRACT Phase 1 - M11 - Old Connaught

BOREHOLE NO. BH01

SHEET Sheet 1 of 1

CO-ORDINATES 725,011.71 E
719,700.87 NRIG TYPE Dando 2000
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 7.90

DATE COMMENCED 10/03/2026

DATE COMPLETED 11/03/2026

GROUND LEVEL (mOD) 20.80
CLIENT Castlethorne Construction
ENGINEER AtkinsSPT HAMMER REF. NO.
ENERGY RATIO (%)BORED BY A.Delaney
PROCESSED BY F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Standpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	TOPSOIL		20.60	0.20						
1	Firm brown sandy SILT/CLAY with occasional gravel				AA260236	B	1.00		N = 11 (2, 1, 2, 3, 3, 3)	
2					AA260237	B	2.00		N = 10 (3, 3, 4, 3, 2, 1)	
	Very soft grey/brown very sandy SILT/CLAY		18.40	2.40	AA260238	B	2.50			
3	Soft brown sandy SILT/CLAY with occasional gravel		17.80	3.00	AA260239	B	3.00		N = 5 (1, 0, 1, 0, 2, 2)	
4					AA260240	B	4.00		N = 7 (1, 1, 2, 1, 2, 2)	
5	Medium dense grey/brown clayey GRAVEL (Possibly very gravelly Clay)		15.90	4.90	AA260241	B	5.00		N = 28 (3, 4, 5, 7, 7, 9)	
6	Dense grey/brown fine to coarse clayey GRAVEL with some angular cobbles and boulders		15.00	5.80	AA260242	B	6.00		N = 46 (5, 7, 9, 10, 12, 15)	
7					AA260243	B	7.00		N = 50/225 mm (7, 9, 12, 17, 21)	
					AA260244	B	7.50			
8	Obstruction End of Borehole at 7.90 m		12.90	7.90					N = 50/75 mm (25, 50)	
9										

HARD STRATA BORING/CHISELLING

WATER STRIKE DETAILS

From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
7.20	7.40	1		2.50	2.50	No	2.00	20	Slow
7.70	7.90	1.5		5.40	5.40	No	1.20	20	Rapid

GROUNDWATER PROGRESS

INSTALLATION DETAILS					Date	Hole Depth	Casing Depth	Depth to Water	Comments
Date	Tip Depth	RZ Top	RZ Base	Type					

REMARKS 2hrs standing on horses at Landowners request.CAT scanned location and hand dug inspection pit was carried out .

Sample Legend

D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample



GEOTECHNICAL BORING RECORD

REPORT NUMBER

26458

CONTRACT Phase 1 - M11 - Old Connaught

BOREHOLE NO. BH02

SHEET Sheet 1 of 2

CO-ORDINATES 725,111.89 E
719,781.91 NRIG TYPE Dando 2000
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 11.80

DATE COMMENCED 18/03/2026

DATE COMPLETED 19/03/2026

GROUND LEVEL (mOD) 20.87
CLIENT Castlethorne Construction
ENGINEER AtkinsSPT HAMMER REF. NO.
ENERGY RATIO (%)BORED BY A.Delaney
PROCESSED BY F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Standpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	TOPSOIL		20.67	0.20						
	Soft brown sandy SILT/CLAY with occasional gravel				AA265207 AA265208	B U	1.00 1.00	70%rec	N = 6 (2, 1, 1, 2, 2, 1)	
1										
2	Medium dense grey/grey brown fine to coarse sandy silty/clayey GRAVEL with occasional cobbles		19.07	1.80	AA265209	B	2.00		N = 17 (6, 4, 5, 3, 4, 5)	
3					AA265210	B	3.00		N = 17 (5, 5, 4, 6, 3, 4)	
4					AA265211	B	4.00		N = 16 (3, 4, 4, 3, 5, 4)	
5					AA265212	B	5.00		N = 23 (2, 3, 3, 8, 6, 6)	
6					AA265213	B	6.00		N = 20 (3, 5, 4, 5, 5, 6)	
7					AA265214	B	7.00		N = 26 (6, 5, 6, 7, 6, 7)	
8	Very stiff to hard brown very gravelly CLAY with some cobbles		13.07	7.80	AA265215	B	8.00		N = 56 (7, 13, 14, 16, 14, 12)	
9					AA265216	B	9.00		N = 48 (6, 8, 10, 13, 13, 12)	
			11.17	9.70						

HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
11.10	11.30	1		2.50	2.50	3.80	1.60		Moderate
11.60	11.80	1.5		6.10	6.10	No	1.80	20	Rapid
INSTALLATION DETAILS				GROUNDWATER PROGRESS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
REMARKS 4 hrs standing on Landowner to move horses .CAT scanned location and hand dug inspection pit was carried out .				Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) UT - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample W - Water Sample					

IGSL BH LOG 26458.GPJ IGSL.GDT 2/4/26



GEOTECHNICAL BORING RECORD

REPORT NUMBER

26458

CONTRACT Phase 1 - M11 - Old Connaught

BOREHOLE NO. BH02

SHEET Sheet 2 of 2

CO-ORDINATES 725,111.89 E
719,781.91 NRIG TYPE Dando 2000
BOREHOLE DIAMETER (mm) 200

DATE COMMENCED 18/03/2026

GROUND LEVEL (mOD) 20.87

BOREHOLE DEPTH (m) 11.80

DATE COMPLETED 19/03/2026

CLIENT Castlethorne Construction
ENGINEER AtkinsSPT HAMMER REF. NO.
ENERGY RATIO (%)BORED BY A.Delaney
PROCESSED BY F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Standpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	Very stiff brown sandy gravelly CLAY with occasional cobbles (<i>continued</i>)		10.07	10.80	AA265217	B	10.00		N = 50 (9, 13, 5, 15, 16, 14) N = 50/150 mm (6, 11, 18, 32) N = 50/75 mm (25, 50)	
11	Dense grey fine to coarse angular GRAVEL with broken angular cobbles and boulders				AA265218	B	11.00			
12	Obstruction End of Borehole at 11.80 m		9.07	11.80						
13										
14										
15										
16										
17										
18										
19										

HARD STRATA BORING/CHISELLING

WATER STRIKE DETAILS

From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
11.10	11.30	1							
11.60	11.80	1.5							

GROUNDWATER PROGRESS

INSTALLATION DETAILS					Date	Hole Depth	Casing Depth	Depth to Water	Comments
Date	Tip Depth	RZ Top	RZ Base	Type					

REMARKS 4 hrs standing on Landowner to move horses .CAT scanned location and hand dug inspection pit was carried out .

Sample Legend

D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample



GEOTECHNICAL BORING RECORD

REPORT NUMBER

26458

CONTRACT Phase 1 - M11 - Old Connaught

BOREHOLE NO. BH03

SHEET Sheet 1 of 2

CO-ORDINATES 725,120.17 E
719,441.67 N

RIG TYPE Dando 2000

BOREHOLE DIAMETER (mm) 200

DATE COMMENCED 12/03/2026

GROUND LEVEL (mOD) 20.02

BOREHOLE DEPTH (m) 9.90

DATE COMPLETED 13/03/2026

CLIENT Castlethorne Construction
ENGINEER AtkinsSPT HAMMER REF. NO.
ENERGY RATIO (%)BORED BY A.Delaney
PROCESSED BY F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Standpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	TOPSOIL		19.72	0.30						
	Soft brown sandy SILT/CLAY with occasional fine gravel		19.72		AA260245	B	1.00		N = 7 (1, 0, 1, 2, 2, 2)	
1					AA260246	U	1.50			
					AA260247	B	2.00		N = 8 (2, 2, 1, 2, 3, 2)	
2					AA260248	B	3.00			
3									N = 9 (1, 1, 1, 2, 2, 4)	
4										
	Medium dense grey fine to medium silty sandy GRAVEL with large cobbles		15.92	4.10	AA260249	B	4.00		N = 9 (1, 2, 2, 2, 2, 3)	
5					AA260250	B	5.00		N = 12 (1, 2, 3, 2, 3, 4)	
6					AA260251	B	6.00		N = 11 (1, 2, 1, 2, 2, 6)	
7	Stiff brown sandy gravelly CLAY with some cobbles		13.22	6.80	AA260252	B	7.00		N = 30 (2, 4, 5, 7, 8, 10)	
	Stiff reddish brown laminated SILT/CLAY		12.32	7.70	AA260253	B	8.00		N = 23 (4, 4, 4, 6, 6, 7)	
8										
9					AA260254	B	9.00		N = 19 (2, 3, 3, 4, 4, 8)	
	Dense grey fine to coarse angular GRAVEL with some clayey bands		10.82	9.20	AA260255	B	9.80		N = 50/75 mm (25, 50)	

HARD STRATA BORING/CHISELLING

WATER STRIKE DETAILS

From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
9.40	9.60	0.75		1.80	1.80	6.50	1.00	20	Slow
9.70	9.90	1.5		8.50	8.50	No	6.30	20	Rapid

GROUNDWATER PROGRESS

INSTALLATION DETAILS					Date	Hole Depth	Casing Depth	Depth to Water	Comments
Date	Tip Depth	RZ Top	RZ Base	Type					

REMARKS 3hrs manouvering rig into position .CAT scanned location and hand dug inspection pit was carried out . Blowing sands noted 6.80-4.90m

Sample Legend

D - Small Disturbed (tub)

B - Bulk Disturbed

LB - Large Bulk Disturbed

Env - Environmental Sample (Jar + Vial + Tub)

UT - Undisturbed 100mm Diameter

Sample

P - Undisturbed Pison Sample

W - Water Sample



GEOTECHNICAL BORING RECORD

REPORT NUMBER

26458

CONTRACT Phase 1 - M11 - Old Connaught

BOREHOLE NO. BH03

SHEET Sheet 2 of 2

CO-ORDINATES 725,120.17 E
719,441.67 N

RIG TYPE Dando 2000

BOREHOLE DIAMETER (mm) 200

DATE COMMENCED 12/03/2026

GROUND LEVEL (mOD) 20.02

BOREHOLE DEPTH (m) 9.90

DATE COMPLETED 13/03/2026

CLIENT Castlethorne Construction
ENGINEER AtkinsSPT HAMMER REF. NO.
ENERGY RATIO (%)BORED BY A.Delaney
PROCESSED BY F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Standpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	Obstruction End of Borehole at 9.90 m									
11										
12										
13										
14										
15										
16										
17										
18										
19										

HARD STRATA BORING/CHISELLING

WATER STRIKE DETAILS

From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
9.40	9.60	0.75							
9.70	9.90	1.5							

GROUNDWATER PROGRESS

INSTALLATION DETAILS					Date	Hole Depth	Casing Depth	Depth to Water	Comments
Date	Tip Depth	RZ Top	RZ Base	Type					

REMARKS 3hrs manouvering rig into position .CAT scanned location and hand dug inspection pit was carried out . Blowing sands noted 6.80-4.90m

Sample Legend

D - Small Disturbed (tub)

B - Bulk Disturbed

LB - Large Bulk Disturbed

Env - Environmental Sample (Jar + Vial + Tub)

UT - Undisturbed 100mm Diameter

Sample

P - Undisturbed Piston Sample

W - Water Sample

Appendix 2

Rotary Coreholes Records

										GEOTECHNICAL CORE LOG RECORD										REPORT NUMBER 26458	
CONTRACT Phase 1 - M11 - Old Connaught												DRILLHOLE NO RC01									
CO-ORDINATES 725,011.71 E 719,700.87 N						RIG TYPE Beretta T-44						SHEET Sheet 1 of 2									
GROUND LEVEL (mOD) 20.80						FLUSH Air/Mist						DATE DRILLED 30/05/2026									
CLIENT Castlethorne Construction						INCLINATION (deg) -90						DATE LOGGED 30/05/2026									
ENGINEER Atkins						CORE DIAMETER (mm) 78						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)	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)									
0					0 250 500			SYMMETRIX DRILLING: No recovery, observed by driller as returns of TOPSOIL	0.20	20.60											
1								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown sandy SILT/CLAY with occasional gravel													
2									2.40	18.40											
3								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown very sandy SILT/CLAY	3.00	17.80											
4								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown sandy SILT/CLAY with occasional gravel													
5									4.90	15.90											
6								SYMMETRIX DRILLING: No recovery, observed by driller as returns of dense grey/brown clayey GRAVEL	5.80	15.00											
7								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown fine to coarse clayey GRAVEL with some cobbles													
8									7.60	13.20											
9								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown gravelly CLAY													
9.80									9.80	11.00		N = 31 (7, 9, 5, 8, 9, 9)									
REMARKS Hole cased from 0.0-9.80m.								WATER STRIKE DETAILS													
								Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments								
								9.30	9.30	N/S			Slow								
								GROUNDWATER DETAILS													
INSTALLATION DETAILS								Date	Hole Depth	Casing Depth	Depth to Water	Comments									
Date	Tip Depth	RZ Top	RZ Base	Type																	

IGSL RC Fl 10M 26458.GPJ IGSL GDT 8/6/26



GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER

26458

CONTRACT Phase 1 - M11 - Old Connaught

DRILLHOLE NO RC01

SHEET Sheet 2 of 2

CO-ORDINATES 725,011.71 E
719,700.87 N

GROUND LEVEL (mOD) 20.80

RIG TYPE Beretta T-44
FLUSH Air/Mist

DATE DRILLED 30/05/2026

DATE LOGGED 30/05/2026

CLIENT Castletorhne Construction

ENGINEER Atkins

INCLINATION (deg) -90

CORE DIAMETER (mm) 78

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)	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10		100	14	0				Weak to moderately weak, medium bedded to thinly laminated, light to dark blueish/grey, fine-grained interbedded SILTSTONE/MUDSTONE (possibly metamorphosed, graphitic appearance on surfaces), slightly to locally moderately/highly weathered (at 10.12-10.17m, 11.07-11.31m & 12.53-12.57m) Frequent incipient fractures - core predominantly non-intact				
11	11.30							Discontinuities are medium to closely spaced, smooth to rough, fractures are planar to irregular. Apertures are tight to locally moderately open, locally clay smeared, locally moderately iron-oxide stained. Dips are subhorizontal to 20-30° & irregular. (continued)				
12		100	19	0								
13	12.80											
13		75	9	0				Highly weathered ROCK - recovered as green very sandy clay	13.30	7.50		
14	13.80							Weak to moderately weak, medium to thinly bedded, light greenish grey, fine-grained interbedded SILTSTONE/SANDSTONE, slightly weathered. Frequent incipient fractures - core predominantly non-intact	13.40	7.40		
14		100	24	11								
15	14.80							Discontinuities are medium to closely spaced, smooth to rough, fractures are planar to irregular. Apertures are tight to locally moderately open, locally clay smeared, locally moderately iron-oxide stained, locally quartz-veined (1-8mm thick). Dips are subhorizontal to 20-40° & irregular.	14.80	6.00		
16								End of Borehole at 14.80 m				
17												
18												
19												

REMARKS

Hole cased from 0.0-9.80m.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
9.30	9.30	N/S			Slow

GROUNDWATER DETAILS

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
					30-05-26	14.80	9.80	7.40	Water level recorded 5mins after end of drilling



GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER

26458

CONTRACT Phase 1 - M11 - Old Connaught

DRILLHOLE NO RC02

SHEET Sheet 1 of 3

CO-ORDINATES 725,111.89 E
719,781.91 N

GROUND LEVEL (mOD) 20.87

RIG TYPE Beretta T-44
FLUSH Air/Mist

DATE DRILLED 27/05/2026

DATE LOGGED 27/05/2026

CLIENT Castlethorne Construction
ENGINEER AtkinsINCLINATION (deg) -90
CORE DIAMETER (mm)DRILLED BY IGSL - DH/JK
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)	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0					0 250 500			SYMMETRIX DRILLING: No recovery, observed by driller as returns of TOPSOIL	0.20	20.67		
1								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown sandy SILT/CLAY with occasional gravel				
2								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/grey brown fine to coarse sandy silty/clayey GRAVEL with occasional cobbles	1.80	19.07		
3												
4												
5												
6												
7												
8								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown very gravelly CLAY with some cobbles	7.80	13.07		
9									9.70	11.17		

REMARKS

Hole cased from 0.0-25.00m.

WATER STRIKE DETAILS

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

GROUNDWATER DETAILS

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
27-05-26	15.00	1.00	15.00	50mm SP					



GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER

26458

CONTRACT Phase 1 - M11 - Old Connaught

DRILLHOLE NO RC02

SHEET Sheet 2 of 3

CO-ORDINATES 725,111.89 E
719,781.91 N

GROUND LEVEL (mOD) 20.87

RIG TYPE Beretta T-44
FLUSH Air/Mist

DATE DRILLED 27/05/2026

DATE LOGGED 27/05/2026

CLIENT Castlethorne Construction
ENGINEER Atkins

INCLINATION (deg) -90

CORE DIAMETER (mm)

DRILLED BY IGSL - DH/JK

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)	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10					0 250 500			SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown sandy gravelly CLAY with occasional cobbles (<i>continued</i>)	10.80	10.07		
11								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey fine to coarse angular GRAVEL with cobbles and boulders	11.80	9.07		
12								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown silty sandy gravelly CLAY				
13												
14									14.90	5.97		
15								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown clayey sandy GRAVEL				
16												
17												
18												N = 26 (2, 6, 4, 8, 7, 7)
19									19.70	1.17		N = 32 (5, 9, 7, 8, 8, 9)

REMARKS

Hole cased from 0.0-25.00m.

WATER STRIKE DETAILS

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

GROUNDWATER DETAILS

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
27-05-26	15.00	1.00	15.00	50mm SP					



GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER

26458

CONTRACT Phase 1 - M11 - Old Connaught

DRILLHOLE NO RC02

SHEET Sheet 3 of 3

CO-ORDINATES 725,111.89 E
719,781.91 N

GROUND LEVEL (mOD) 20.87

RIG TYPE Beretta T-44
FLUSH Air/Mist

DATE DRILLED 27/05/2026

DATE LOGGED 27/05/2026

CLIENT Castlethorne Construction
ENGINEER Atkins

INCLINATION (deg) -90

DRILLED BY IGSL - DH/JK

CORE DIAMETER (mm)

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)	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
20					0 250 500			SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown gravelly CLAY (continued)				
21								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown sandy gravelly CLAY	21.30	-0.43		N = 34 (3, 5, 8, 9, 8, 9)
22												N = 27 (2, 4, 6, 6, 7, 8)
23												N = 36 (3, 6, 7, 9, 9, 11)
24												
25								End of Borehole at 25.00 m	25.00	-4.13		
26												
27												
28												
29												

REMARKS

Hole cased from 0.0-25.00m.

WATER STRIKE DETAILS

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

GROUNDWATER DETAILS

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
27-05-26	15.00	1.00	15.00	50mm SP	27-05-26	25.00	25.00	14.20	Water level recorded 5mins after end of drilling



GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER

26458

CONTRACT Phase 1 - M11 - Old Connaught

DRILLHOLE NO RC03

SHEET Sheet 1 of 3

CO-ORDINATES 725,120.17 E
719,441.67 N

GROUND LEVEL (mOD) 20.02

RIG TYPE Beretta T-44
FLUSH Air/Mist

DATE DRILLED 02/05/2026

DATE LOGGED 03/05/2026

CLIENT Castlethorne Construction
ENGINEER AtkinsINCLINATION (deg) -90
CORE DIAMETER (mm)DRILLED BY IGSL - JK
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)	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0					0 250 500			SYMMETRIX DRILLING: No recovery, observed by driller as returns of TOPSOIL	0.30	19.72		
1								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown sandy SILT/CLAY with occasional fine gravel				
2												
3												
4								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey fine to medium silty sandy GRAVEL with large cobbles	4.10	15.92		
5												
6									6.80	13.22		
7								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown sandy gravelly CLAY with some cobbles	7.70	12.32		
8								SYMMETRIX DRILLING: No recovery, observed by driller as returns of reddish brown laminated SILT/CLAY				
9									9.20	10.82		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey fine to coarse angular GRAVEL with some clayey bands	9.90	10.12		

REMARKS

Hole cased from 0.0-20.00m.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
11.40 19.70	11.40 19.70	16.50 N/S			Slow Slow

GROUNDWATER DETAILS

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
04-06-26	16.50	8.50	16.50	50mm SP					



GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER

26458

CONTRACT Phase 1 - M11 - Old Connaught

DRILLHOLE NO RC03

SHEET Sheet 2 of 3

CO-ORDINATES 725,120.17 E
719,441.67 N

GROUND LEVEL (mOD) 20.02

RIG TYPE Beretta T-44
FLUSH Air/Mist

DATE DRILLED 02/05/2026

DATE LOGGED 03/05/2026

CLIENT Castlethorne Construction
ENGINEER AtkinsINCLINATION (deg) -90
CORE DIAMETER (mm)DRILLED BY IGSL - JK
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)	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10					0 250 500			SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown sandy gravelly CLAY with occasional cobbles (<i>continued</i>)				N = 40/230 mm (4, 5, 8, 11, 16, 5)
11									11.40	8.62		
12								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown clayey sandy GRAVEL Driller notes gravels blowing				N = 50/105 mm (6, 12, 21, 29)
13												N = 50/155 mm (5, 10, 21, 22, 7)
14												N = 50/90 mm (11, 19, 27, 23)
15												
16									16.50	3.52		N = 10/5 mm (40, 10)
17								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown gravelly CLAY				N = 15/10 mm (35, 15)
18												
19									19.70	0.32		N = 22/10 mm (17, 25, 22)
								SYMMETRIX DRILLING: No recovery, observed by driller	20.00	0.02		

REMARKS

Hole cased from 0.0-20.00m.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
11.40 19.70	11.40 19.70	16.50 N/S			Slow Slow

GROUNDWATER DETAILS

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
04-06-26	16.50	8.50	16.50	50mm SP	04-06-26	20.00	20.00	12.20	Water level recorded 5mins after end of drilling

										GEOTECHNICAL CORE LOG RECORD										REPORT NUMBER 26458												
CONTRACT Phase 1 - M11 - Old Connaught												DRILLHOLE NO RC03																				
CO-ORDINATES 725,120.17 E 719,441.67 N												SHEET Sheet 3 of 3																				
GROUND LEVEL (mOD) 20.02												DATE DRILLED 02/05/2026																				
CLIENT Castlethorne Construction												DATE LOGGED 03/05/2026																				
ENGINEER Atkins												DRILLED BY IGSL - JK																				
RIG TYPE Beretta T-44												LOGGED BY D. O' Shea																				
FLUSH Air/Mist																																
INCLINATION (deg) -90																																
CORE DIAMETER (mm)																																
<table><tr><td>Downhole Depth (m)</td><td>Core Run Depth (m)</td><td>T.C.R. %</td><td>S.C.R. %</td><td>R.Q.D. %</td><td>Fracture Spacing Log (mm)</td><td>Non-intact Zone</td><td>Legend</td></tr><tr><td colspan="4"></td><td> 0250500 </td><td></td><td></td></tr></table>										Downhole Depth (m)	Core Run Depth (m)	T.C.R. %	S.C.R. %	R.Q.D. %	Fracture Spacing Log (mm)	Non-intact Zone	Legend					0250500			Description				Depth (m)	Elevation	Standpipe Details	SPT (N Value)
Downhole Depth (m)	Core Run Depth (m)	T.C.R. %	S.C.R. %	R.Q.D. %	Fracture Spacing Log (mm)	Non-intact Zone	Legend																									
				0250500																												
20										as returns of grey/brown clayey sandy GRAVEL							N = 5/5 mm (45, 5)															
21										End of Borehole at 20.00 m																						
22																																
23																																
24																																
25																																
26																																
27																																
28																																
29																																

REMARKS					WATER STRIKE DETAILS					
Hole cased from 0.0-20.00m.					Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					11.40 19.70	11.40 19.70	16.50 N/S			Slow Slow
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
04-06-26	16.50	8.50	16.50	50mm SP						

RC01 – Box 1 of 2 – 9.80-12.80m



RC01 – Box 2 of 2 – 12.80-14.80m



Appendix 3

Trial Pit Records



TRIAL PIT RECORD

REPORT NUMBER

26458

CONTRACT Phase 1 - M11 - Old Connaught

TRIAL PIT NO. ST01

SHEET Sheet 1 of 1

LOGGED BY DM

CO-ORDINATES 725,059.15 E
719,433.57 N

DATE STARTED 23/03/2026

DATE COMPLETED 23/03/2026

CLIENT Castlethorne Construction
ENGINEER Atkins

GROUND LEVEL (m) 20.77

EXCAVATION METHOD TB280FR

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL: Soft brown sandy CLAY.		0.10	20.67	 1 (Seepage)	260166	B	1.40-1.50		
	MADE GROUND: Firm brown slightly gravelly sandy CLAY with rare plastic and red brick fragments (<2%). Gravel is subangular fine to medium.									
1.0	Medium dense dark grey sandy GRAVEL. Gravel is subangular fine to medium.		1.20	19.57						
	Firm brown slightly gravelly sandy CLAY. Gravel is subangular fine to medium.		1.30	19.47						
	End of Trial Pit at 1.60m		1.60	19.17						
2.0										
3.0										
4.0										

Groundwater Conditions

Seepage at 1.20m

Stability

Good

General Remarks

Location CAT scanned prior to excavation.



TRIAL PIT RECORD

REPORT NUMBER

26458

CONTRACT Phase 1 - M11 - Old Connaught

TRIAL PIT NO.

TP/SA01

LOGGED BY DM

CO-ORDINATES 724,989.66 E
719,517.55 N

SHEET

Sheet 1 of 1

DATE STARTED 25/03/2026
DATE COMPLETED 25/03/2026CLIENT Castlethorne Construction
ENGINEER Atkins

GROUND LEVEL (m) 21.11

EXCAVATION METHOD TB280FR

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL: Soft brown sandy CLAY.		0.20	20.91		260181	B	1.00		
	Soft to firm brown slightly sandy slightly gravelly CLAY. Gravel is subangular fine to medium of limestone.									
1.0	End of Trial Pit at 1.10m		1.10	20.01						
2.0										
3.0										
4.0										

Groundwater Conditions

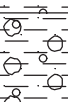
Seepage at 0.90m

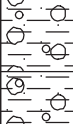
Stability

Slight instability - Sidewall collapse from 0.90m

General Remarks

Location CAT scanned prior to excavation.

 TRIAL PIT RECORD REPORT NUMBER 26458										
CONTRACT Phase 1 - M11 - Old Connaught						TRIAL PIT NO. TP/SA02 SHEET Sheet 1 of 1				
LOGGED BY DM		CO-ORDINATES 724,977.32 E 719,583.42 N		DATE STARTED 23/03/2026 DATE COMPLETED 23/03/2026						
CLIENT ENGINEER Castlethorne Construction Atkins		GROUND LEVEL (m) 21.54		EXCAVATION METHOD TB280FR						
	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL: Soft brown sandy CLAY.									
	Firm brown slightly silty sandy gravelly CLAY. Gravel is subangular fine to medium of limestone.		0.20	21.34						
1.0	Firm greyish brown slightly sandy gravelly CLAY with a low cobble content. Gravel is subangular fine to medium of limestone. Cobbles are subangular of limestone.		1.00	20.54		260167	B	0.80-0.90	18 20 14	
	End of Trial Pit at 1.40m		1.40	20.14	 (Slow)	260168	B	1.30-1.40		
2.0										
3.0										
4.0										
Groundwater Conditions Slow ingress at 1.40m										
Stability Slight instability - Sidewall collapse from 1.00m										
General Remarks Location CAT scanned prior to excavation.										

 TRIAL PIT RECORD REPORT NUMBER 26458										
CONTRACT Phase 1 - M11 - Old Connaught						TRIAL PIT NO. TP/SA03 SHEET Sheet 1 of 1				
LOGGED BY DM		CO-ORDINATES 724,990.34 E 719,640.37 N				DATE STARTED 24/03/2026 DATE COMPLETED 24/03/2026				
CLIENT ENGINEER Castlethorne Construction Atkins		GROUND LEVEL (m) 21.10				EXCAVATION METHOD TB280FR				
	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL: Soft brown sandy CLAY.									
	Firm brown sandy gravelly CLAY with a low cobble content. Gravel is subangular fine to medium. Cobbles are subangular of limestone.		0.20	20.90						
1.0	Medium dense grey slightly clayey sandy GRAVEL with a medium cobble content. Gravel is subangular fine to medium. Cobbles are subangular to subrounded of limestone.		1.10	20.00		260169	B	0.80-0.90		
	End of Trial Pit at 1.40m		1.40	19.70	↓ (Seepage)	260170	B	1.30-1.40		
2.0										
3.0										
4.0										
Groundwater Conditions Seepage at 1.40m										
Stability Slight instability - Sidewall collapse from 1.20m										
General Remarks Location CAT scanned prior to excavation.										

		TRIAL PIT RECORD						REPORT NUMBER 26458	
CONTRACT Phase 1 - M11 - Old Connaught							TRIAL PIT NO. TP/SA04		
LOGGED BY DM							SHEET Sheet 1 of 1		
CO-ORDINATES 724,976.54 E 719,681.11 N							DATE STARTED 24/03/2026 DATE COMPLETED 24/03/2026		
GROUND LEVEL (m) 21.10							EXCAVATION METHOD TB280FR		
CLIENT ENGINEER Castlethorne Construction Atkins									

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL: Soft brown sandy CLAY.									
	Firm brown slightly gravelly sandy CLAY. Gravel is subangular fine of limestone.		0.20	20.90						
	Stiff light brown mottled light grey slightly sandy slightly gravelly CLAY. Gravel is subangular fine to medium of limestone.		0.60	20.50		260171	B	0.50-0.60	20 22 18	
1.0					↓ (Seepage)					
						260172	B	1.50-1.60		
2.0	End of Trial Pit at 2.00m		2.00	19.10						
3.0										
4.0										

Groundwater Conditions Seepage at 0.90m	
Stability Good	
General Remarks Location CAT scanned prior to excavation.	



TRIAL PIT RECORD

REPORT NUMBER

26458

CONTRACT	Phase 1 - M11 - Old Connaught
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TRIAL PIT NO.

TP/SA05

SHEET

Sheet 1 of 1

LOGGED BY DM

CO-ORDINATES	724,930.59 E 719,736.66 N
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DATE STARTED

24/03/2026

DATE COMPLETED

24/03/2026

CLIENT	Castlethorne Construction
ENGINEER	Atkins

GROUND LEVEL (m) 23.18

EXCAVATION METHOD

TB280FR

[illegible]

Groundwater Conditions

Dry

Stability

Good

General Remarks	
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Location CAT scanned prior to excavation.

 TRIAL PIT RECORD REPORT NUMBER 26458										
CONTRACT Phase 1 - M11 - Old Connaught						TRIAL PIT NO. TP/SA06 SHEET Sheet 1 of 1				
LOGGED BY DM		CO-ORDINATES 725,100.45 E 719,754.40 N		DATE STARTED 25/03/2026 DATE COMPLETED 25/03/2026						
CLIENT ENGINEER Castlethorne Construction Atkins		GROUND LEVEL (m) 20.87		EXCAVATION METHOD TB280FR						
	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL: Soft brown sandy CLAY.									
	MADE GROUND: Soft to firm brown slightly sandy slightly gravelly CLAY. Gravel is subangular fine to medium of limestone.		0.20	20.67						
	MADE GROUND: Soft to firm brown sandy gravelly CLAY with occasional red brick and concrete fragments.		0.50	20.37		260183	B	0.50		
	Medium dense grey/brown sandy GRAVEL.		0.70	20.17						
1.0										
	End of Trial Pit at 1.60m		1.60	19.27		260184	B	1.60		
2.0										
3.0										
4.0										

Groundwater Conditions

Seepage at 1.40m

Stability

Poor Stability - Sidewall collapse from 1.0m

General Remarks

Location CAT scanned prior to excavation.

		TRIAL PIT RECORD						REPORT NUMBER 26458	
CONTRACT Phase 1 - M11 - Old Connaught							TRIAL PIT NO. TP/SA07		
LOGGED BY DM							CO-ORDINATES 725,111.95 E 719,530.93 N		
CLIENT ENGINEER Castlethorne Construction Atkins							GROUND LEVEL (m) 19.16		
							SHEET Sheet 1 of 1		
							DATE STARTED 25/03/2026 DATE COMPLETED 25/03/2026		
							EXCAVATION METHOD TB280FR		

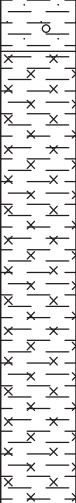
	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL: Soft brown sandy CLAY.									
	Soft to firm brown slightly sandy slightly gravelly CLAY. Gravel is subangular fine to medium of limestone.		0.20	18.96						
1.0	Firm to stiff greyish brown slightly sandy gravelly CLAY with a low cobble content. Gravel is subangular fine to medium of limestone. Cobbles are subangular of limestone.		1.00	18.16		260182	B	1.00		
	End of Trial Pit at 1.40m		1.40	17.76						
2.0										
3.0										
4.0										

Groundwater Conditions
 Seepage at 1.40m

Stability
 Slight instability - Sidewall collapse from 1.10m

General Remarks
 Location CAT scanned prior to excavation.

		TRIAL PIT RECORD						REPORT NUMBER 26458	
CONTRACT Phase 1 - M11 - Old Connaught							TRIAL PIT NO. TP01		
LOGGED BY O.A				CO-ORDINATES 724,951.97 E 719,714.15 N			SHEET Sheet 1 of 1		
CLIENT ENGINEER Castlethorne Construction Atkins				GROUND LEVEL (m) 21.93			DATE STARTED 20/03/2026 DATE COMPLETED 20/03/2026		
							EXCAVATION METHOD TB280FR		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL: Soft grey very sandy CLAY with rootlets					ENV01	Env	0.00-1.00		
	Soft brown silty sandy CLAY		0.40	21.53						
	Soft to firm greyish brown sandy gravelly CLAY. Gravel is subangular fine to medium of limestone.		0.60	21.33		258592	B	0.50-0.50	9	
1.0									11	
	Firm grey silty CLAY		1.20	20.73		258593	B	1.00-1.00		
						258594	B	1.50-1.50		
2.0					 (Rapid)					
3.0										
	End of Trial Pit at 3.20m		3.20	18.73						
4.0										

Groundwater Conditions Rapid at 2.0m										
Stability Poor Stability - Sidewall collapse from 2.00m										
General Remarks Location CAT scanned prior to excavation. Pit ended due to sidewall instability and water ingress.										



TRIAL PIT RECORD

REPORT NUMBER

26458

CONTRACT Phase 1 - M11 - Old Connaught

TRIAL PIT NO. TP02

SHEET Sheet 1 of 1

LOGGED BY O.A

CO-ORDINATES 724,975.07 E
719,615.58 N

DATE STARTED 20/03/2026

DATE COMPLETED 20/03/2026

CLIENT Castlethorne Construction
ENGINEER Atkins

GROUND LEVEL (m) 21.48

EXCAVATION METHOD TB280FR

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL: Soft grey very sandy CLAY with rootlets					ENV01	Env	0.00-1.00		
	Soft to firm brown sandy gravelly CLAY. Gravel is subangular fine to medium of limestone.		0.60	20.88		258589	B	0.80-1.00	19 18 16	
1.0	Firm to stiff grey sandy gravelly CLAY. Gravel is subangular fine to medium of limestone.		1.30	20.18		258590	B	1.50-1.50		
2.0										
	Grey very silty fine SAND		2.60	18.88		258591	B	2.70-2.70		
3.0	End of Trial Pit at 2.90m		2.90	18.58						
4.0										

Groundwater Conditions

Seepage at 1.90m

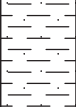
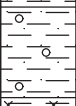
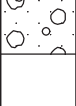
Stability

Poor Stability - Sidewall collapse from 1.80m

General Remarks

Location CAT scanned prior to excavation. Pit ended due to sidewall instability.

		TRIAL PIT RECORD						REPORT NUMBER 26458	
CONTRACT Phase 1 - M11 - Old Connaught							TRIAL PIT NO. TP04 SHEET Sheet 1 of 1		
LOGGED BY O.A		CO-ORDINATES 725,014.08 E 719,583.19 N		DATE STARTED 20/03/2026 DATE COMPLETED 20/03/2026					
CLIENT ENGINEER Castlethorne Construction Atkins		GROUND LEVEL (m) 20.56		EXCAVATION METHOD TB280FR					

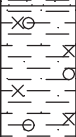
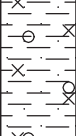
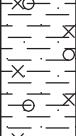
	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL: Soft dark grey slightly sandy CLAY (planted arable field)					ENV01	Env	0.00-1.00		
	Soft to firm brown sandy CLAY		0.50	20.06					20 25 28	
1.0						258585	B	1.00-1.00		
	Soft to firm dark grey very sandy gravelly CLAY. Gravel is subangular fine to medium of limestone.		1.30	19.26	 (Rapid)	258586	B	1.50-1.50		
	Firm grey silty CLAY		1.70	18.86		258587	B	1.80-1.80		
2.0										
	Grey gravelly fine to coarse SAND with a low cobble content. Gravel is subangular to subrounded fine to medium of limestone.		2.20	18.36		258588	B	2.30-2.30		
	End of Trial Pit at 2.50m		2.50	18.06						
3.0										
4.0										

Groundwater Conditions
 Rapid ingress at 1.50m

Stability
 Poor Stability - Sidewall collapse from 1.50m

General Remarks
 Location CAT scanned prior to excavation. Pit ended due to sidewall instability and water ingress.

		TRIAL PIT RECORD						REPORT NUMBER 26458	
CONTRACT Phase 1 - M11 - Old Connaught							TRIAL PIT NO. TP05		
LOGGED BY O.A							SHEET Sheet 1 of 1		
CO-ORDINATES 725,028.90 E 719,727.04 N							DATE STARTED 20/03/2026 DATE COMPLETED 20/03/2026		
GROUND LEVEL (m) 20.73							EXCAVATION METHOD TB280FR		
CLIENT ENGINEER Castlethorne Construction Atkins									

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TPOSOIL: Soft grey very sandy CLAY					ENV01	Env	0.00-1.00		
	Soft to firm brown silty sandy gravelly CLAY. Gravel is subangular fine to medium of limestone.		0.40	20.33		258595	B	0.60-0.60	15 18 19	
1.0	Firm grey silty sandy gravelly CLAY. Gravel is subangular fine to medium of limestone.		1.20	19.53		258596	B	1.50-1.50		
2.0					↓ (Moderate)					
	End of Trial Pit at 2.80m		2.80	17.93						
3.0										
4.0										

Groundwater Conditions Flow at 2.20m										
Stability Poor Stability - Sidewall collapse from 2.00m										
General Remarks Location CAT scanned prior to excavation. Pit ended due to sidewall instability and water ingress.										

TP01 – 1 of 2



TP01 – 2 of 2



TP02 – 1 of 2



TP02 – 2 of 2



TP03 – 1 of 2



TP03 – 2 of 2



TP04 – 1 of 2



TP04 – 2 of 2



TP05 – 1 of 2



TP05 – 2 of 2



Appendix 4

Window Sample Records



WINDOW SAMPLE RECORD

REPORT NUMBER

26458

CONTRACT Phase 1 - M11 - Old Connaught

PROBE NO. WS01

SHEET Sheet 1 of 1

CO-ORDINATES	724,973.71 E 719,703.63 N
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GROUND LEVEL (mOD)	21.35
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DATE DRILLED	23/03/2026
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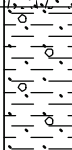
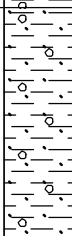
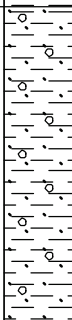
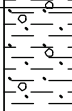
DATE LOGGED	23/03/2026
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CLIENT	Castlethorne Construction
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ENGINEER Atkins

SAMPLED BY	IGSL
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LOGGED BY HM

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Vane Test (kPa)	Hand Penetrometer (kPa)
0.0	TOPSOIL		0.20	21.15						
	Soft to firm brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to subangular fine to coarse.									
1.0	Soft to firm brown sandy slightly gravelly CLAY. Gravel is subrounded to subangular fine to coarse.		0.90	20.45		0.00-1.00	70			
2.0	Soft brown sandy slightly gravelly CLAY. Gravel is subrounded to subangular fine to coarse		2.00	19.35		1.00-2.00	100			
3.0						2.00-3.00	70			
	Soft to firm brown sandy slightly gravelly CLAY. Gravel is subrounded to subangular fine to coarse.		3.50	17.85						
4.0	Final Depth 4.00m		4.00	17.35		3.00-4.00	80			
5.0										

General Remarks

Installations



WINDOW SAMPLE RECORD

REPORT NUMBER

26458

CONTRACT Phase 1 - M11 - Old Connaught

PROBE NO. **WS02**

SHEET Sheet 1 of 1

CO-ORDINATES 724,948.87 E
719,539.85 N

DATE DRILLED 23/03/2026

DATE LOGGED 23/03/2026

GROUND LEVEL (mOD) 22.30

CLIENT Castlethorne Construction
ENGINEER Atkins

SAMPLED BY IGSL
LOGGED BY HM

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TOPSOIL		0.20	22.10						
	Soft to firm brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to subangular fine to coarse.		0.50	21.80						
	Firm to stiff brown sandy gravelly CLAY. Gravel is subrounded to subangular fine to coarse					0.00-1.00	90			
1.0						1.00-2.00	60			
2.0	Final Depth 2.00m		2.00	20.30						
3.0										
4.0										
5.0										

General Remarks

Installations

Project Number: 26458

Phase 1 Old Connaught – Window Sample Photographs



WS01

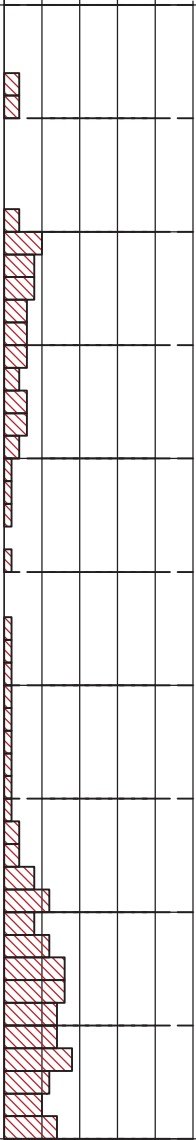


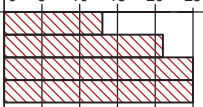
WS02



Appendix 5

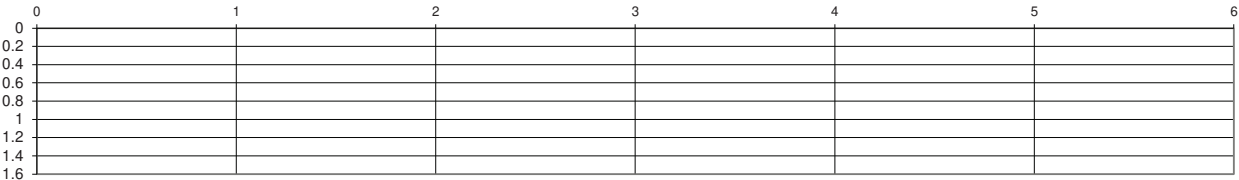
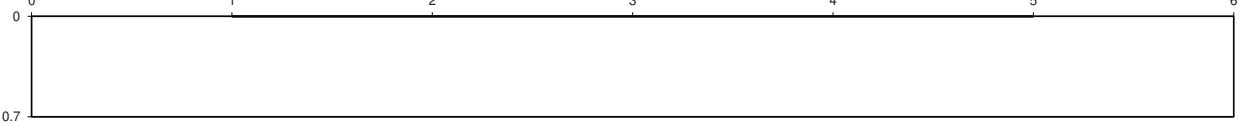
Dynamic Probe Records

		DYNAMIC PROBE RECORD					REPORT NUMBER 26458	
CONTRACT Phase 1 - M11 - Old Connaught						PROBE NO. DP01		
CO-ORDINATES 724,973.71 E 719,703.63 N						SHEET Sheet 1 of 2		
GROUND LEVEL (mOD) 21.35						DATE DRILLED 23/03/2024		
CLIENT Castlethorne Construction						DATE LOGGED 23/03/2024		
ENGINEER Atkins						PROBE TYPE DPH		
HAMMER MASS (kg) 64								
INCREMENT SIZE (mm) 100								
FALL HEIGHT (mm) 750								
Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water	Depth (m)	Probe Readings (Blows/Increment)	Graphic Probe Record
0.0			0.00			0.00	0	
						0.10	0	
						0.20	0	
						0.30	2	
						0.40	2	
						0.50	0	
						0.60	0	
						0.70	0	
						0.80	0	
						0.90	2	
						1.00	5	
						1.10	4	
						1.20	4	
						1.30	3	
						1.40	3	
						1.50	3	
						1.60	2	
						1.70	3	
						1.80	3	
						1.90	2	
						2.00	1	
						2.10	1	
						2.20	1	
						2.30	0	
						2.40	1	
						2.50	0	
						2.60	0	
						2.70	1	
						2.80	1	
						2.90	1	
						3.00	1	
						3.10	1	
						3.20	1	
						3.30	1	
						3.40	1	
						3.50	1	
						3.60	2	
						3.70	2	
						3.80	4	
						3.90	6	
						4.00	4	
						4.10	6	
						4.20	8	
						4.30	8	
						4.40	7	
						4.50	7	
						4.60	9	
						4.70	6	
						4.80	5	
						4.90	7	
GROUNDWATER OBSERVATIONS								
REMARKS								

		DYNAMIC PROBE RECORD					REPORT NUMBER 26458					
CONTRACT Phase 1 - M11 - Old Connaught						PROBE NO. DP01						
CO-ORDINATES 724,973.71 E 719,703.63 N						SHEET Sheet 2 of 2						
GROUND LEVEL (mOD) 21.35						DATE DRILLED 23/03/2024						
CLIENT Castlethorne Construction						DATE LOGGED 23/03/2024						
ENGINEER Atkins						PROBE TYPE DPH						
HAMMER MASS (kg) 64												
INCREMENT SIZE (mm) 100												
FALL HEIGHT (mm) 750												
Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water	Depth (m)	Probe Readings (Blows/Increment)	Graphic Probe Record				
5.0	. (continued)					5.00	13					
	End of Probe at 5.40 m			15.95		5.10	21					
						5.20	25					
						5.30	25					
6.0												
7.0												
8.0												
9.0												
GROUNDWATER OBSERVATIONS												
REMARKS												

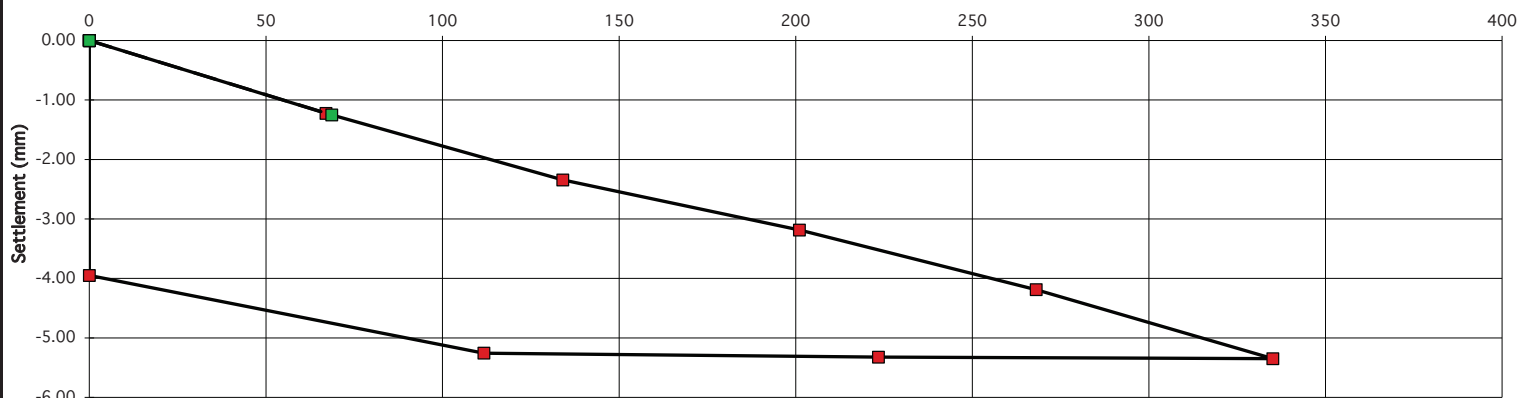
Appendix 6

Inspection (Slit) Trench Record

Report No. 26458		SLIT TRENCH RECORD			FACING DIRECTION: W  E			
Project: Phase 1 - M11 Old Connaught Engineer: Mountclare Crew: DM		Survey Easting (m) Northing (m) Elevation (mOD)			Slit Trench No. ST01 Sheet 1 of 1			
		Start of Trench 725059.147 719433.573 20.77 End of Trench 725051.064 719433.287 21.036			Date Commenced 23/03/2026 Date Completed 23/03/2026			
Ground Conditions								
From (m)	To (m)	Soil Description				Photograph		
0.00	0.10	TOPSOIL						
0.1	1.2	MADE GROUND: Firm brown slightly gravelly sandy CLAY with rare plastic and red brick fragments (<2%). Gravel is subangular fine to medium.						
1.2	1.3	Medium dense dark grey sandy GRAVEL. Gravel is subangular fine to medium.						
1.3	1.6	Firm brown slightly gravelly sandy CLAY. Gravel is subangular fine to medium.						
Trench Dimensions		Location		Excavation Quantities				
LHS of Trench (m)	0.0			Surface	Length (m)	Material		
RHS of Trench (m)	6.0			Road				
Trench Depth (m)	1.6			Path (LHS)				
Trench Width (m)	0.7			Path (RHS)				
				Grass Verge (LHS)				
				Grass Verge (RHS)				
Facing Direction	South	SAMPLES		Other				
Facing Features	Stream	sample 1: 1.4-1.5 (260166)		Total Length	6.0			
Groundwater	Seepage at 1.20m			Zero Metres Taken As:				
X-Section 								
Plan 								
	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)		
Service A								
Service B								
Service C								
Service D								
Service E								
Service F								
Service G								
Service H								
Service I								
Service J								
Service K								
Service L								
Service M								

Appendix 7

Plate Bearing Test Records

PLATE TEST REPORT SHEET (F3.1)			Applied Pressure/Settlement Curve	
Reference No.	R178005		Description of soil under test (natural soil, placed fill, sub-base)	 
Contract	Phase 1 - M11 - Old Connaught			
Test No.	PBT01 - Load		Brown slightly gravelly sandy CLAY	
Location	E:724963.445 N:719733.331 L:21.874			
Depth	0.5 BGL		Sample Ref No. _____ Depth _____ m bgl	
Client	Castlethorne			
Plate Diameter:	300 mm			
Test Method	BS 1377: Part 9: 1990 Test4 - Incremental Loading Test			
Technician	DM			
Authorised by	<i>HA Ryan</i>			
Date	20/03/2026			
Settlement (mm) Pressure / Settlement  Pressure (kN/m2)				
Gradient at 1.25 mm settlement intersection = 55 Modulus of subgrade reaction = 25 MPa/m Correction factor applied = 0.46 as per HD 25-26/10 Equivalent CBR value in accordance with NRA HD25-26/10 2.6 %				

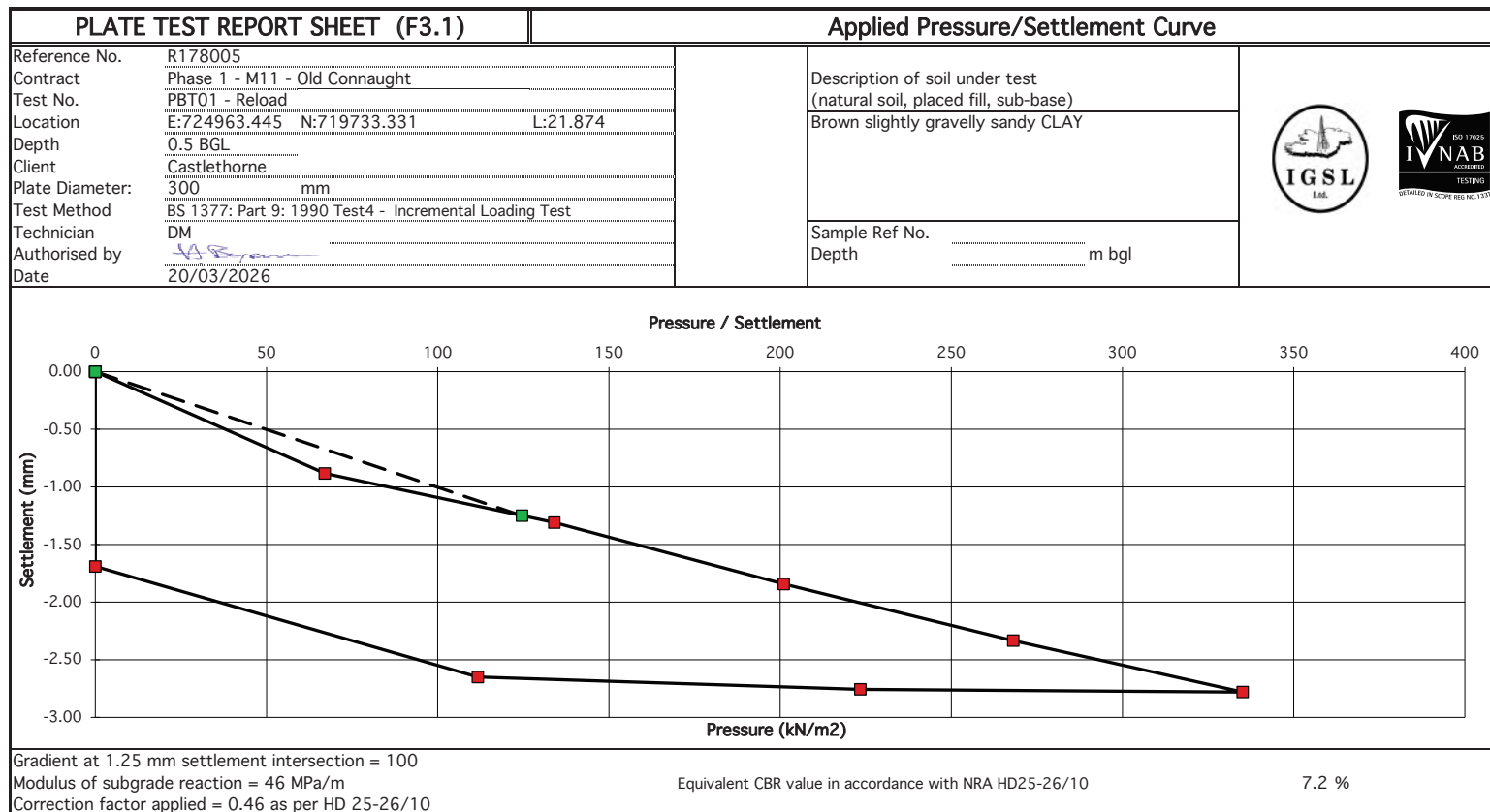
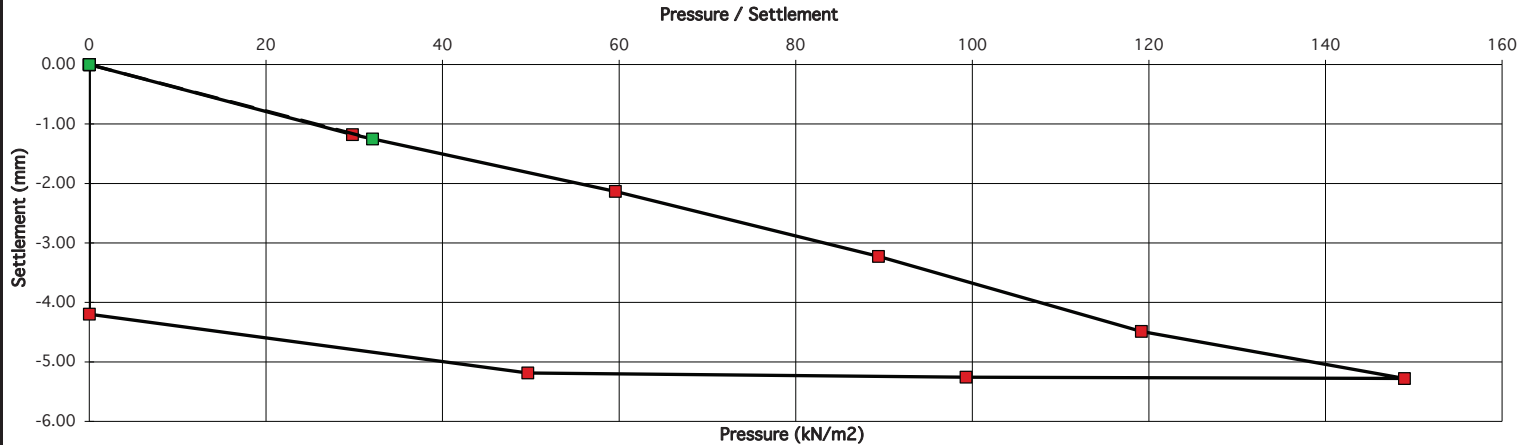


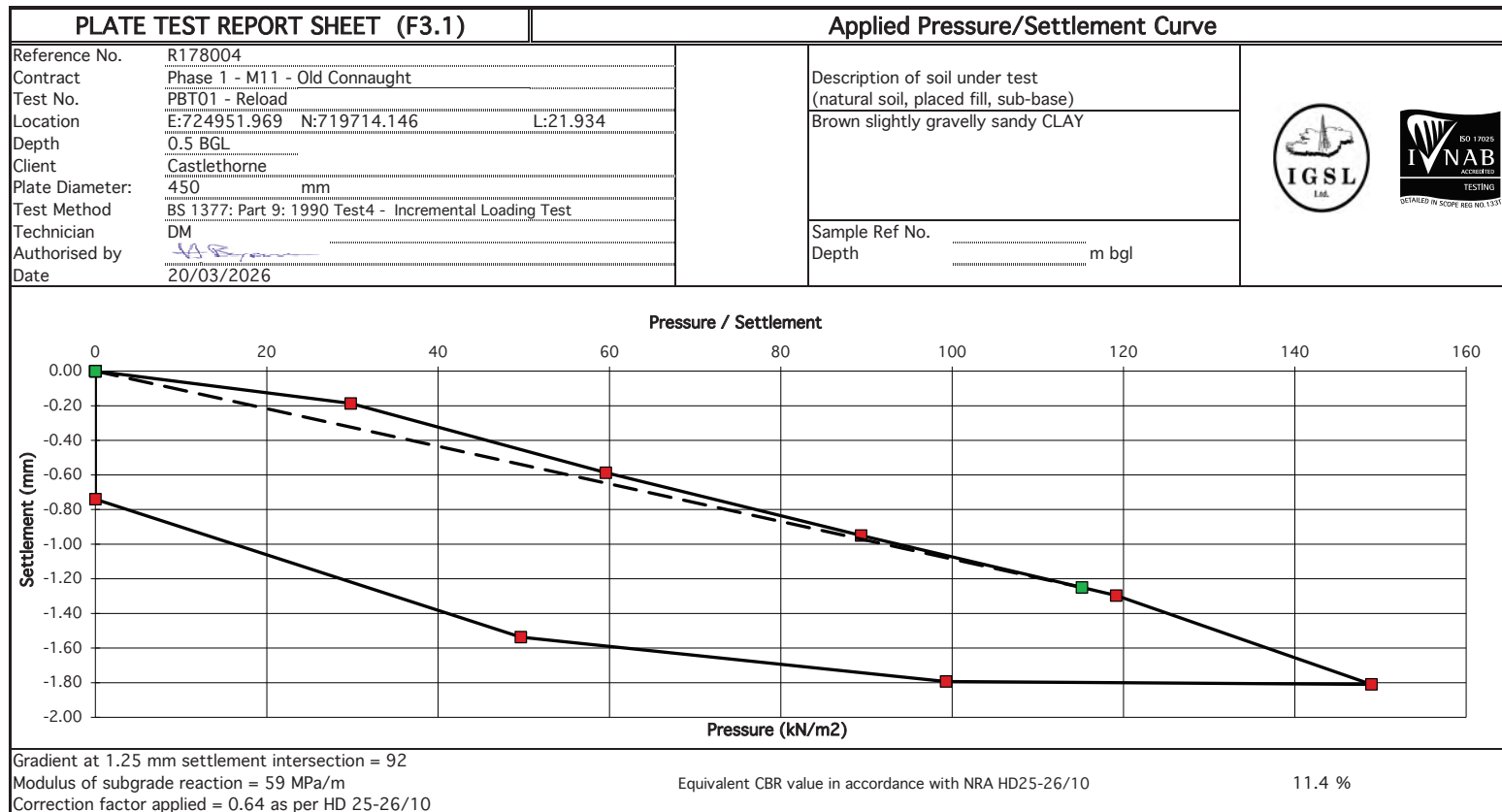
PLATE TEST REPORT SHEET (F3.1)		Applied Pressure/Settlement Curve	
Reference No.	R178004	Description of soil under test (natural soil, placed fill, sub-base) Brown slightly gravelly sandy CLAY	 
Contract	Phase 1 - M11 - Old Connaught		
Test No.	PBT01 - Load		
Location	E:724951.969 N:719714.146 L:21.934		
Depth	0.5 BGL		
Client	Castlethorne	Sample Ref No.	
Plate Diameter:	450 mm	Depth	
Test Method	BS 1377: Part 9: 1990 Test4 - Incremental Loading Test		
Technician	DM		
Authorised by	<i>HA Ryan</i>		
Date	20/03/2026		

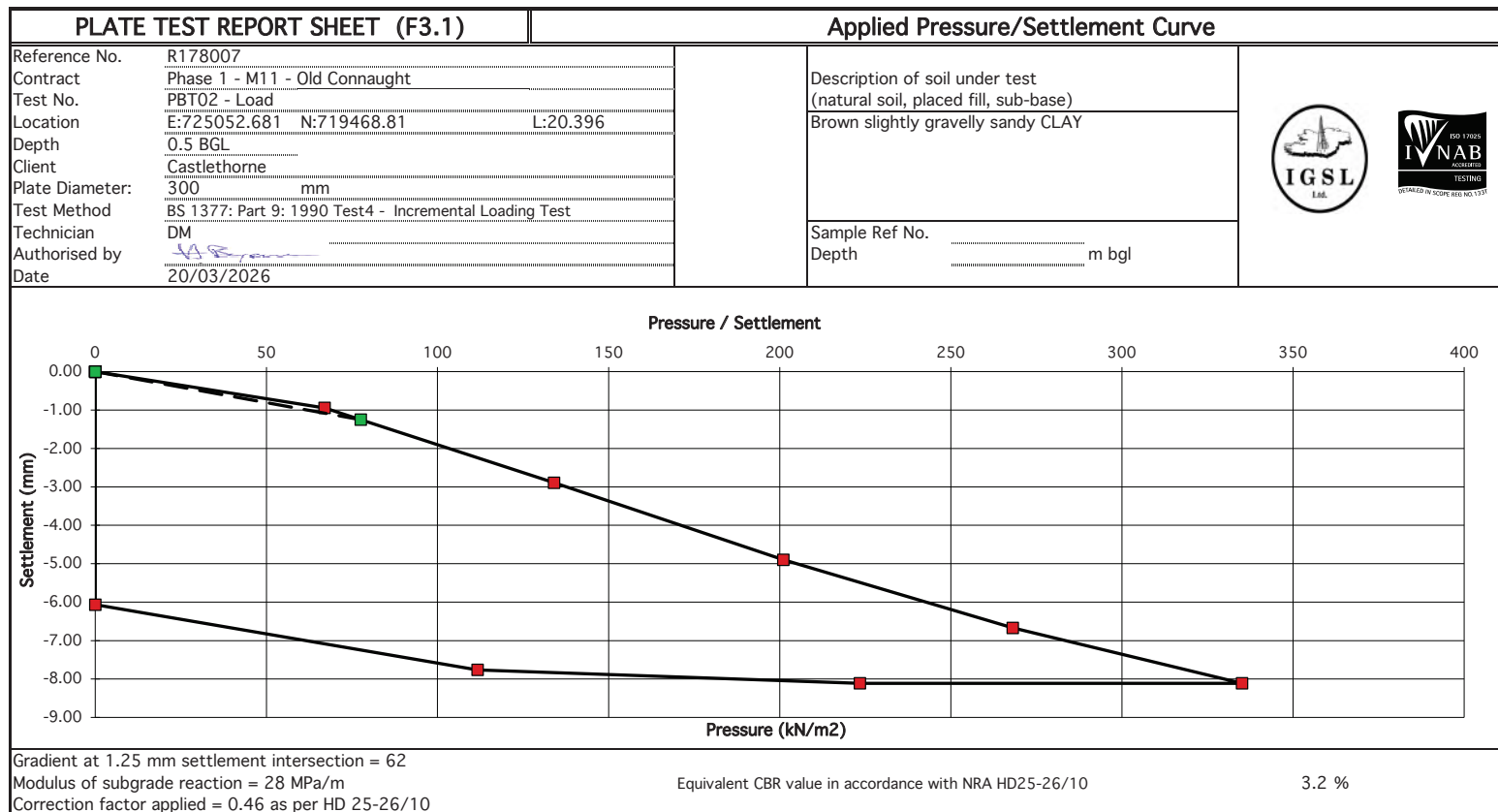
Pressure / Settlement

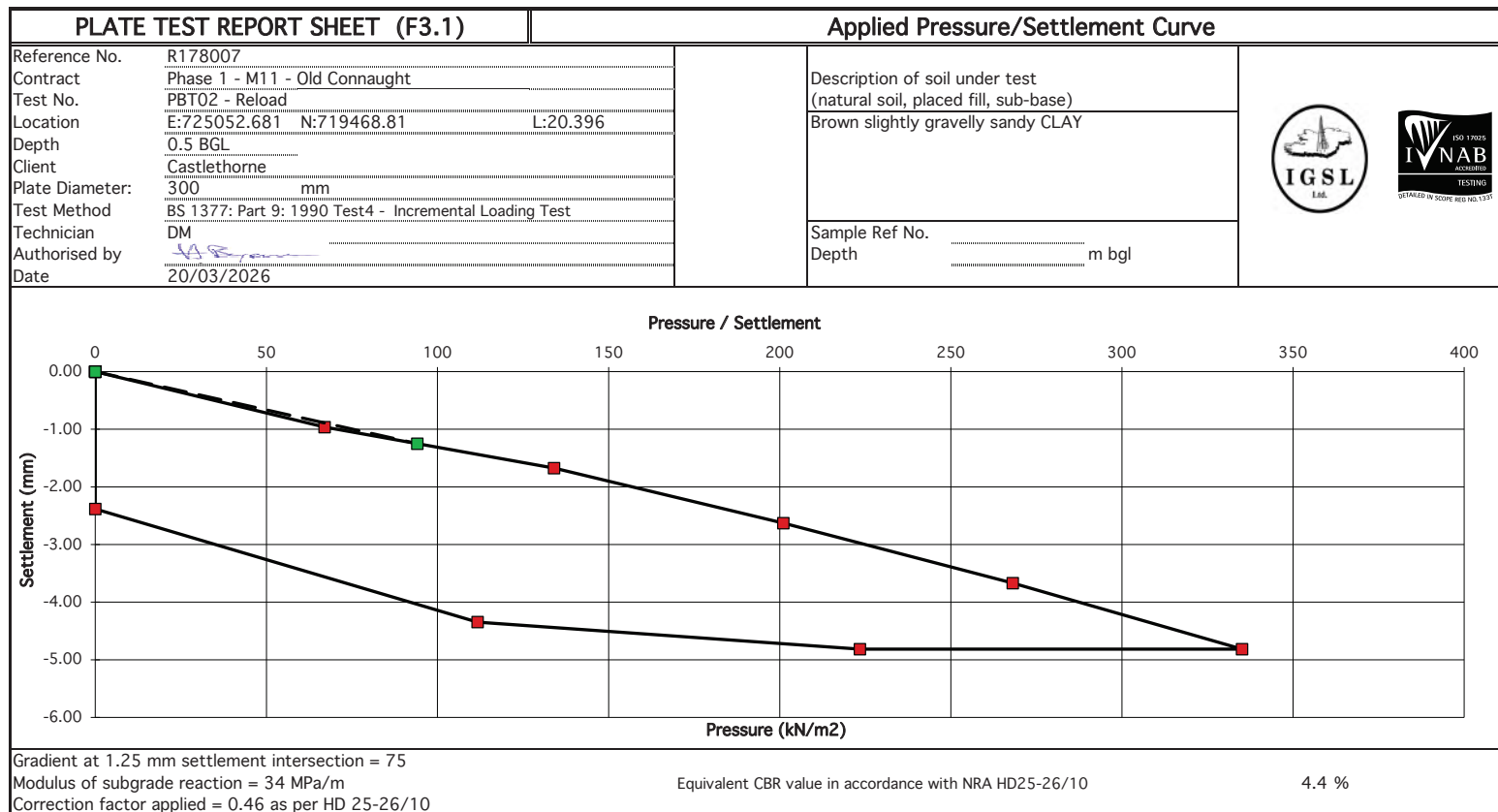


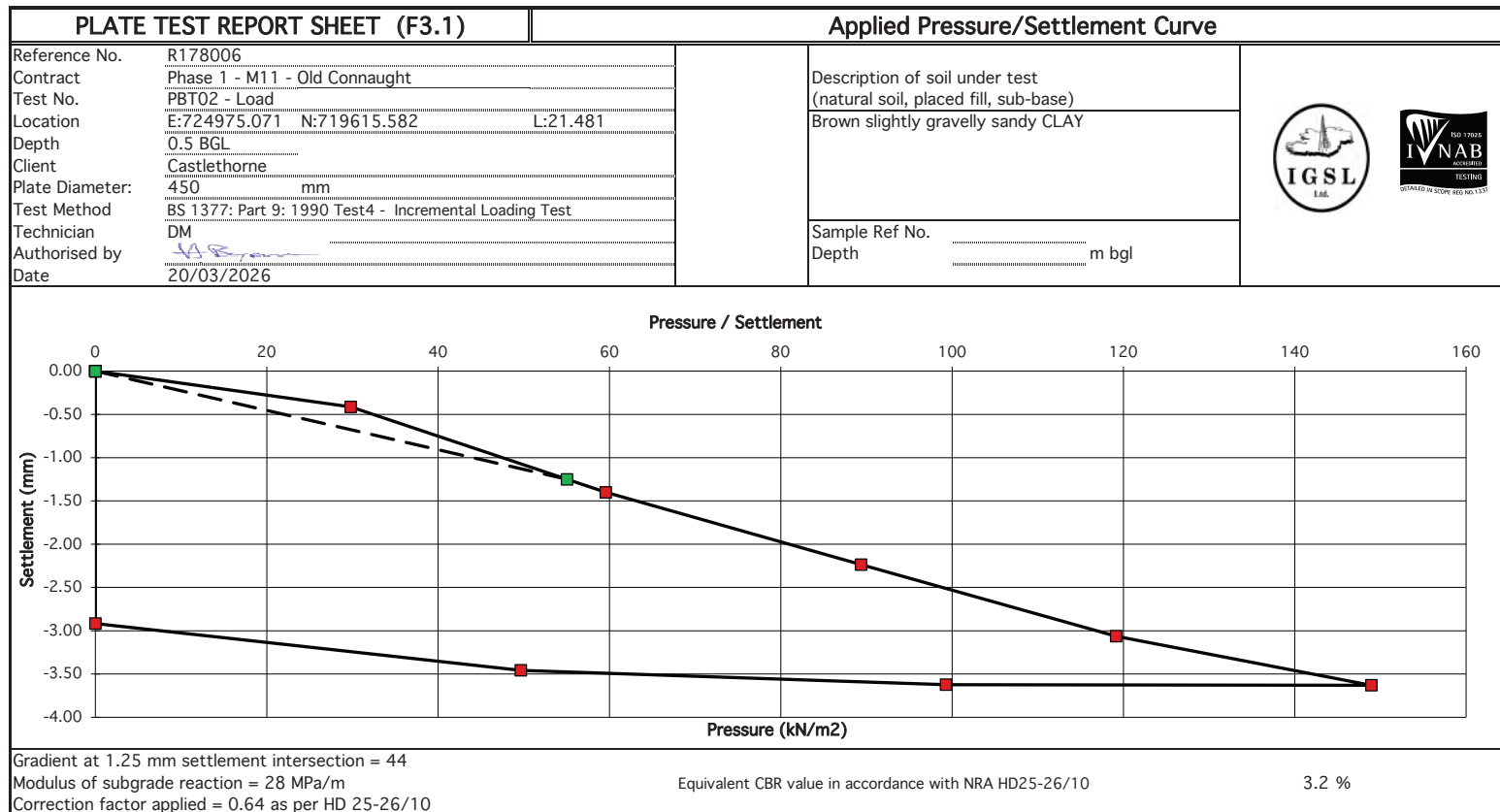
Pressure (kN/m ²)	Settlement (mm) - Series 1	Settlement (mm) - Series 2
0	0.00	-4.25
30	-1.25	-4.75
60	-2.25	-5.25
90	-3.25	-5.25
120	-4.25	-5.25
150	-5.25	-5.25

Gradient at 1.25 mm settlement intersection = 26	Equivalent CBR value in accordance with NRA HD25-26/10	1.2 %
Modulus of subgrade reaction = 16 MPa/m		
Correction factor applied = 0.64 as per HD 25-26/10		









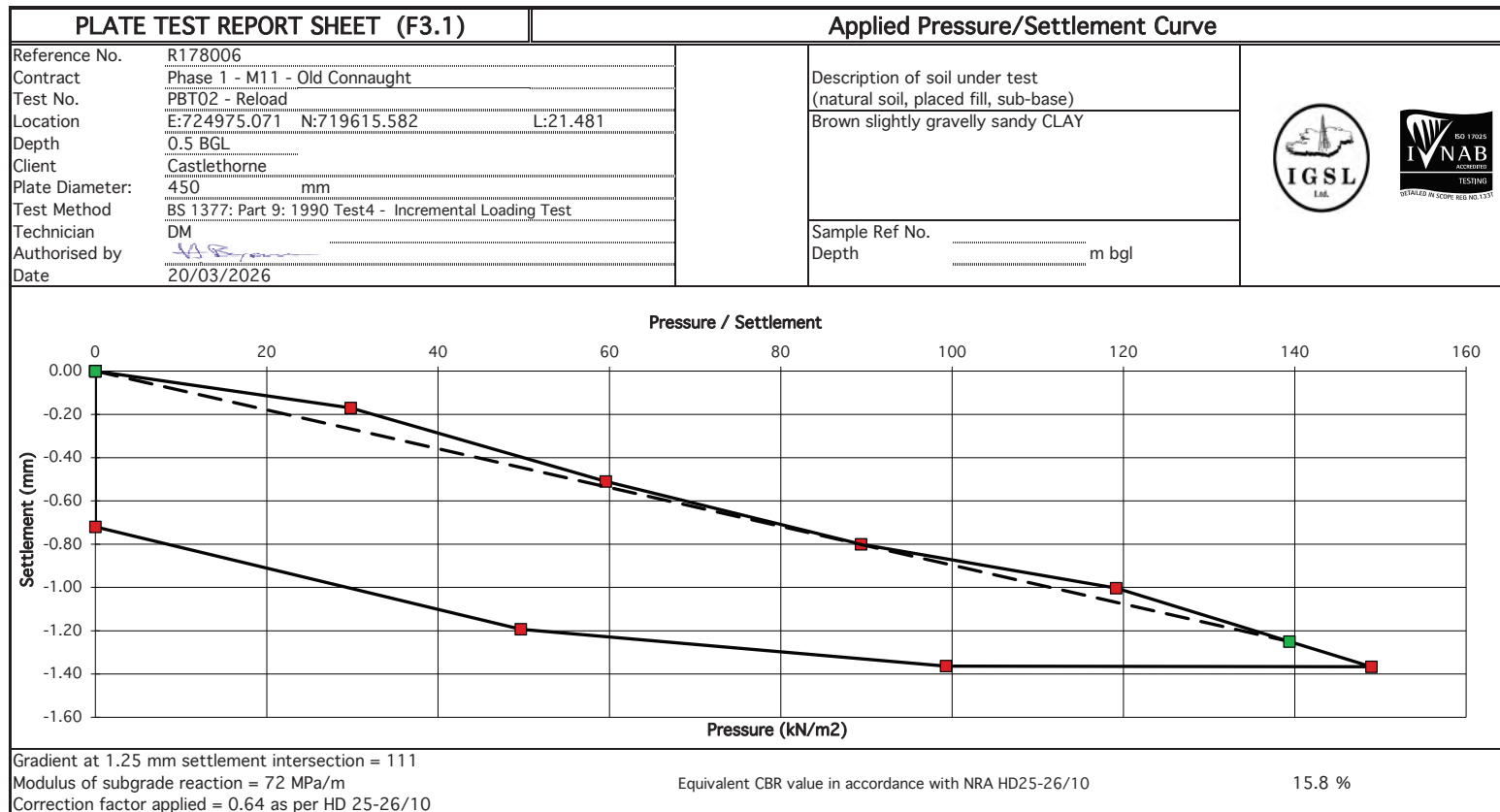


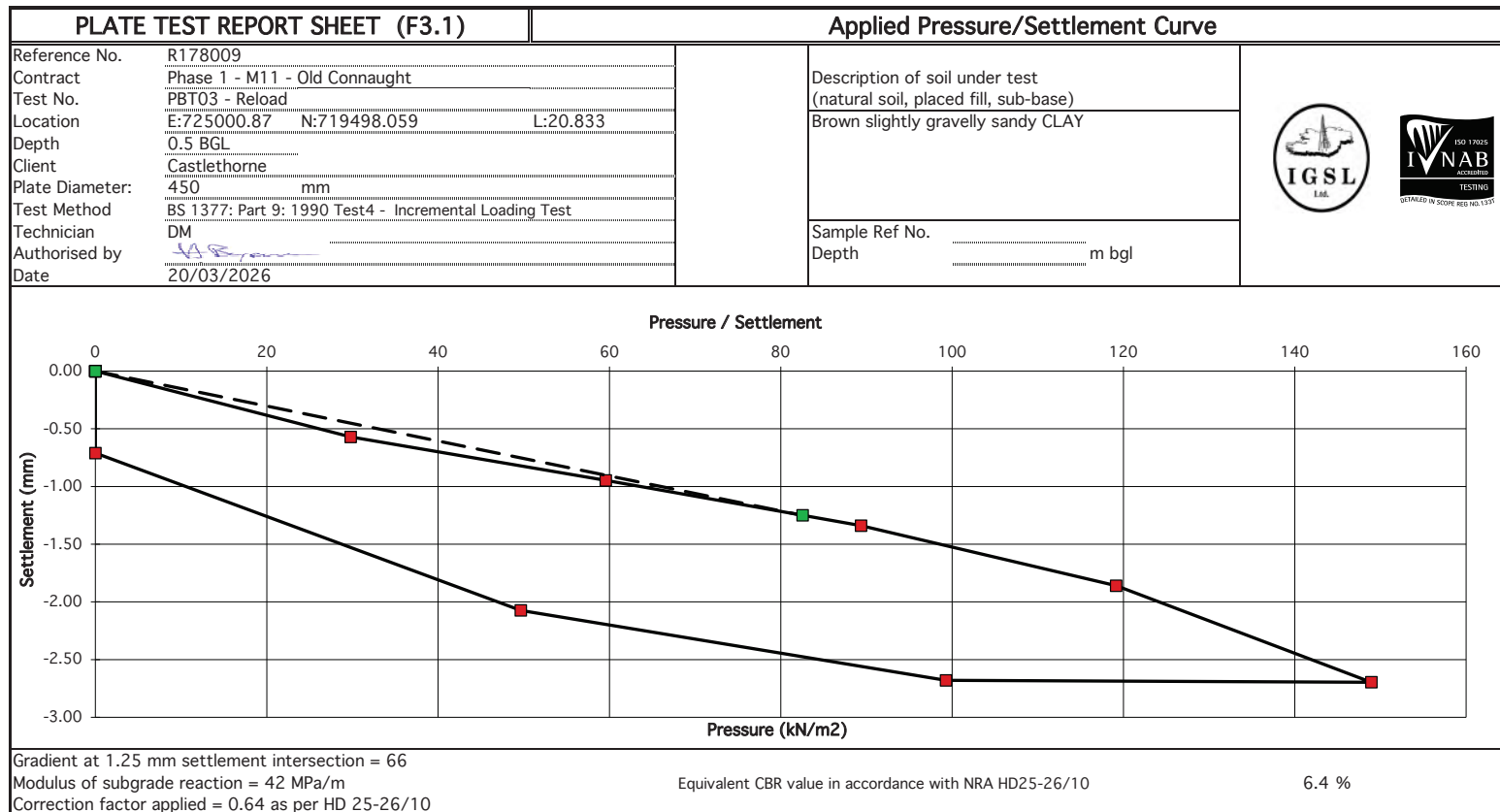
PLATE TEST REPORT SHEET (F3.1)			Applied Pressure/Settlement Curve	
Reference No.	R178008		Description of soil under test (natural soil, placed fill, sub-base)	
Contract	Phase 1 - M11 - Old Connaught			
Test No.	PBT03 - Load		Brown slightly gravelly sandy CLAY	
Location	E:725000.87 N:719498.059 L:20.833			
Depth	0.5 BGL		Sample Ref No. _____	
Client	Castlethorne			
Plate Diameter:	450 mm		Depth _____ m bgl	
Test Method	BS 1377: Part 9: 1990 Test4 - Incremental Loading Test			
Technician	DM			
Authorised by	<i>HA Ryan</i>			
Date	20/03/2026			

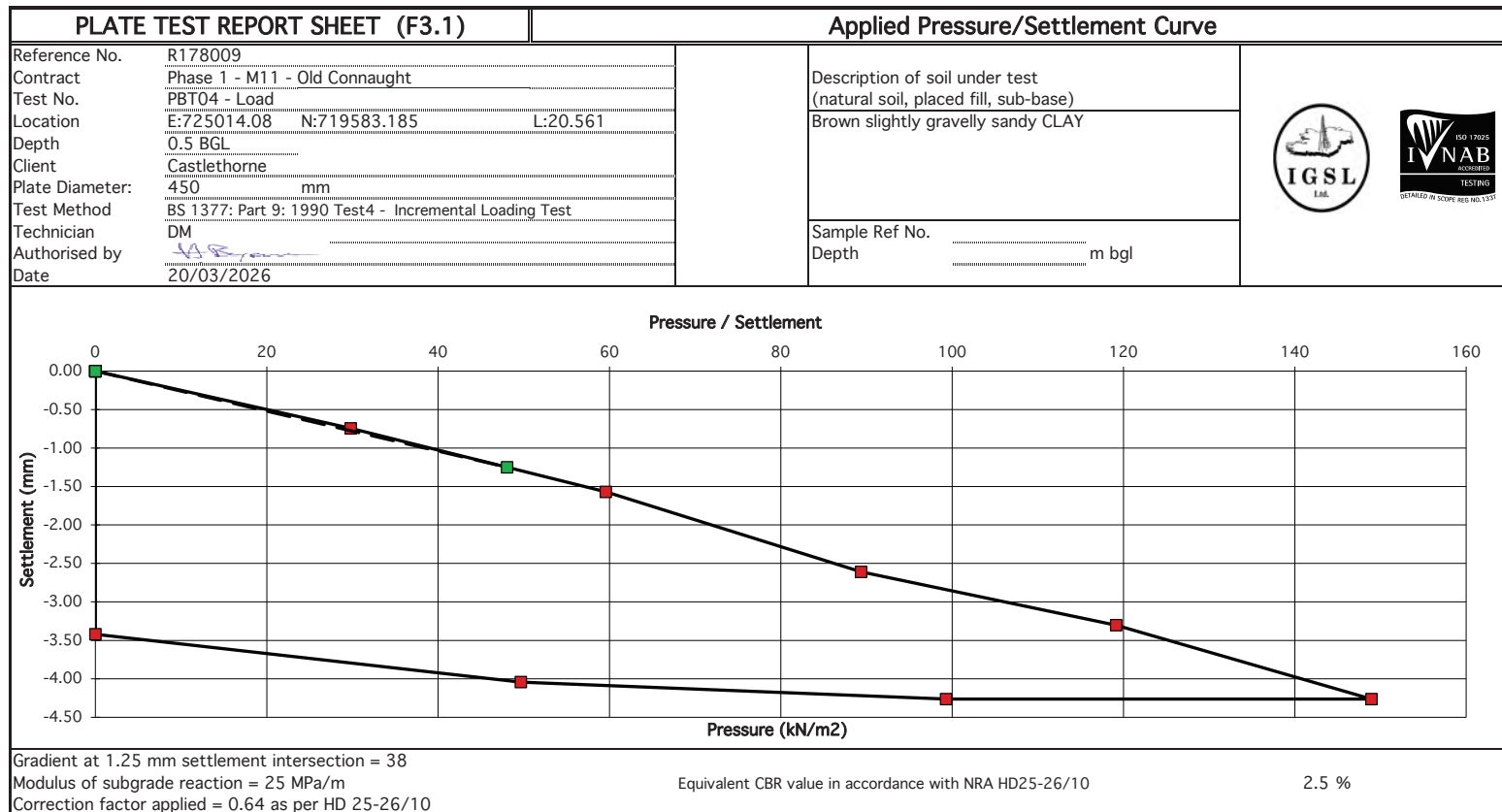
Pressure / Settlement

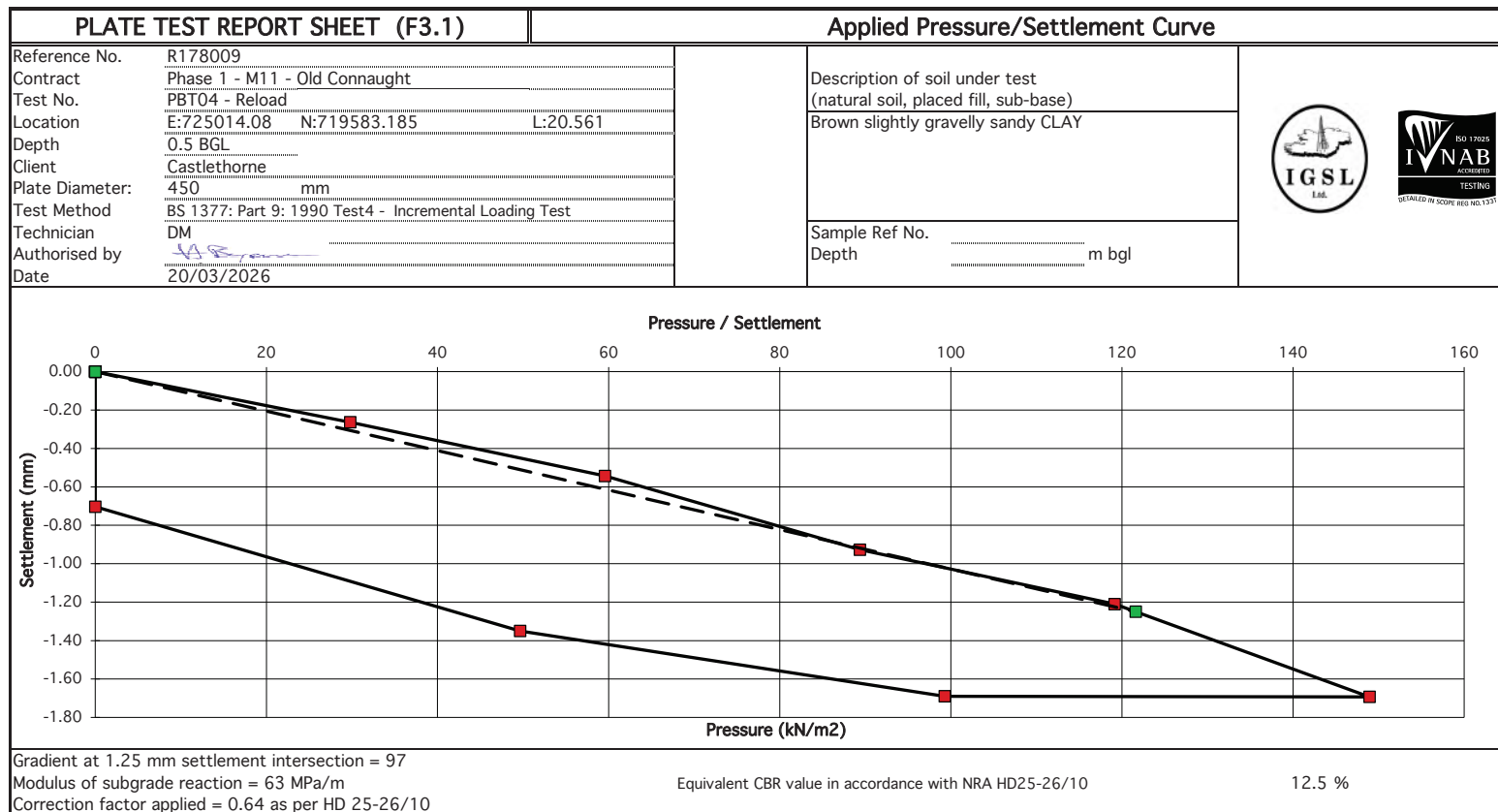
Pressure (kN/m ²)	Settlement (mm) - Series 1	Settlement (mm) - Series 2
0	0.00	-6.50
30	-1.25	-7.50
60	-2.50	-8.00
90	-3.75	-8.50
120	-5.00	-8.80
150	-6.25	-9.00

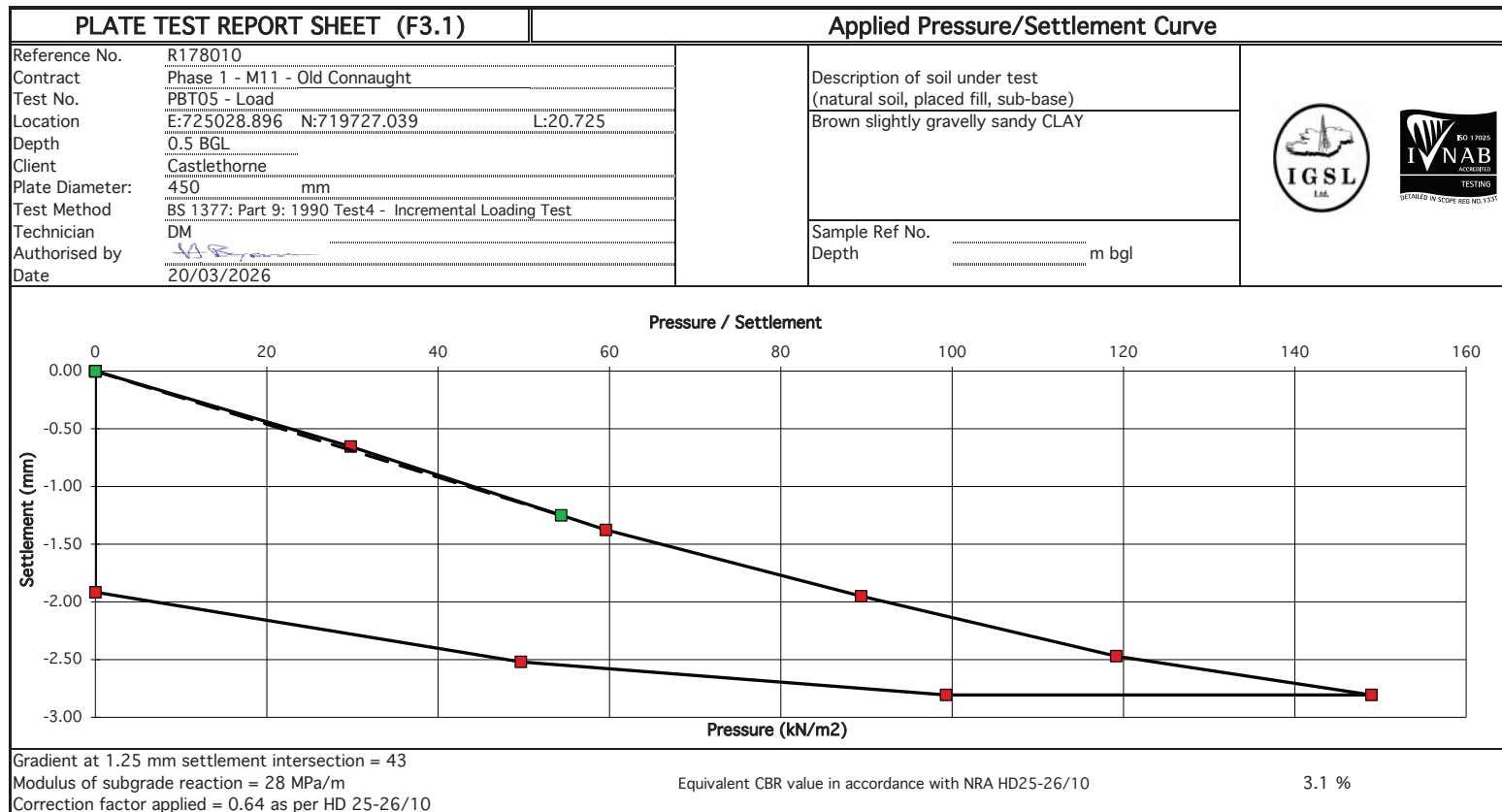
Gradient at 1.25 mm settlement intersection = 25
 Modulus of subgrade reaction = 16 MPa/m
 Correction factor applied = 0.64 as per HD 25-26/10

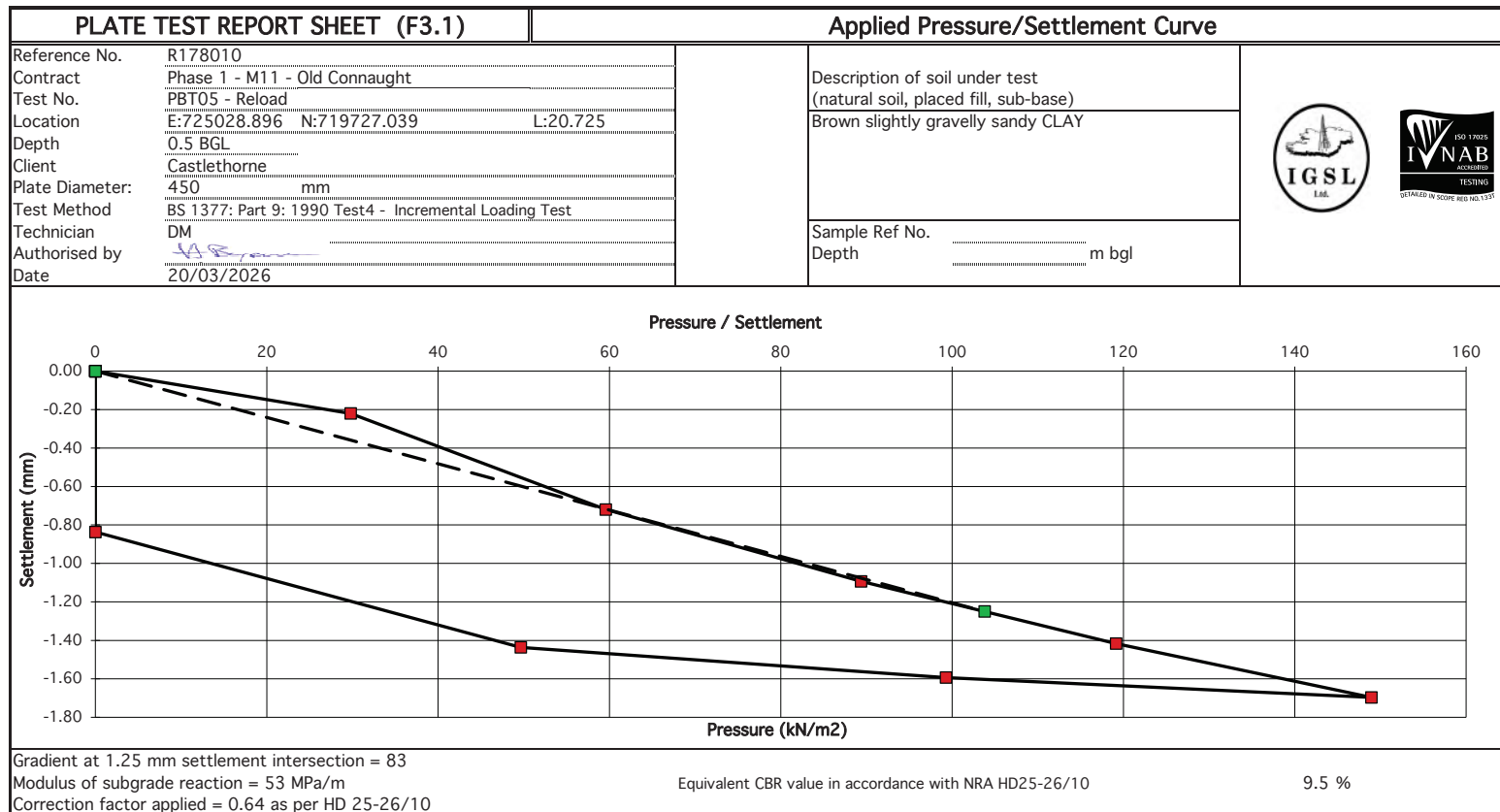
Equivalent CBR value in accordance with NRA HD25-26/10 1.2 %











Appendix 8

Infiltration Test Records

Soakaway Design f -value from field tests

IGSL

Contract: Old Connaught, Phase 1
Test No. SA01
Engineer NP
Date: 25/03/2026

Contract No. 26458

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	DRY
0.20	1.10	Soft to firm brown slightly sandy slightly gravelly CLAY.	

Notes: For all trial pit information, see TP/SA01.

Field Data

Depth to Water (m)	Elapsed Time (min)
0.580	0.00
0.580	1.00
0.580	2.00
0.580	3.00
0.590	4.00
0.590	5.00
0.590	6.00
0.600	7.00
0.600	8.00
0.600	9.00
0.610	10.00
0.610	12.00
0.610	14.00
0.610	16.00
0.610	18.00
0.620	20.00
0.630	25.00
0.630	30.00
0.630	40.00
0.630	50.00
0.640	60.00

Field Test

Depth of Pit (D)	1.10	m
Width of Pit (B)	0.40	m
Length of Pit (L)	1.50	m

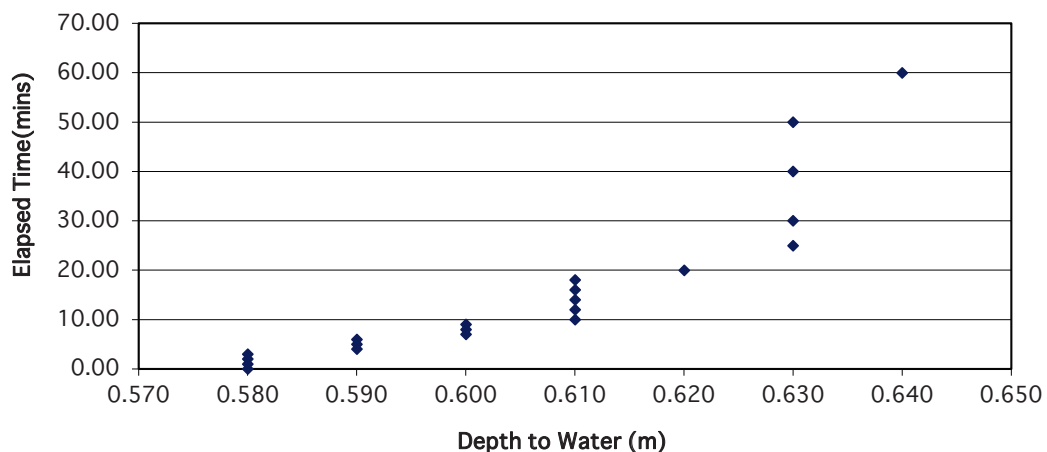
Initial depth to Water =	0.58	m
Final depth to water =	0.64	m
Elapsed time (mins)=	60.00	

Top of permeable soil		m
Base of permeable soil		m

Base area=	0.6	m ²
*Av. side area of permeable stratum over test period	1.862	m ²
Total Exposed area =	2.462	m ²

Infiltration rate (f) = Volume of water used/unit exposed area / unit time |
f= 0.00024 m/min or 4.06174E-06 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests

IGSL

Contract: Old Connaught, Phase 1
Test No. SA02 (Stage 1)
Engineer DM
Date: 23/03/2026

Contract No. 26458

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	DRY
0.20	1.00	Firm brown slightly silty sandy gravelly CLAY.	
1.00	1.40	Firm greyish brown slightly sandy gravelly CLAY with cobbles.	

Notes: For all trial pit information, see TP/SA02.

Field Data

Depth to Water (m)	Elapsed Time (min)
0.650	0.00
0.670	1.00
0.700	2.00
0.720	3.00
0.740	4.00
0.760	5.00
0.770	6.00
0.780	7.00
0.790	8.00
0.800	9.00
0.810	10.00
0.840	12.00
0.860	14.00
0.870	16.00
0.880	18.00
0.900	20.00
0.930	25.00
0.960	30.00
0.990	40.00
1.030	50.00
1.070	60.00

Field Test

Depth of Pit (D)	1.40	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.50	m

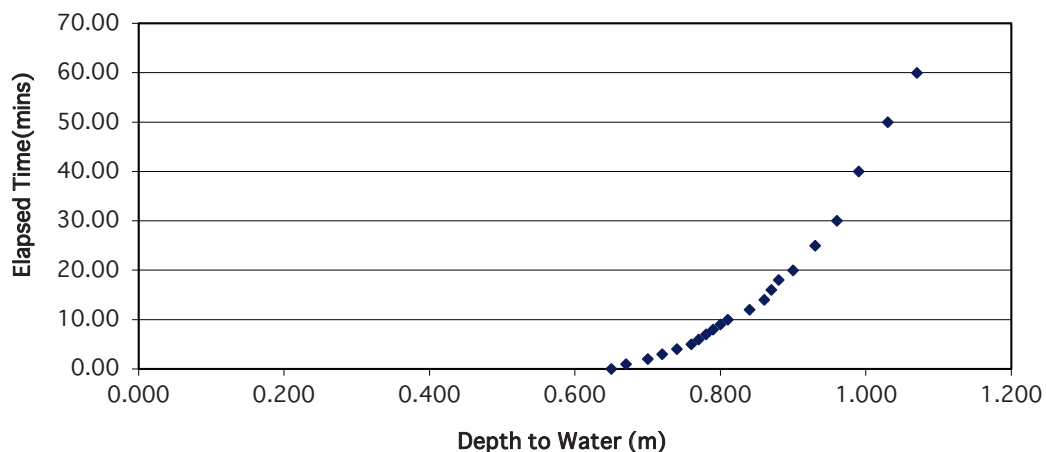
Initial depth to Water =	0.65	m
Final depth to water =	1.07	m
Elapsed time (mins)=	60.00	

Top of permeable soil		m
Base of permeable soil		m

Base area=	0.75	m ²
*Av. side area of permeable stratum over test period	2.16	m ²
Total Exposed area =	2.91	m ²

Infiltration rate (f) = Volume of water used/unit exposed area / unit time |
f= 0.0018 m/min or 3.00687E-05 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests

IGSL

Contract: Old Connaught, Phase 1
Test No. SA02 (Stage 2)
Engineer DM
Date: 23/03/2026

Contract No. 26458

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	DRY
0.20	1.00	Firm brown slightly silty sandy gravelly CLAY.	
1.00	1.40	Firm greyish brown slightly sandy gravelly CLAY with cobbles.	

Notes: For all trial pit information, see TP/SA02.

Field Data

Depth to Water (m)	Elapsed Time (min)
0.630	0.00
0.640	1.00
0.650	2.00
0.660	3.00
0.670	4.00
0.680	5.00
0.690	6.00
0.700	7.00
0.710	8.00
0.720	9.00
0.730	10.00
0.740	12.00
0.750	14.00
0.750	16.00
0.760	18.00
0.770	20.00
0.780	25.00
0.790	30.00
0.810	40.00
0.820	50.00
0.830	60.00

Field Test

Depth of Pit (D)	1.40	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.50	m

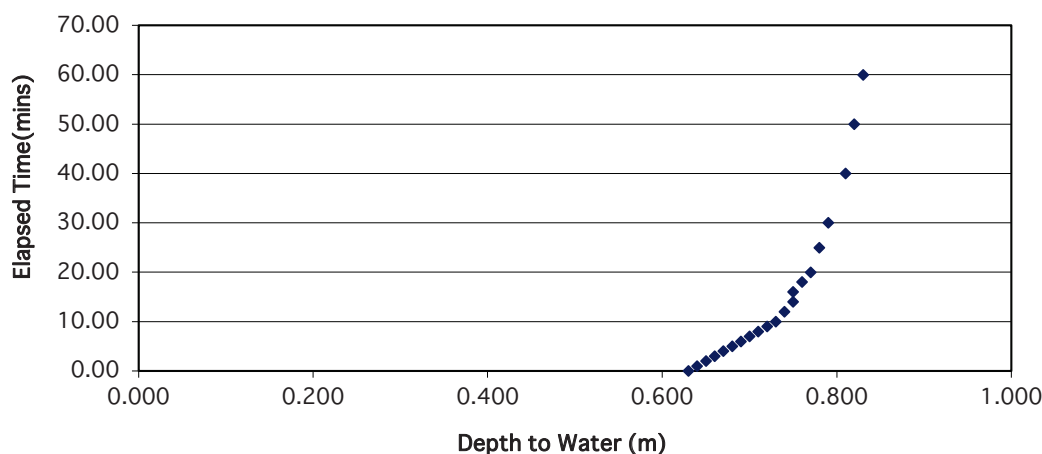
Initial depth to Water =	0.63	m
Final depth to water =	0.830	m
Elapsed time (mins)=	60.00	

Top of permeable soil		m
Base of permeable soil		m

Base area=	0.75	m ²
*Av. side area of permeable stratum over test period	2.68	m ²
Total Exposed area =	3.43	m ²

Infiltration rate (f) = Volume of water used/unit exposed area / unit time |
f= 0.00073 m/min or 1.21477E-05 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design

f -value from field tests

IGSL

Contract: Old Connaught, Phase 1

Contract No. 26458

Test No. SA03 (Stage 1)

Engineer DM

Date: 23/03/2026

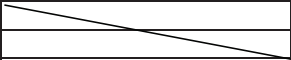
Summary of ground conditions			
from	to	Description	Ground water
0.00	0.20	TOPSOIL	DRY
0.20	1.10	Firm brown sandy gravelly CLAY with cobbles.	
1.10	1.40	Medium dense grey slightly clayey sandy GRAVEL with cobbles.	

Notes: For all trial pit information, see TP/SA03.

Field Data

Depth to Water (m)	Elapsed Time (min)
0.850	0.00
0.870	1.00
0.900	2.00
0.920	3.00
0.940	4.00
0.950	5.00
0.970	6.00
0.980	7.00
0.990	8.00
1.000	9.00
1.020	10.00
1.030	12.00
1.050	14.00
1.070	16.00
1.100	18.00
1.120	20.00
1.150	25.00
1.190	30.00
1.200	40.00
1.210	50.00
1.220	60.00

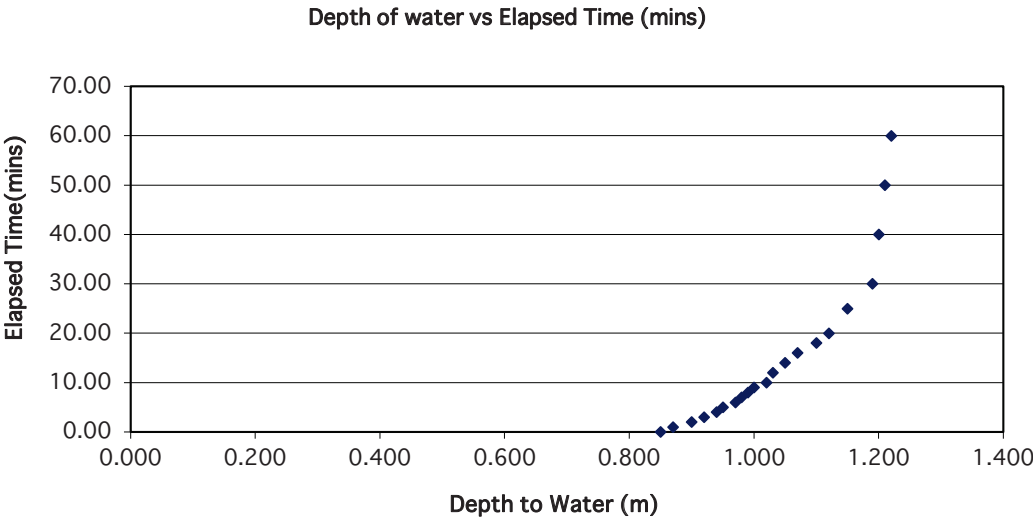
Field Test

Depth of Pit (D)	1.40	m
Width of Pit (B)	0.60	m
Length of Pit (L)	1.70	m
Initial depth to Water =	0.85	m
Final depth to water =	1.220	m
Elapsed time (mins)=	60.00	
Top of permeable soil		
Base of permeable soil		

Base area=	1.02	m2
*Av. side area of permeable stratum over test period	1.679	m2
Total Exposed area =	2.699	m2

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

f= 0.00233 m/min or 3.88415E-05 m/sec



Soakaway Design

f -value from field tests

IGSL

Contract: Old Connaught, Phase 1

Contract No. 26458

Test No. SA03 (Stage 2)

Engineer DM

Date: 23/03/2026

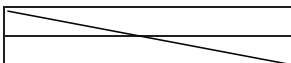
Summary of ground conditions			
from	to	Description	Ground water
0.00	0.20	TOPSOIL	DRY
0.20	1.10	Firm brown sandy gravelly CLAY with cobbles.	
1.10	1.40	Medium dense grey slightly clayey sandy GRAVEL with cobbles.	

Notes: For all trial pit information, see TP/SA03.

Field Data

Depth to Water (m)	Elapsed Time (min)
0.800	0.00
0.800	1.00
0.810	2.00
0.820	3.00
0.830	4.00
0.850	5.00
0.860	6.00
0.870	7.00
0.890	8.00
0.900	9.00
0.910	10.00
0.920	12.00
0.940	14.00
0.950	16.00
0.960	18.00
0.970	20.00
0.990	25.00
1.000	30.00
1.020	40.00
1.040	50.00
1.060	60.00

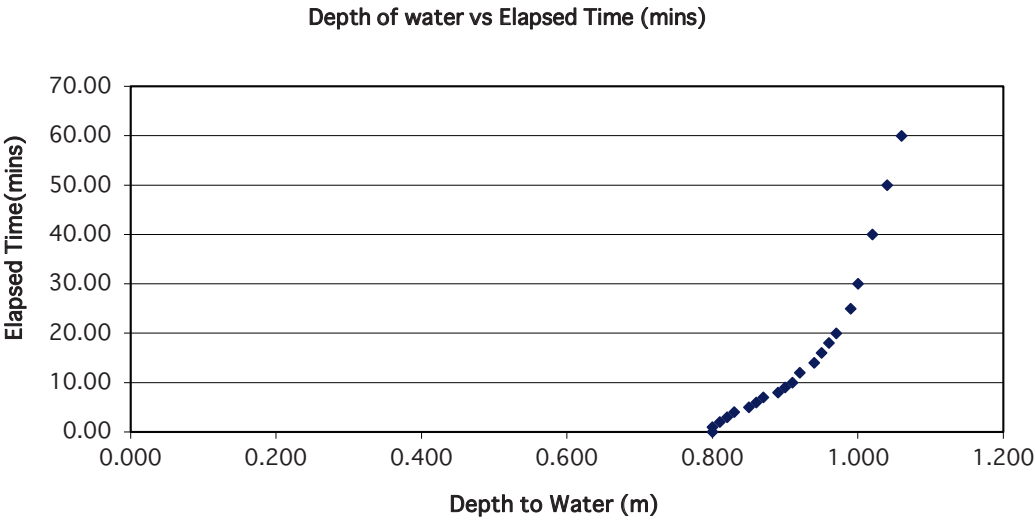
Field Test

Depth of Pit (D)	1.40	m
Width of Pit (B)	0.60	m
Length of Pit (L)	1.70	m
Initial depth to Water =	0.80	m
Final depth to water =	1.060	m
Elapsed time (mins)=	60.00	
Top of permeable soil		
Base of permeable soil		m

Base area=	1.02	m2
*Av. side area of permeable stratum over test period	2.162	m2
Total Exposed area =	3.182	m2

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

f= 0.00139 m/min or 2.31511E-05 m/sec



Soakaway Design f -value from field tests

IGSL

Contract: Old Connaught, Phase 1
Test No. SA04
Engineer DM
Date: 23/03/2026

Contract No. 26458

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	DRY
0.20	0.60	Firm brown slightly gravelly sandy CLAY.	
0.60	2.00	Stiff light brown mottled light grey slightly sandy slightly gravelly CLAY.	

Notes: For all trial pit information, see TP/SA04.

Field Data

Depth to Water (m)	Elapsed Time (min)
0.780	0.00
0.780	1.00
0.780	2.00
0.780	3.00
0.780	4.00
0.780	5.00
0.780	6.00
0.780	7.00
0.780	8.00
0.780	9.00
0.780	10.00
0.780	12.00
0.780	14.00
0.780	16.00
0.780	18.00
0.780	20.00
0.780	25.00
0.780	30.00
0.780	40.00
0.780	50.00
0.780	60.00

Field Test

Depth of Pit (D)	2.00	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.50	m

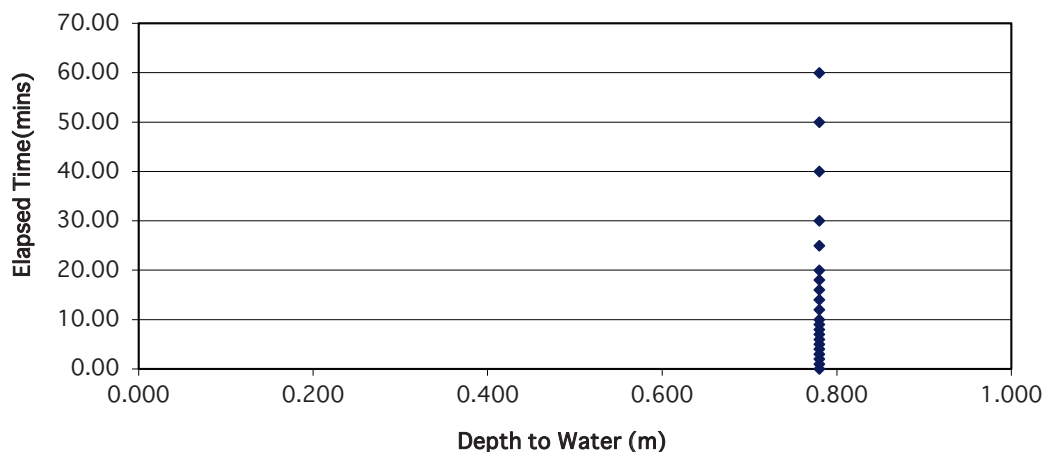
Initial depth to Water =	0.78	m
Final depth to water =	0.78	m
Elapsed time (mins)=	60.00	

Top of permeable soil		m
Base of permeable soil		m

Base area=	0.75	m ²
*Av. side area of permeable stratum over test period	4.88	m ²
Total Exposed area =	5.63	m ²

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

IGSL

Contract: Old Connaught, Phase 1

Contract No. 26458

Test No. SA05

Engineer DM

Date: 23/03/2026

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	DRY
0.20	0.90	Firm brown slightly gravelly sandy CLAY.	
0.90	1.80	Firm to stiff greyish brown slightly sandy slightly gravelly silty CLAY.	

Notes: For all trial pit information, see TP/SA05.

Field Data

Field Test

Depth to Water (m)	Elapsed Time (min)
0.600	0.00
0.600	1.00
0.600	2.00
0.600	3.00
0.600	4.00
0.600	5.00
0.600	6.00
0.600	7.00
0.600	8.00
0.600	9.00
0.600	10.00
0.600	12.00
0.600	14.00
0.610	16.00
0.610	18.00
0.610	20.00
0.610	25.00
0.610	30.00
0.610	40.00
0.610	50.00
0.610	60.00

Depth of Pit (D)	1.80	m
Width of Pit (B)	0.60	m
Length of Pit (L)	1.70	m

Initial depth to Water =	0.60	m
Final depth to water =	0.61	m
Elapsed time (mins)=	60.00	

Top of permeable soil		m
Base of permeable soil		m

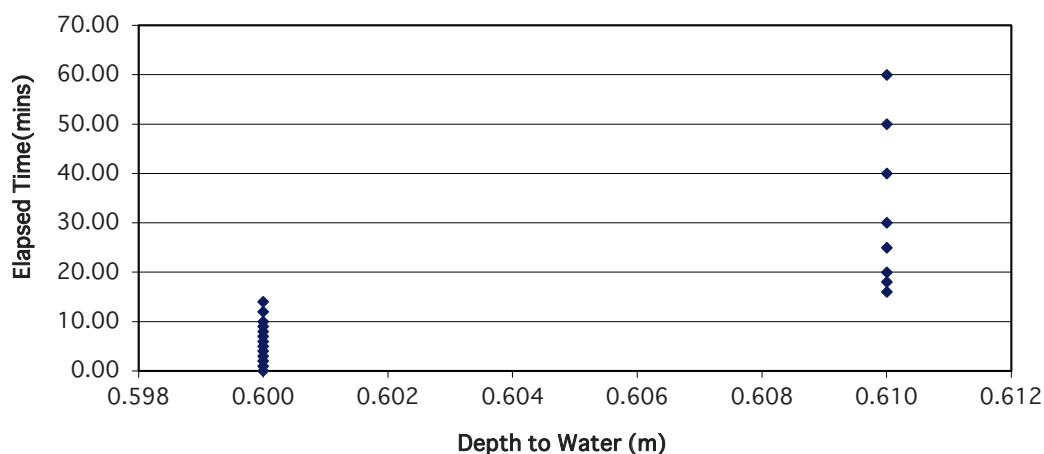
Base area=	1.02	m ²
*Av. side area of permeable stratum over test period	5.497	m ²
Total Exposed area =	6.517	m ²

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

f= 0 m/min or 0 m/sec

No fall in water after 16 mins

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests

IGSL

Contract: Old Connaught, Phase 1
Test No. SA06 (Stage 1)
Engineer NP
Date: 25/03/2026

Contract No. 26458

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	DRY
0.20	0.50	MADE GROUND: Soft to firm brown slightly sandy slightly gravelly CLAY.	
0.50	0.70	MADE GROUND	
0.70	1.60	Medium dense grey/brown sandy GRAVEL.	

Notes: For all trial pit information, see TP/SA06. Pit was dry after 16min.

Field Data

Field Test

Depth to Water (m)	Elapsed Time (min)
0.840	0.00
0.860	1.00
0.890	2.00
0.940	3.00
0.960	4.00
0.980	5.00
1.000	6.00
1.020	7.00
1.040	8.00
1.060	9.00
1.080	10.00
1.100	12.00
1.150	14.00
1.200	16.00

Depth of Pit (D)	1.60	m
Width of Pit (B)	0.40	m
Length of Pit (L)	1.50	m

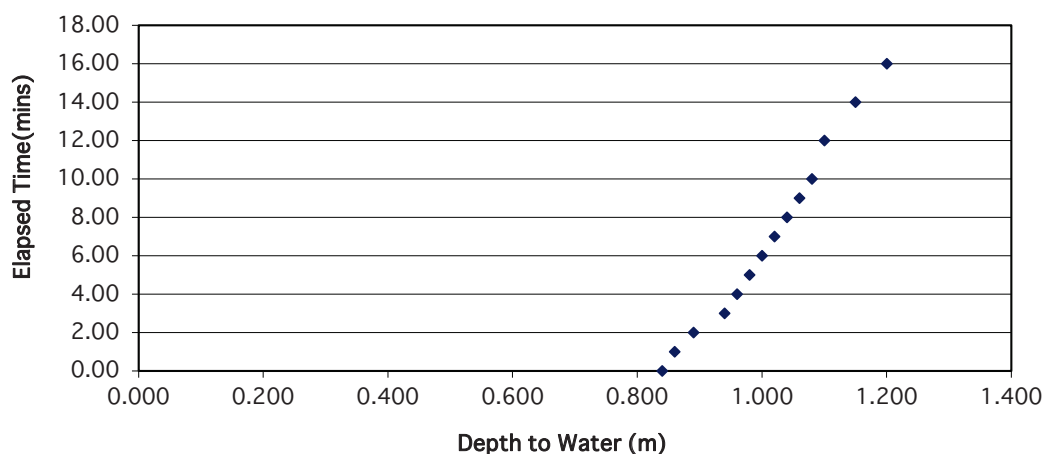
Initial depth to Water =	0.84	m
Final depth to water =	1.20	m
Elapsed time (mins)=	16.00	

Top of permeable soil		m
Base of permeable soil		m

Base area=	0.6	m ²
*Av. side area of permeable stratum over test period	2.204	m ²
Total Exposed area =	2.804	m ²

Infiltration rate (f) = Volume of water used/unit exposed area / unit time |
f= 0.00481 m/min or 8.02425E-05 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests

IGSL

Contract: Old Connaught, Phase 1
Test No. SA06 (Stage 2)
Engineer NP
Date: 25/03/2026

Contract No. 26458

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	DRY
0.20	0.50	MADE GROUND: Soft to firm brown slightly sandy slightly gravelly CLAY.	
0.50	0.70	MADE GROUND	
0.70	1.60	Medium dense grey/brown sandy GRAVEL.	

Notes: For all trial pit information, see TP/SA06. Pit was dry after 25min.

Field Data

Field Test

Depth to Water (m)	Elapsed Time (min)
1.050	0.00
1.050	1.00
1.080	2.00
1.100	3.00
1.110	4.00
1.130	5.00
1.150	6.00
1.160	7.00
1.190	8.00
1.200	9.00
1.220	10.00
1.240	12.00
1.260	14.00
1.280	16.00
1.300	18.00
1.320	20.00
1.400	25.00

Depth of Pit (D)	1.40	m
Width of Pit (B)	0.40	m
Length of Pit (L)	1.50	m

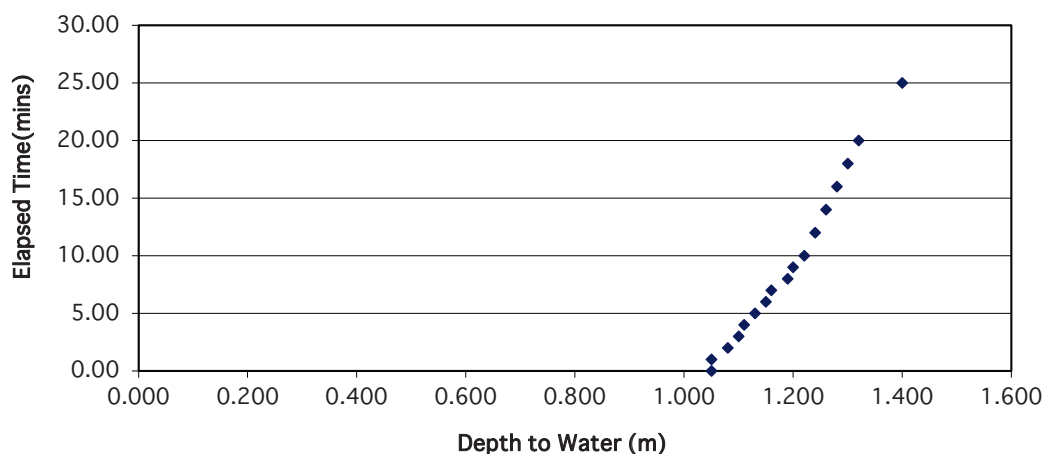
Initial depth to Water =	1.05	m
Final depth to water =	1.400	m
Elapsed time (mins)=	25.00	

Top of permeable soil		m
Base of permeable soil		m

Base area=	0.6	m ²
*Av. side area of permeable stratum over test period	0.665	m ²
Total Exposed area =	1.265	m ²

Infiltration rate (f) = Volume of water used/unit exposed area / unit time |
f= 0.00664 m/min or 0.000110672 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests

IGSL

Contract: Old Connaught, Phase 1

Contract No. 26458

Test No. SA07

Engineer NP

Date: 25/03/2026

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	DRY
0.20	1.00	Soft to firm brown slightly sandy slightly gravelly CLAY.	
1.00	1.40	Firm to stiff greyish brown slightly sandy gravelly CLAY with cobbles.	

Notes: For all trial pit information, see TP/SA07.

Field Data

Field Test

Depth to Water (m)	Elapsed Time (min)
0.710	0.00
0.710	1.00
0.710	2.00
0.710	3.00
0.710	4.00
0.710	5.00
0.710	6.00
0.710	7.00
0.710	8.00
0.710	9.00
0.710	10.00
0.710	12.00
0.710	14.00
0.710	16.00
0.710	18.00
0.710	20.00
0.710	25.00
0.710	30.00
0.710	40.00
0.710	50.00
0.710	60.00

Depth of Pit (D)	1.40	m
Width of Pit (B)	0.40	m
Length of Pit (L)	1.60	m

Initial depth to Water =	0.71	m
Final depth to water =	0.71	m
Elapsed time (mins)=	60.00	

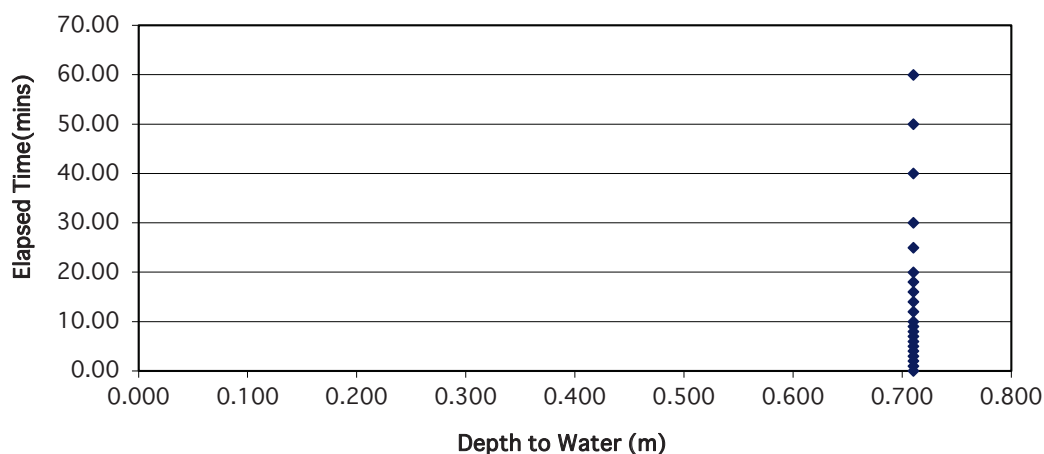
Top of permeable soil		m
Base of permeable soil		m

Base area=	0.64	m ²
*Av. side area of permeable stratum over test period	2.76	m ²
Total Exposed area =	3.4	m ²

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)



Appendix 9

Groundwater Monitoring Records

Appendix 10

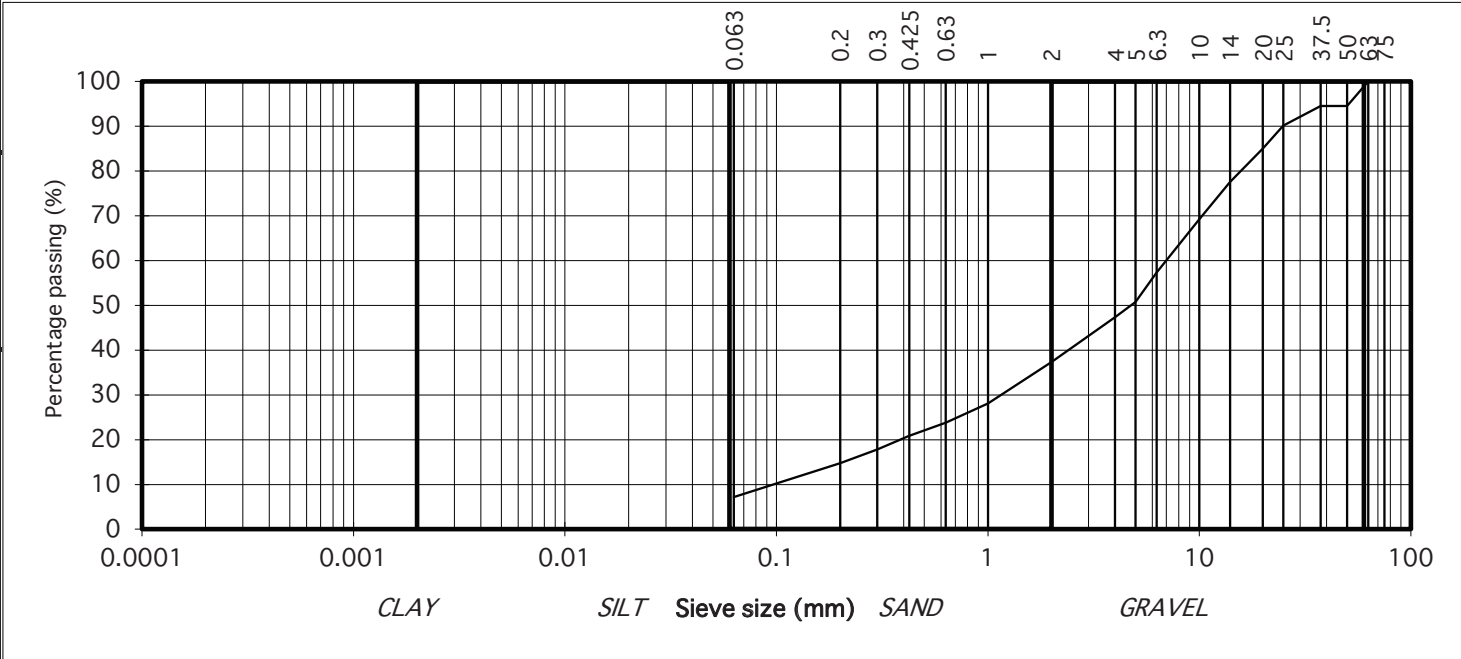
Geotechnical Laboratory Testing

IGSL Ltd Materials Laboratory Unit J5, M7 Business Park Newhall, Naas Co. Kildare 045 846176				Test Report										
				Determination of Water Content, Liquid & Plastic Limits Tested in accordance with BS1377-2-2022/EN17892-1 and EN17892-12										
Report No. R180387				Contract No. 26458		Contract Name: Old Connaught Bray Phase 1 Castlethorne								
Customer Atkins CE														
Samples Received: 14/05/26		Date Tested: 14/05/26												
BH/TP*	Sample No.	Depth* (m)	Lab. Ref	Sample Type*	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425µm	Preparation	Liquid Limit Clause	Classification (BS5930)	Description	
BH01	AA260236	1.0	A26/1040	B	14	30	16	14	88	WS	5.3	C L	Brown sandy gravelly CLAY	
BH01	AA260240	4.0	A26/1041	B	9.8	32	15	17	56	WS	5.3	C L	Brown sandy gravelly CLAY	
BH02	AA265208	1.0	A26/1043	B	19	30	NP	NP	94	WS	5.3		Brown sandy gravelly SILT	
BH02	AA265216	9.0	A26/1046	B	16.2	35	15	20	59	WS	5.3	C L	Brown slightly sandy, slightly gravelly, CLAY	
BH03	AA260246	1.5	A26/1047	B	15.7	37	18	19	47	WS	5.3	C I	Brown sandy gravelly CLAY	
BH03	AA260252	7.0	A26/1049	B	17.1	31	12	19	76	WS	5.3	C L	Brown sandy gravelly CLAY	
TP01	AA258594	1.5	A26/1051	B	21.2	39	18	21	98	WS	5.3	C I	Brown sandy gravelly CLAY	
TP02	AA258590	1.5	A26/1052	B	16.4	28	15	13	86	WS	5.3	C L	Brown sandy gravelly CLAY	
TP04	AA258585	1.0	A26/1055	B	17.3	33	NP	NP	47	WS	5.3		Brown sandy gravelly SILT	
TP05	AA258596	1.5	A26/1057	B	18.1	35	17	18	87	WS	5.3	C L	Brown slightly sandy, slightly gravelly, CLAY	
Preparation: WS - Wet sieved AR - As received NP - Non plastic Liquid Limit 5.2 Cone Penetrometer definitive method Clause: 5.3 Cone Penetrometer single point method				Sample Type: B - Bulk Disturbed U - Undisturbed				Remarks: 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. This report shall not be reproduced except in full without written approval from the Laboratory.						
IGSL Ltd Materials Laboratory				Persons authorized to approve reports H Byrne (Laboratory Manager)					Approved by		Date		Page	
											03/06/26		1 of 1	

TEST REPORT
Determination of Particle Size Distribution
 Tested in accordance with: BS1377-2:2022 Clause 10
 (note: Sedimentation stage not accredited)



particle size	% passing		Contract No. 26458	Report No. R180388	
75	100	COBBLES	Contract Name : Old Connaught Bray Phase 1 Castlethorne		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.
63	100		BH/TP No. BH01		
50	95		Sample No.* AA260241	Lab. Sample No. A26/1042	
37.5	95		Sample Type: B		
25	90		Depth* (m) 5.00	Customer: Atkins CE	
20	85	GRAVEL	Date Received 14/05/2026	Date Testing started 14/05/2026	Remarks
14	78		Description: Brown clayey/silty, very sandy, GRAVEL		
10	69				
6.3	57				
5.0	51				
4.0	47				
2.0	37				
1.0	28				
0.63	24				
0.425	21	SAND			
0.3	18				
0.2	15				
0.063	7				
		SILT/CLAY			



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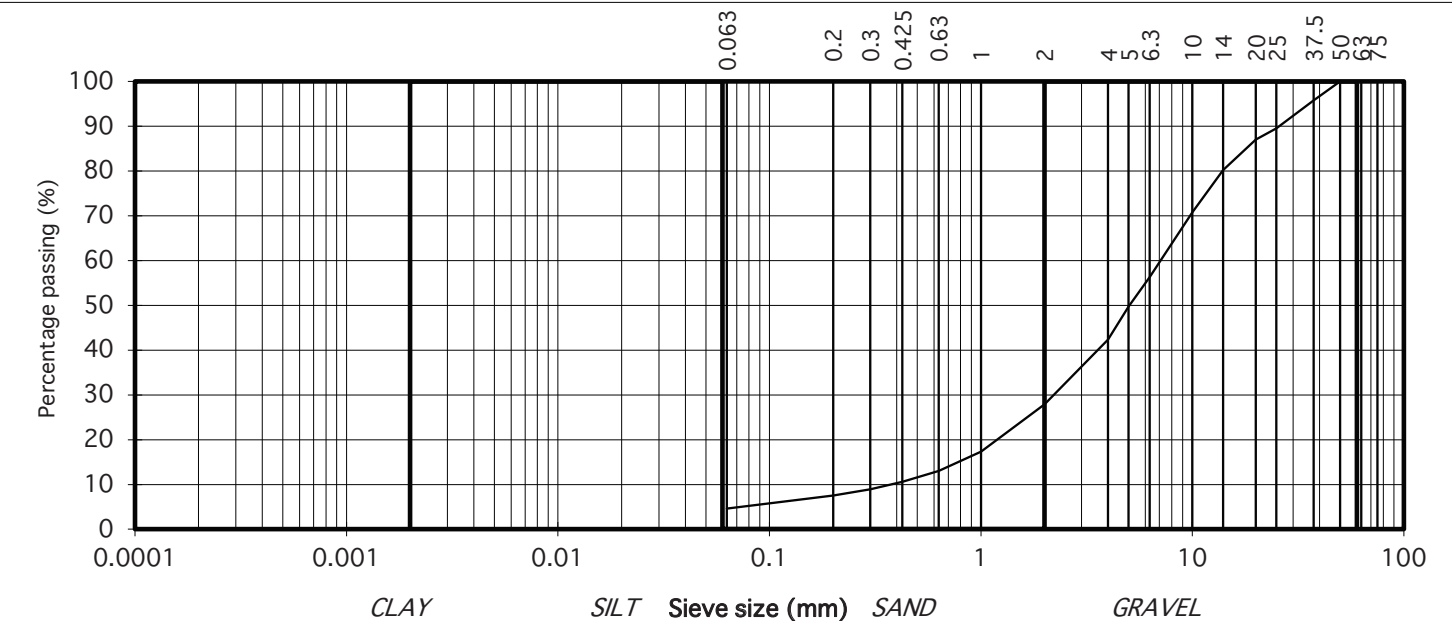
Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT

Determination of Particle Size Distribution

Tested in accordance with: BS1377-2:2022 Clause 10
(note: Sedimentation stage not accredited)



particle size	% passing		Contract No.	26458	Report No.	R180503			
			Contract Name :	Old Connaught Bray Phase 1 Castlethorne				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.	
75	100	COBBLES	BH/TP No.	BH02					
63	100		Sample No.*	AA265213	Lab. Sample No.	A26/1045			
50	100	GRAVEL	Sample Type:	B					
37.5	96		Depth* (m)	6.00	Customer:	Atkins CE			
25	90		Date Received	14/05/2026	Date Testing started	14/05/2026			
20	87		Description:	Brown slightly clayey/silty, very sandy, GRAVEL					
14	80		SAND	Remarks					
10	71								
6.3	56								
5.0	50								
4.0	42	SILT/CLAY							
2.0	28								
1.0	17								
0.63	13								
0.425	11								
0.3	9								
0.2	8								
0.063	5								

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

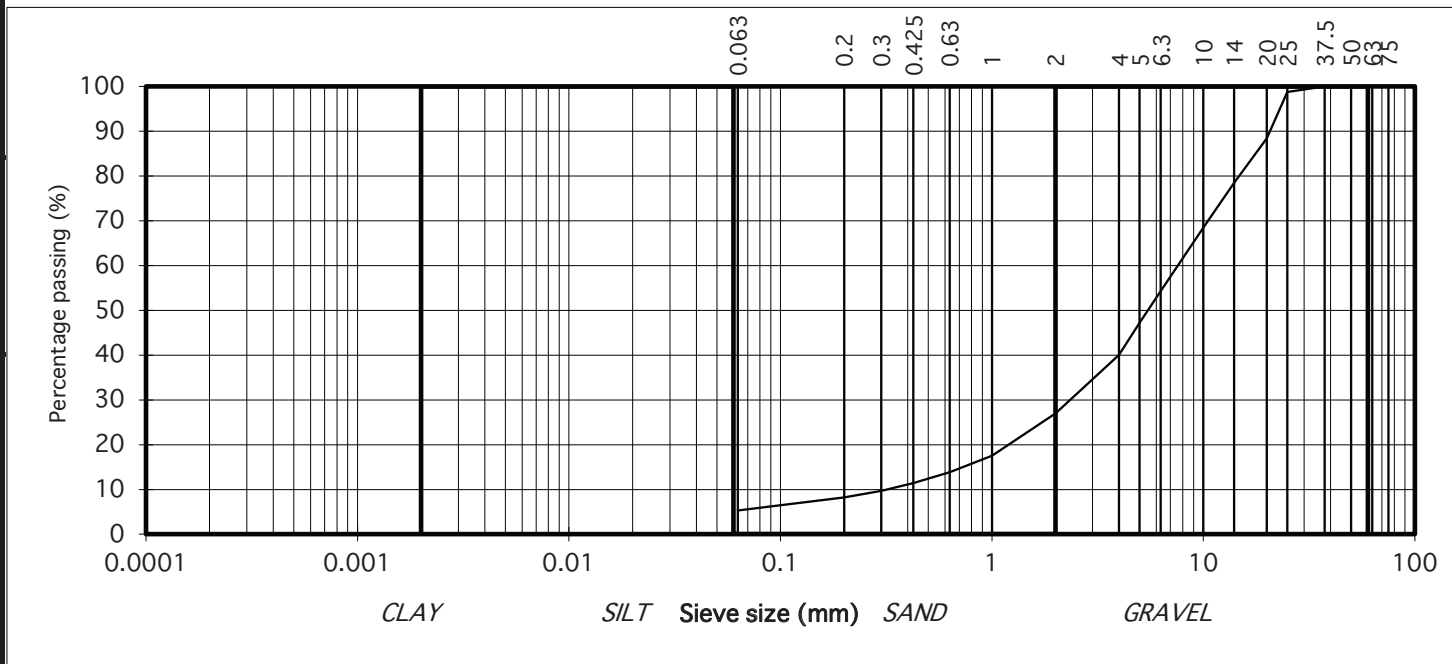
TEST REPORT

Determination of Particle Size Distribution

Tested in accordance with: BS1377-2:2022 Clause 10
(note: Sedimentation stage not accredited)



particle size	% passing		Contract No. 26458	Report No. R180500	
75	100	COBBLES	Contract Name : Old Connaught Bray Phase 1 Castlethorne		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.
63	100		BH/TP No. BH02		
50	100		Sample No.* AA265210	Lab. Sample No. A26/1044	
37.5	100		Sample Type: B		
25	99	GRAVEL	Depth* (m) 3.00	Customer: Atkins CE	Remarks
20	88		Date Received 14/05/2026	Date Testing started 14/05/2026	
14	78		Description: Brown clayey/silty, very sandy, GRAVEL		
10	69				
6.3	54				
5.0	47				
4.0	40				
2.0	27				
1.0	18	SAND			
0.63	14				
0.425	11				
0.3	10				
0.2	8	SILT/CLAY			
0.063	5				



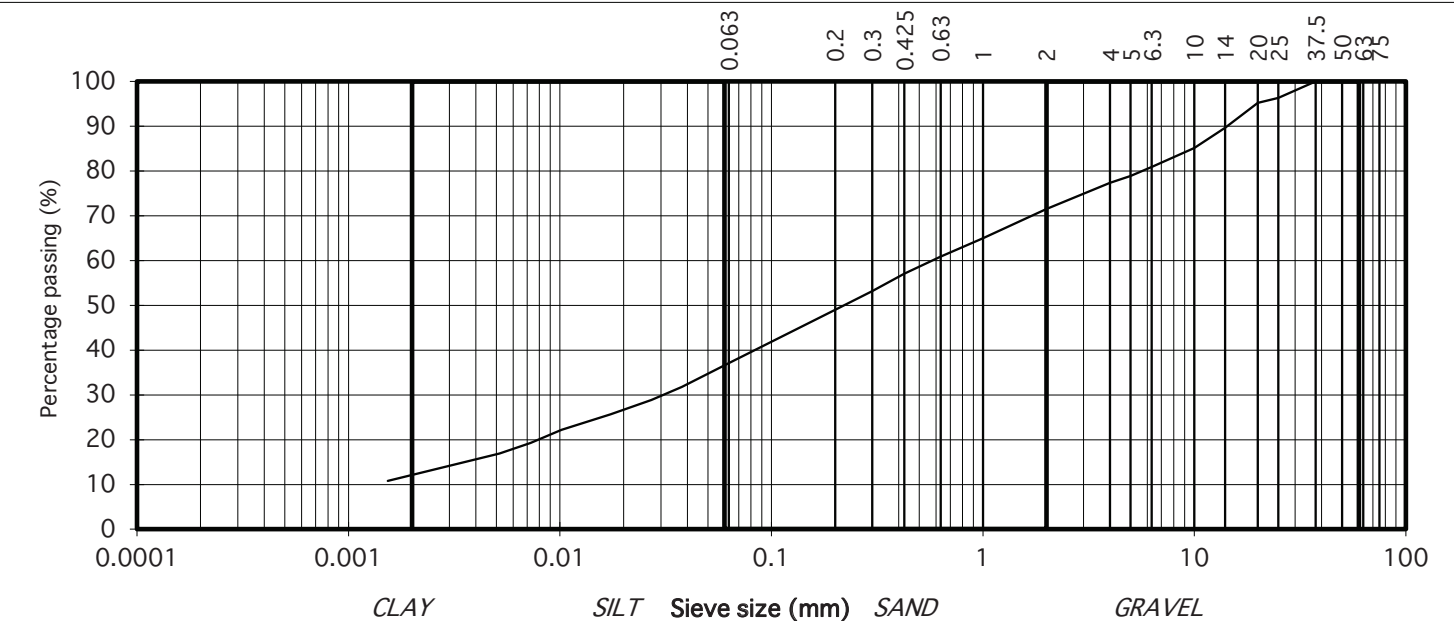
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
 Tested in accordance with: BS1377-2:2022 Clause 10
 (note: Sedimentation stage not accredited)



particle size	% passing		Contract No.	26458	Report No.	R180501	
			Contract Name :	Old Connaught Bray Phase 1 Castlethorne			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.
			BH/TP No.	BH02			
			Sample No.*	AA265216	Lab. Sample No.	A26/1046	
			Sample Type:	B			
			Depth* (m)	9.00	Customer:	Atkins CE	
			Date Received	14/05/2026	Date Testing started	14/05/2026	
			Description:	Brown slightly sandy, slightly gravelly, CLAY			
			Remarks				
							
75	100	COBBLES					
63	100						
50	100						
37.5	100						
25	96						
20	95	GRAVEL					
14	90						
10	85						
6.3	81						
5.0	79						
4.0	77						
2.0	72						
1.0	65						
0.63	61	SAND					
0.425	57						
0.3	53						
0.2	49						
0.063	37						
0.038	32	SILT/CLAY					
0.027	29						
0.017	26						
0.010	22						
0.007	19						
0.005	17						
0.002	11						

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TEST REPORT

Determination of Particle Size Distribution

Tested in accordance with: BS1377-2:2022 Clause 10
(note: Sedimentation stage not accredited)



particle size	% passing		Contract No.	26458	Report No.	R180389			
			Contract Name :	Old Connaught Bray Phase 1 Castlethorne			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.		
75	100	COBBLES	BH/TP No.	BH03					
63	73		Sample No.*	AA260250	Lab. Sample No.	A26/1048			
50	70	GRAVEL	Sample Type:	B					
37.5	62		Depth* (m)	5.00	Customer:	Atkins CE			
25	53		Date Received	14/05/2026	Date Testing started	14/05/2026			
20	44		Description:	Brown slightly clayey/silty, sandy, GRAVEL with many cobbles					
14	31		SAND	Remarks	Sample size did not meet the requirements of BS1377				
10	23			SILT/CLAY					
6.3	17								
5.0	16								
4.0	15								
2.0	12								
1.0	10								
0.63	9								
0.425	8								
0.3	8								
0.2	6								
0.063	3								

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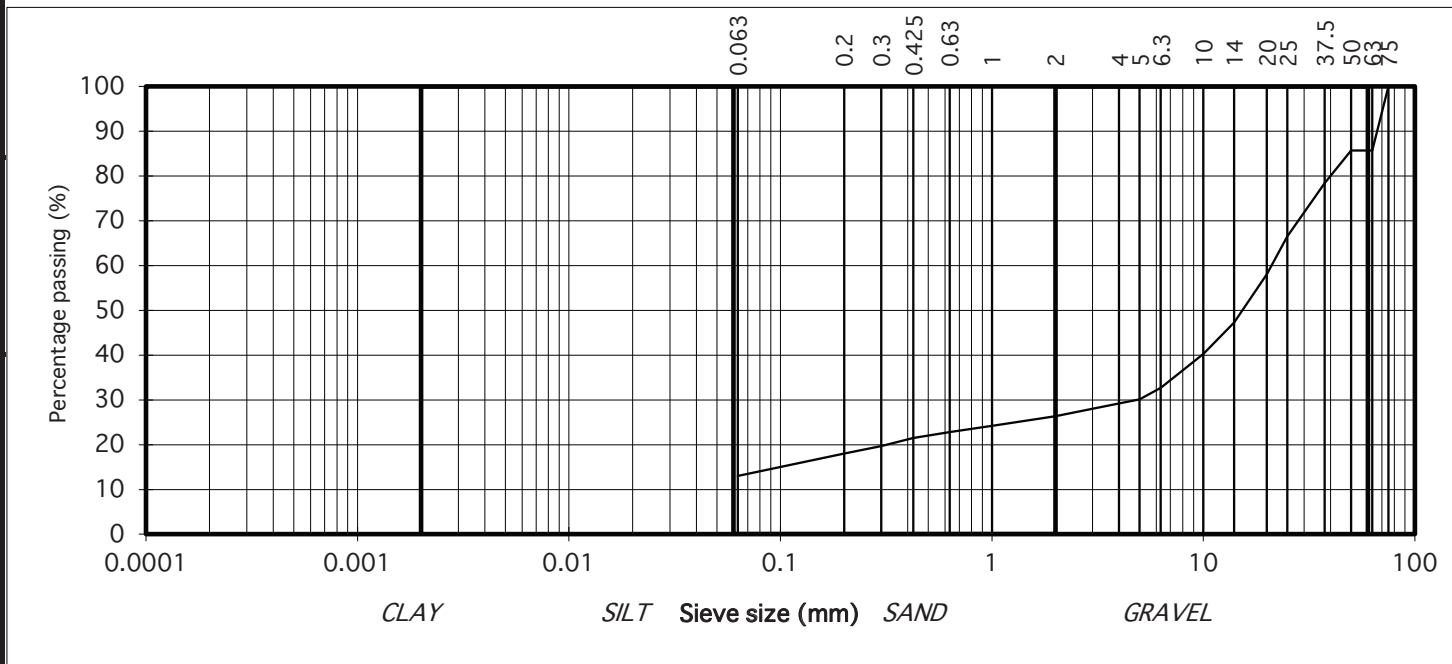
TEST REPORT

Determination of Particle Size Distribution

Tested in accordance with: BS1377-2:2022 Clause 10
(note: Sedimentation stage not accredited)



particle size	% passing		Contract No. 26458	Report No. R180390	
75	100	COBBLES	Contract Name : Old Connaught Bray Phase 1 Castlethorne		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.
63	86		BH/TP No. BH03		
50	86		Sample No.* AA260254	Lab. Sample No. A26/1050	
37.5	78		Sample Type: B		
25	67		Depth* (m) 9.00	Customer: Atkins CE	
20	58	GRAVEL	Date Received 14/05/2026	Date Testing started 14/05/2026	
14	47		Description: Brown clayey/silty, sandy, GRAVEL with some cobbles		
10	40		Remarks		
6.3	33				
5.0	30				
4.0	29	SAND			
2.0	26				
1.0	24				
0.63	23				
0.425	21				
0.3	20	SILT/CLAY			
0.2	18				
0.063	13				



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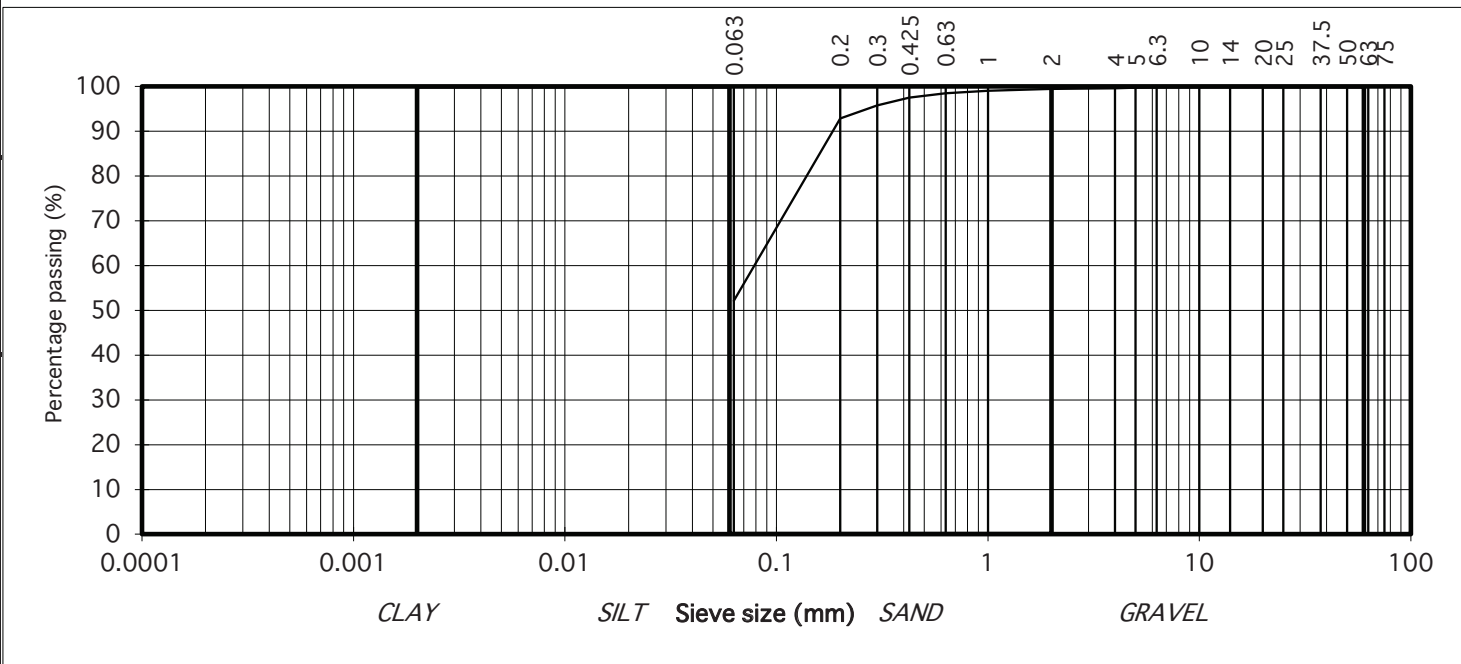
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
 Tested in accordance with: BS1377-2:2022 Clause 10
 (note: Sedimentation stage not accredited)



particle size	% passing		Contract No. 26458	Report No. R180391	
75	100	COBBLES	Contract Name : Old Connaught Bray Phase 1 Castlethorne		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.
63	100		BH/TP No. TP02		
50	100		Sample No.* AA258591	Lab. Sample No. A26/1053	
37.5	100		Sample Type: B		
25	100		Depth* (m) 2.70	Customer: Atkins CE	
20	100	GRAVEL	Date Received 14/05/2026	Date Testing started 14/05/2026	
14	100		Description: Brown sandy, slightly gravelly, SILT/CLAY		
10	100		Remarks		
6.3	100				
5.0	100				
4.0	100	SAND			
2.0	99				
1.0	99				
0.63	98				
0.425	98				
0.3	96	SILT/CLAY			
0.2	93				
0.063	52				



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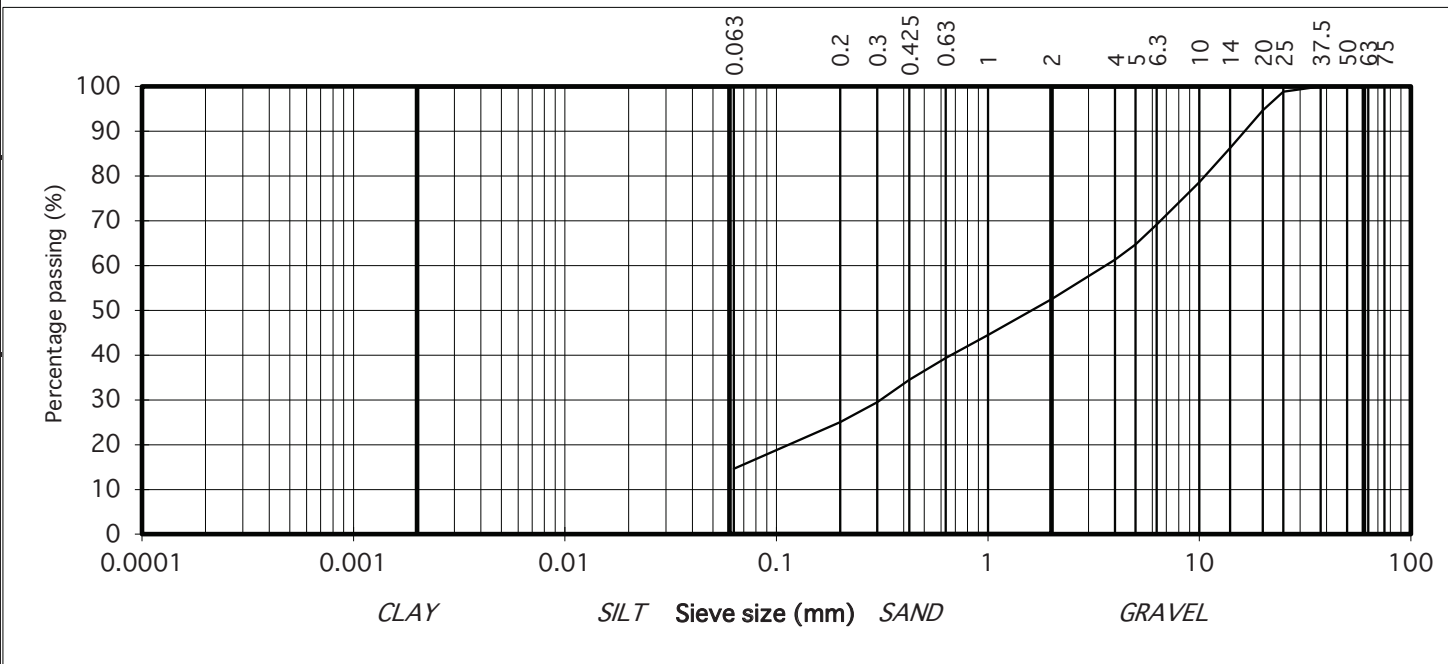
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TEST REPORT
Determination of Particle Size Distribution
 Tested in accordance with: BS1377-2:2022 Clause 10
 (note: Sedimentation stage not accredited)



particle size	% passing		Contract No. 26458	Report No. R180502	
75	100	COBBLES	Contract Name : Old Connaught Bray Phase 1 Castlethorne		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.
63	100		BH/TP No. TP03		
50	100		Sample No.* AA258584	Lab. Sample No. A26/1054	
37.5	100		Sample Type: B		
25	99		Depth* (m) 1.80	Customer: Atkins CE	
20	95	GRAVEL	Date Received 14/05/2026	Date Testing started 14/05/2026	
14	86		Description: Brown clayey/silty, very sandy, GRAVEL		
10	79		Remarks		
6.3	69				
5.0	65				
4.0	61				
2.0	52				
1.0	45				
0.63	39				
0.425	34	SAND			
0.3	29				
0.2	25				
0.063	15				
		SILT/CLAY			



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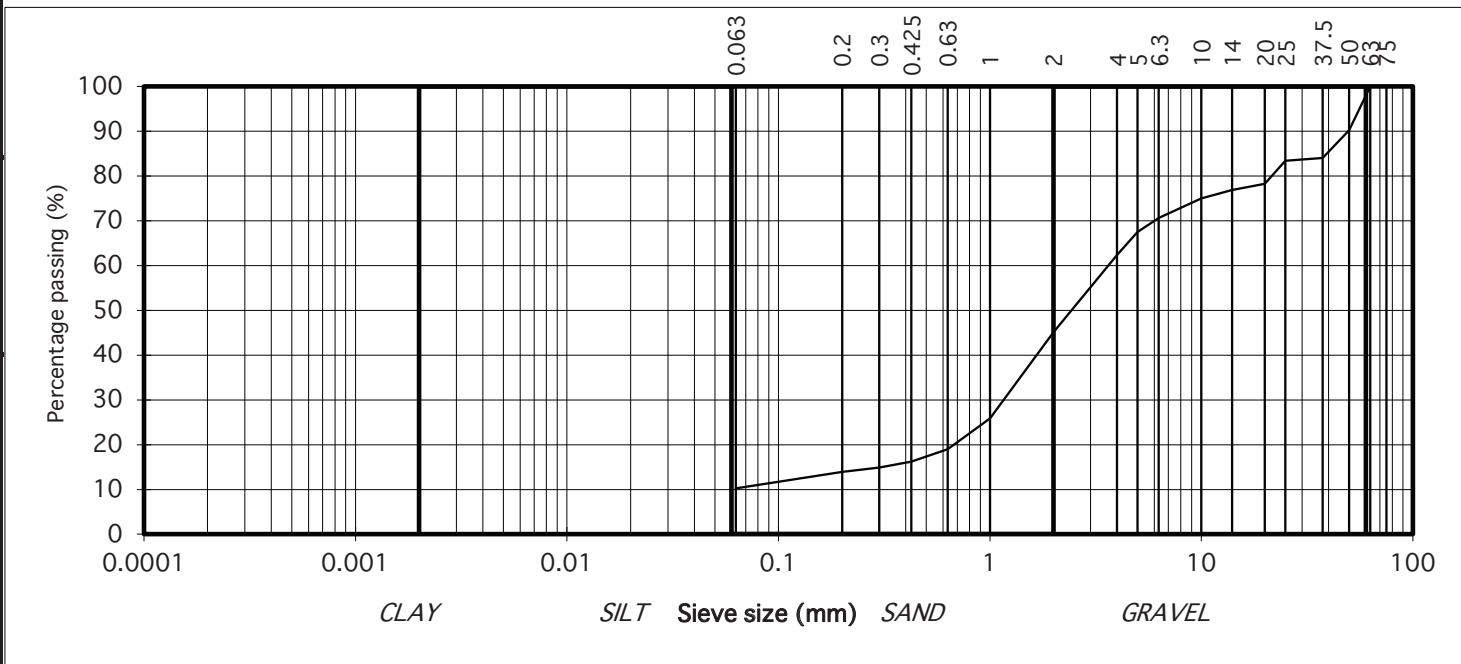
TEST REPORT

Determination of Particle Size Distribution

Tested in accordance with: BS1377-2:2022 Clause 10
(note: Sedimentation stage not accredited)



particle size	% passing		Contract No. 26458	Report No. R180392	
75	100	COBBLES	Contract Name : Old Connaught Bray Phase 1 Castlethorne		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.
63	100		BH/TP No. TP04		
50	90		Sample No.* AA258588	Lab. Sample No. A26/1056	
37.5	84		Sample Type: B		
25	83	GRAVEL	Depth* (m) 2.30	Customer: Atkins CE	Remarks
20	78		Date Received 14/05/2026	Date Testing started 14/05/2026	
14	77		Description: Brown clayey/silty, very sandy, GRAVEL		
10	75				
6.3	71				
5.0	67				
4.0	62				
2.0	45				
1.0	26	SAND			
0.63	19				
0.425	16				
0.3	15				
0.2	14	SILT/CLAY			
0.063	10				



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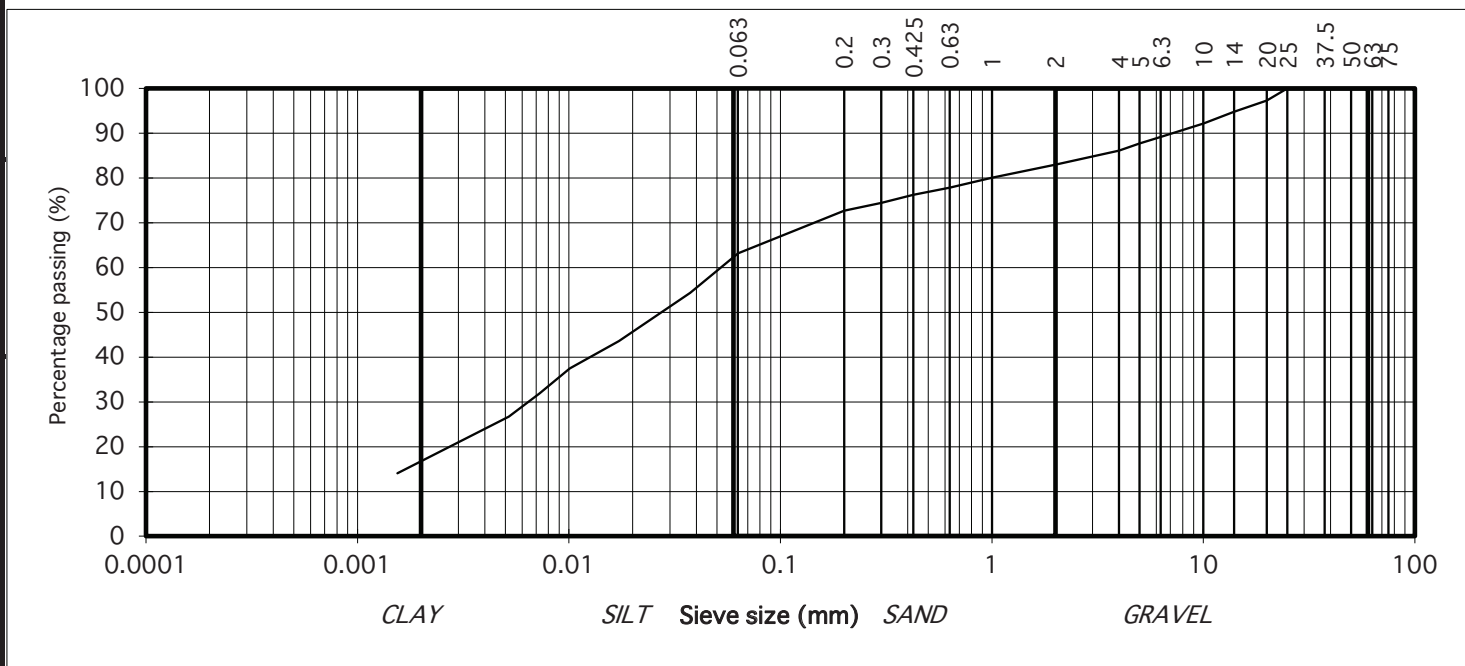
TEST REPORT

Determination of Particle Size Distribution

Tested in accordance with: BS1377-2:2022 Clause 10
(note: Sedimentation stage not accredited)



particle size	% passing		Contract No. 26458	Report No. R180393	
75	100	COBBLES	Contract Name : Old Connaught Bray Phase 1 Castlethorne		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.
63	100		BH/TP No. TP05		
50	100		Sample No.* AA258596	Lab. Sample No. A26/1057	
37.5	100		Sample Type: B		
25	100		Depth* (m) 1.50	Customer: Atkins CE	
20	97	GRAVEL	Date Received 14/05/2026	Date Testing started 14/05/2026	
14	95		Description: Brown slightly sandy, slightly gravelly, CLAY		
10	92		Remarks		
6.3	89				
5.0	88				
4.0	86				
2.0	83				
1.0	80				
0.63	78				
0.425	76				
0.3	74	SAND			
0.2	73				
0.063	63				
0.037	54				
0.027	50				
0.017	44	SILT/CLAY			
0.010	38				
0.007	32				
0.005	27				
0.002	14				



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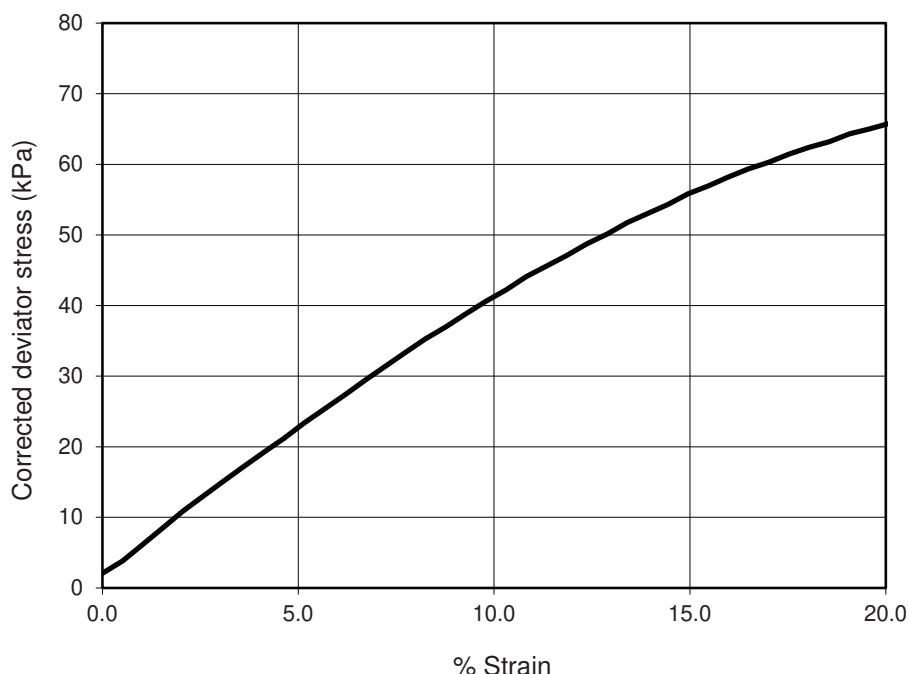
Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

IGSL Ltd Materials Laboratory Unit F, M7 Business Park Naas Co. Kildare 045-899324	Test Report		
	Unconsolidated Undrained Triaxial Test Tested in accordance with BS EN ISO 17892 - 8 : 2018		

Report no: R179299
 Contract Name: Old Connaught Bray Phase 1 Contract No: 26458
 Location*: BH2 1.0m Sample No*: 265208
 Description: Grey mottled brown sandy SILT/CLAY
 Customer: Atkins

Height (mm)	194.0	Diameter	104.0	Cell pressure(kPa)	20
Water Content %	19.4	Bulk density (Mg/m ³)	2.11	Dry density (Mg/m ³)	1.77



Strain at failure %	20.6	Cohesion C _u (kPa)	33
		(Undrained shear strength kPa)	
Rate of strain (%/minute)	2.0		
Thickness of membrane	0.48	Membrane correction (at failure)	5.155
Date received	-	Date tested	18/05/26

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

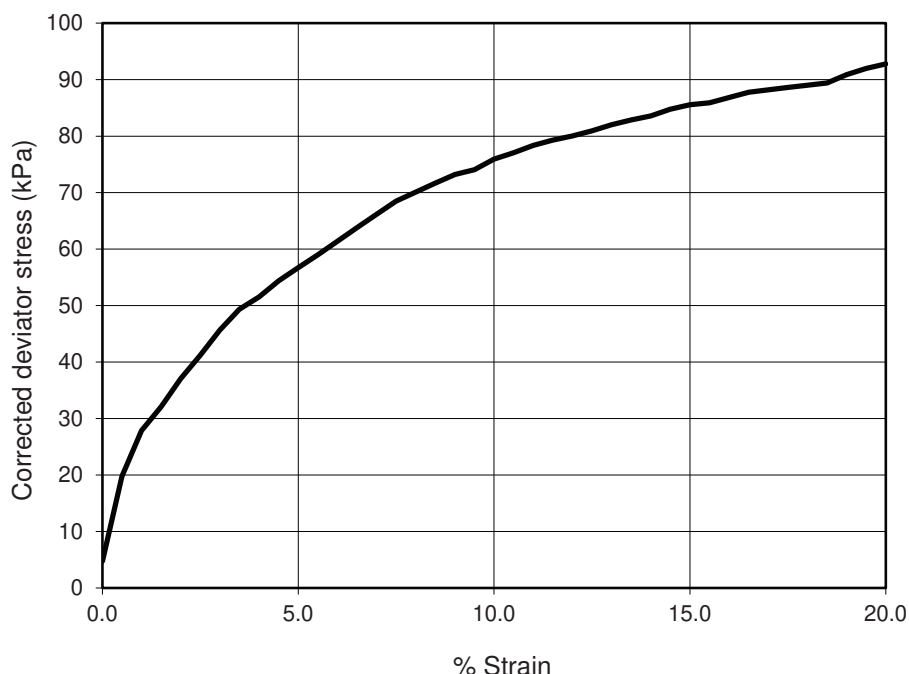
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Person authorised to approve report: J Barrett (Quality Manager)				
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IGSL Ltd Materials Laboratory Unit F, M7 Business Park Naas Co. Kildare 045-899324	Test Report		
	Unconsolidated Undrained Triaxial Test Tested in accordance with BS EN ISO 17892 - 8 : 2018		

Report no: R179300
 Contract Name: Old Connaught Bray Phase 1 Contract No: 26458
 Location*: BH3 1.5m Sample No*: 260246
 Description: Brown silty sandy GRAVEL with cobbles
 Customer: Atkins

Height (mm)	200.0	Diameter	103.0	Cell pressure(kPa)	30
Water Content %	16.8	Bulk density (Mg/m ³)	2.19	Dry density (Mg/m ³)	1.87



Strain at failure %	20.0	Cohesion C _u (kPa)	46
		(Undrained shear strength kPa)	
Rate of strain (%/minute)	2.0		
Thickness of membrane	0.48	Membrane correction (at failure)	5.000
Date received	-	Date tested	19/05/26

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

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Person authorised to approve report: J Barrett (Quality Manager)				
	IGSL Materials Laboratory	Approved by	Date	Page
			21/05/26	1 of 1

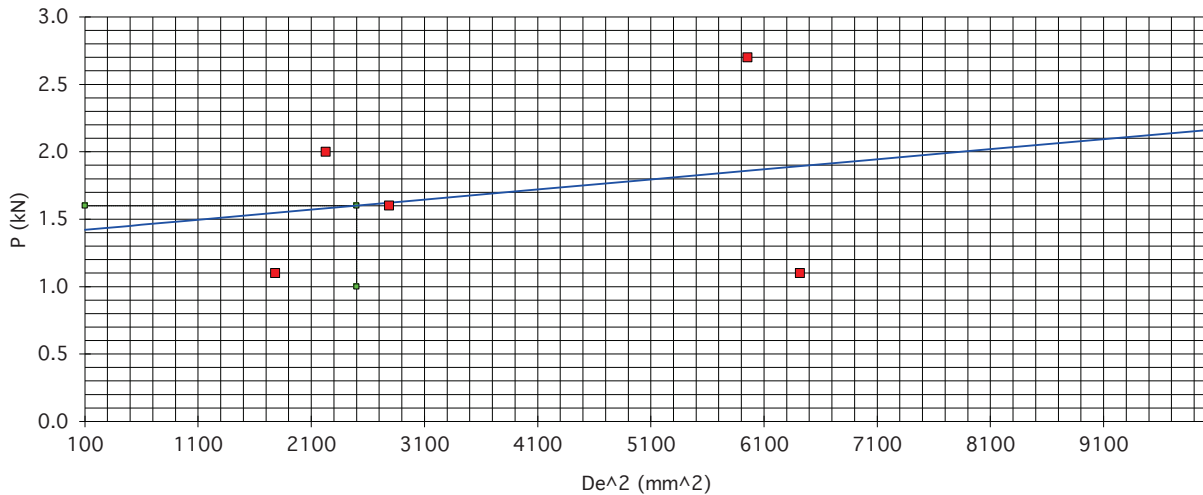
Point Load Irregular - Test Results

Contract: Phase 1 - M11 - Old Connaught

Sample Type: Irregular Core Pieces

Contract No.: 26458

Tested by: D. O'Shea

[illegible]

Calculation of $I_s(50)$

$$P = 7.5E-05 \text{ De}^2 + 1.413485609$$

1.60 kN

0.6 MN/m²

12.802546 MPa

Appendix 11

Chemical & Environmental Laboratory Testing (Eurofins Chemtest Laboratory)



Final Report

Report No.: 26-10992-1

Initial Date of Issue: 22-Apr-2026

Re-Issue Details:

Client IGSL

Client Address: M7 Business Park
Naas
County Kildare
Ireland

Contact(s): Darren Keogh

Project 26458 Old Conna (Phase 1)

Quotation No.: Q26-41264

Date Received: 08-Apr-2026

Order No.:

Date Instructed: 09-Apr-2026

No. of Samples: 4

Turnaround (Wkdays): 7

Results Due: 17-Apr-2026

Date Approved: 22-Apr-2026

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: 26458 Old Conna (Phase 1)

Client: IGSL		Chemtest Job No.:							
Quotation No.: Q26-41264		Chemtest Sample ID.:							
		<i>Client Reference:</i>							
		<i>Sample Type:</i>							
		<i>Top Depth (m):</i>							
		<i>Date Sampled:</i>							
Determinand	HWOL Code	Accred.	SOP	Units	LOD				
Moisture		N	2030	%	0.020	16	17	15	18
Soil Colour		N	2030		N/A	Brown	Brown	Brown	Brown
Other Material		N	2030		N/A	Stones	Stones	Stones	Roots
Soil Texture		N	2030		N/A	Clay	Clay	Clay	Clay
pH (2.5:1) at 20C		N	2010		4.0	8.2	8.1	8.0	7.6
Magnesium (Water Soluble)		N	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	< 0.010	0.010	< 0.010	< 0.010
Total Sulphur		U	2175	%	0.010	0.014	0.017	0.019	0.037
Chloride (Water Soluble)		M	2220	g/l	0.010	< 0.010	< 0.010	< 0.010	0.016
Nitrate (Water Soluble)		N	2220	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Ammonium (Water Soluble)		N	2220	g/l	0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sulphate (Acid Soluble)		U	2430	%	0.010	0.019	0.018	0.032	0.042

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2010	pH Value of Soils	pH at 20°C	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 <30°C.	
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 measurement 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

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

Text example All items indicated in italic font represent customer-supplied information that may not be independently verified by the laboratory

This report shall not be reproduced except in full, and only with the prior approval of the laboratory.

Any comments or interpretations are outside the scope of UKAS accreditation.

The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.

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 EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at $\leq 30^{\circ}\text{C}$ 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.

Where analysis is performed on a dried and crushed sample, it has been prepared by crushing all of the sample. If material has been removed prior to crushing, or by request of the client, this will be stated on the report.

NEW_ASB Eurofins Chemtest Limited, 11 Depot Road, Newmarket, CB8 0AL

DURHAM Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

Sample Deviation Codes

As a result of any of the below deviations applying, the test results may be unreliable

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 - The required amount of sample for analysis was not received

H - Appropriate cooling measures were not taken for sample transportation

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.

Report Information

Charges may apply to extended sample storage.

Water Sample Category Key for Accreditation

DW - Drinking Water (Non-Regulatory)
GW - Ground Water
LE - Land Leachate
NA - Not Applicable
PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

Asbestos Tests LOD = LOQ

Limit of Detection = Limit of Quantification for asbestos results only

If you require extended retention of samples, please email your requirements to:
cs@etuki.eurofins.com



Final Report

Report No.: 26-09996-1

Initial Date of Issue: 29-Apr-2026

Re-Issue Details:

Client IGSL

Client Address: M7 Business Park
Naas
County Kildare
Ireland

Contact(s): Darren Keogh

Project Old Conna Phase 1

Quotation No.: **Date Received:** 31-Mar-2026

Order No.: **Date Instructed:** 02-Apr-2026

No. of Samples: 5

Turnaround (Wkdays): 7 **Results Due:** 14-Apr-2026

Date Approved: 29-Apr-2026

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Leachate

Project: Old Conna Phase 1

Client: IGSL	Chemtest Job No.:					26-09996	26-09996	26-09996	26-09996	26-09996
Quotation No.:	Chemtest Sample ID.:					2103258	2103259	2103260	2103261	2103262
	<i>Client Sample ID.:</i>					<i>TP01</i>	<i>TP02</i>	<i>TP03</i>	<i>TP04</i>	<i>TP05</i>
	<i>Sample Type:</i>					<i>SOIL</i>	<i>SOIL</i>	<i>SOIL</i>	<i>SOIL</i>	<i>SOIL</i>
	<i>Top Depth (m):</i>					<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
	<i>Bottom Depth (m):</i>					<i>1.00</i>	<i>1.00</i>	<i>1.00</i>	<i>1.00</i>	<i>1.00</i>
	<i>Date Sampled:</i>					<i>20-Mar-2026</i>	<i>20-Mar-2026</i>	<i>20-Mar-2026</i>	<i>20-Mar-2026</i>	<i>20-Mar-2026</i>
Determinand	Accred.	SOP	Type	Units	LOD					
Ammonium	U	1220	10:1	mg/l	0.050	0.21	0.14	0.23	0.16	0.20
Ammonium	N	1220	10:1	mg/kg	0.10	2.2	1.8	2.3	2.0	2.1

Results - Soil

Project: Old Conna Phase 1

Client: IGSL		Chemtest Job No.:		26-09996	26-09996	26-09996	26-09996	26-09996
Quotation No.:		Chemtest Sample ID.:		2103258	2103259	2103260	2103261	2103262
		Client Sample ID.:		TP01	TP02	TP03	TP04	TP05
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.00	0.00	0.00	0.00	0.00
		Bottom Depth (m):		1.00	1.00	1.00	1.00	1.00
		Date Sampled:		20-Mar-2026	20-Mar-2026	20-Mar-2026	20-Mar-2026	20-Mar-2026
		Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	HWOL Code	Accred.	SOP	Units	LOD			
ACM Type		N	2192		N/A	-	-	-
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture		N	2030	%	0.020	21	19	16
Soil Colour		N	2030		N/A	Brown	Brown	Brown
Other Material		N	2030		N/A	Stones	Stones	Stones
Soil Texture		N	2030		N/A	Sand	Clay	Clay
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40	0.65	0.55	< 0.40
Sulphur (Elemental)		M	2180	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Cyanide (Total)		M	2300	mg/kg	0.50	0.80	0.80	< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	2.7	4.0	5.0
Sulphate (Total)		U	2430	%	0.010	0.085	0.056	0.042
Arsenic		M	2455	mg/kg	0.5	18	17	21
Barium		M	2455	mg/kg	0.5	61	38	39
Cadmium		M	2455	mg/kg	0.10	0.95	0.53	0.65
Chromium		M	2455	mg/kg	0.5	26	25	29
Molybdenum		M	2455	mg/kg	0.5	1.2	0.7	0.8
Antimony		N	2455	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Copper		M	2455	mg/kg	0.50	19	15	17
Mercury		M	2455	mg/kg	0.05	0.07	< 0.05	0.06
Nickel		M	2455	mg/kg	0.50	25	24	26
Lead		M	2455	mg/kg	0.50	57	29	23
Selenium		M	2455	mg/kg	0.25	0.83	0.54	0.40
Zinc		M	2455	mg/kg	0.50	85	67	74
Chromium (Trivalent)		N	2490	mg/kg	1.0	26	25	29
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Aliphatic EPH >C10-C12	EH_2D_AL_#1	M	5002	mg/kg	2.00	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	EH_2D_AL_#1	M	5002	mg/kg	2.00	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C16-C21	EH_2D_AL_#1	M	5002	mg/kg	2.00	130	< 2.0	< 2.0
Aliphatic EPH >C21-C35	EH_2D_AL_#1	M	5002	mg/kg	3.00	46	< 3.0	< 3.0
Aliphatic EPH >C35-C40	EH_2D_AL_#1	N	5002	mg/kg	10.00	< 10	< 10	< 10

Results - Soil

Project: Old Conna Phase 1

Client: IGS		Chemtest Job No.:		26-09996	26-09996	26-09996	26-09996	26-09996
Quotation No.:		Chemtest Sample ID.:		2103258	2103259	2103260	2103261	2103262
		Client Sample ID.:		TP01	TP02	TP03	TP04	TP05
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.00	0.00	0.00	0.00	0.00
		Bottom Depth (m):		1.00	1.00	1.00	1.00	1.00
		Date Sampled:		20-Mar-2026	20-Mar-2026	20-Mar-2026	20-Mar-2026	20-Mar-2026
		Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	HWOL Code	Accred.	SOP	Units	LOD			
Total Aliphatic EPH >C10-C35	EH_2D_AL_#1	M	5002	mg/kg	7.00	180	< 7.0	< 7.0
Aromatic EPH >C10-C12	EH_2D_AR_#1	U	5002	mg/kg	2.00	< 2.0	< 2.0	< 2.0
Aromatic EPH >C12-C16	EH_2D_AR_#1	U	5002	mg/kg	2.00	19	< 2.0	< 2.0
Aromatic EPH >C16-C21	EH_2D_AR_#1	U	5002	mg/kg	2.00	< 2.0	< 2.0	< 2.0
Aromatic EPH >C21-C35	EH_2D_AR_#1	U	5002	mg/kg	2.00	2.7	< 2.0	2.4
Aromatic EPH >C35-C40	EH_2D_AR_#1	N	5002	mg/kg	1.00	< 1.0	< 1.0	< 1.0
Total Aromatic EPH >C10-C35	EH_2D_AR_#1	U	5002	mg/kg	4.00	22	< 4.0	5.7
Total EPH >C10-C35	EH_2D_Total_#1	U	5002	mg/kg	10.00	200	< 10	12
Mineral Oil EPH	EH_2D_AL_#1	N	5002	mg/kg	10	180	< 10	< 10
Benzene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene		M	5003	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene		M	5003	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Acenaphthene		M	5003	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Fluorene		M	5003	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Phenanthrene		M	5003	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Anthracene		M	5003	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Fluoranthene		M	5003	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Pyrene		M	5003	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Benzo[a]anthracene		M	5003	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Chrysene		M	5003	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Benzo[b]fluoranthene		M	5003	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Benzo[k]fluoranthene		M	5003	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Benzo[a]pyrene		M	5003	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-c,d)Pyrene		M	5003	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)Anthracene		M	5003	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Benzo[g,h,i]perylene		M	5003	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Coronene		N	5003	mg/kg	0.05	< 0.05	< 0.05	< 0.05
PCB 28		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 52		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 101		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 118		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 153		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 138		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 180		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Tot PCBs Low (7 Congeners)		N	2815	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Phenols		M	2920	mg/kg	0.10	0.16	< 0.10	< 0.10

Results - Single Stage WAC

Project: Old Conna Phase 1

Chemtest Job No: 26-09996 Chemtest Sample ID: 2103258 Sample Ref: Sample ID: TP01 Client Reference: Top Depth(m): 0.00 Bottom Depth(m): 1.00 Sampling Date: 20-Mar-2026						Landfill Waste Acceptance Criteria Limits		
Determinand	SOP	HWOL Code	Accred.	Units		Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon	2625		M	%	1.7	3	5	6
Loss On Ignition	2610		M	%	6.2	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	5002	EH_2D_Total_#1	N	mg/kg	180	500	--	--
Total (Of 17) PAH's	5003		N	mg/kg	< 0.1	100	--	--
pH at 20C	2010		M		7.2	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.020	--	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	0.0055	0.055	0.5	2	25
Barium	1455		U	0.033	0.33	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0017	0.017	0.5	10	70
Copper	1455		U	0.0040	0.040	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0055	0.056	0.5	10	30
Nickel	1455		U	0.0037	0.037	0.4	10	40
Lead	1455		U	0.0042	0.042	0.5	10	50
Antimony	1455		N	0.0014	0.014	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.015	0.15	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.38	3.8	10	150	500
Sulphate	1220		U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020		N	53	530	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	5.4	54	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.1
WAC Sample Weight	646.7

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: Old Conna Phase 1

Chemtest Job No: 26-09996 Chemtest Sample ID: 2103259 Sample Ref: Sample ID: TP02 Client Reference: Top Depth(m): 0.00 Bottom Depth(m): 1.00 Sampling Date: 20-Mar-2026						Landfill Waste Acceptance Criteria Limits		
						Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	SOP	HWOL Code	Accred.	Units				
Total Organic Carbon	2625		M	%	1.0	3	5	6
Loss On Ignition	2610		M	%	4.9	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	5002	EH_2D_Total_#1	N	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	5003		N	mg/kg	< 0.1	100	--	--
pH at 20C	2010		M		7.2	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	< 0.0020	--	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	0.0035	0.035	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	0.0041	0.041	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	0.0018	0.018	0.4	10	40
Lead	1455		U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455		N	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	< 0.003	< 0.025	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.26	2.6	10	150	500
Sulphate	1220		U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020		N	120	1200	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.0	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.1
WAC Sample Weight	683.6

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: Old Conna Phase 1

Chemtest Job No: 26-09996 Chemtest Sample ID: 2103260 Sample Ref: Sample ID: TP03 Client Reference: Top Depth(m): 0.00 Bottom Depth(m): 1.00 Sampling Date: 20-Mar-2026						Landfill Waste Acceptance Criteria Limits		
						Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	SOP	HWOL Code	Accred.	Units				
Total Organic Carbon	2625		M	%	0.69	3	5	6
Loss On Ignition	2610		M	%	3.3	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	5002	EH_2D_Total_#1	N	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	5003		N	mg/kg	< 0.1	100	--	--
pH at 20C	2010		M		7.6	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.014	--	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	0.0028	0.028	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	0.0021	0.021	0.5	10	70
Copper	1455		U	0.0030	0.030	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	0.0012	0.012	0.4	10	40
Lead	1455		U	0.0018	0.018	0.5	10	50
Antimony	1455		N	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.007	0.073	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.21	2.1	10	150	500
Sulphate	1220		U	< 1.0	< 10	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	5.3	53	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	11
WAC Sample Weight	805.7

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: Old Conna Phase 1

Chemtest Job No: 26-09996						Landfill Waste Acceptance Criteria		
Chemtest Sample ID: 2103261						Inert Waste Landfill	Limits	
Sample Ref:							Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID: TP04								
Client Reference:								
Top Depth(m): 0.00								
Bottom Depth(m): 1.00								
Sampling Date: 20-Mar-2026								
Determinand	SOP	HWOL Code	Accred.	Units				
Total Organic Carbon	2625		M	%	1.4	3	5	6
Loss On Ignition	2610		M	%	4.5	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	5002	EH_2D_Total_#1	N	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	5003		N	mg/kg	< 0.1	100	--	--
pH at 20C	2010		M		7.3	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis				10:1 Eluate mg/kg	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	0.0095	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	0.0009	0.0087	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	0.0011	0.011	0.5	10	30
Nickel	1455		U	0.0009	0.0086	0.4	10	40
Lead	1455		U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455		N	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.005	0.047	4	50	200
Chloride	1220		U	1.3	13	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	82	810	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	2.9	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.4
WAC Sample Weight	748.0

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: Old Conna Phase 1

Chemtest Job No: 26-09996 Chemtest Sample ID: 2103262 Sample Ref: Sample ID: TP05 Client Reference: Top Depth(m): 0.00 Bottom Depth(m): 1.00 Sampling Date: 20-Mar-2026						Landfill Waste Acceptance Criteria Limits		
						Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	SOP	HWOL Code	Accred.	Units				
Total Organic Carbon	2625		M	%	2.3	3	5	6
Loss On Ignition	2610		M	%	6.5	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	5002	EH_2D_Total_#1	N	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	5003		N	mg/kg	< 0.1	100	--	--
pH at 20C	2010		M		7.6	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	< 0.0020	--	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	0.0024	0.024	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	0.0019	0.019	0.5	10	70
Copper	1455		U	0.0030	0.030	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0008	0.0078	0.5	10	30
Nickel	1455		U	0.0015	0.015	0.4	10	40
Lead	1455		U	0.0012	0.012	0.5	10	50
Antimony	1455		N	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.006	0.057	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.34	3.4	10	150	500
Sulphate	1220		U	1.0	10	1000	20000	50000
Total Dissolved Solids	1020		N	45	450	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.1	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	10
WAC Sample Weight	781.1

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.

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity at 25°C 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.	RE PW PL LE DW GW
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).	RE PW PL SW DW GW
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation	PL SW GW
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.	PL GW
2010	pH Value of Soils	pH at 20°C	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 <30°C.	
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 Quantification in Soils Sediments Ballast & Aggregate Crushed Concrete & Demolition Rubble	Asbestos	Polarised light microscopy / Gravimetry	
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline 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.	
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.	
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8–C10 Aromatics: >C5–C7,>C7–C8,>C8–C10	Water extraction / Headspace GCxGC FID detection	
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS. Reported PCB 101 results may contain contributions from PCB 90 due to inseparable chromatography.	

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
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.	
5002	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40	Acetone/Hexane extraction / GCxGC FID detection	
5003	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	Hexane / Acetone extraction GC-MS	
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	
650	Characterisation of Waste (Leaching C2,C8,C10,WAC)	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

Text example All items indicated in italic font represent customer-supplied information that may not be independently verified by the laboratory

This report shall not be reproduced except in full, and only with the prior approval of the laboratory.

Any comments or interpretations are outside the scope of UKAS accreditation.

The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.

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 EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at $\leq 30^{\circ}\text{C}$ 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.

Where analysis is performed on a dried and crushed sample, it has been prepared by crushing all of the sample. If material has been removed prior to crushing, or by request of the client, this will be stated on the report.

NEW_ASB Eurofins Chemtest Limited, 11 Depot Road, Newmarket, CB8 0AL

DURHAM Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

Sample Deviation Codes

As a result of any of the below deviations applying, the test results may be unreliable

- 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 - The required amount of sample for analysis was not received
- H - Appropriate cooling measures were not taken for sample transportation

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.

Report Information

Water Sample Category Key for Accreditation

DW - Drinking Water (Non-Regulatory)
GW - Ground Water
LE - Land Leachate
NA - Not Applicable
PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

Asbestos Tests LOD = LOQ

Limit of Detection = Limit of Quantification for asbestos results only

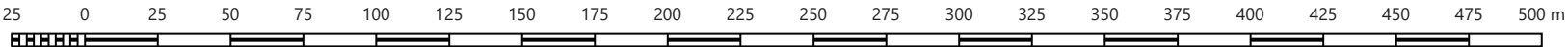
If you require extended retention of samples, please email your requirements to:
cs@etuki.eurofins.com

Appendix 12

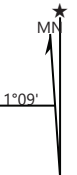
As-Surveyed Site Plan



26458 Old Connaught South Dublin - Phase 1



Scale: 1 : 2500.



Appendix F. Responses to Uisce Eireann Workshop Queries



Irish Water Form IW-AD-EDS-FM-003			Project Design Review Contract Document and Comments Tracker		
Workshop Date:					
			WS4		
			IDD Portfolio Manager		
			ESP Feedback / Comments		
Document	Participant Name	Query ID	IW Observations / Comment	ESP Feedback / Comments	Addressed by
Planning WWPS and RM Design Report - Phase A1	Padraig Hanly	ADRL 4.1	Section 2.2 of Report - Masterplan comments sent back by UE for response. WS4 Detailed Design and WS 5 Hazop to occur later when the detailed design for the project is complete.	Noted	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Padraig Hanly	ADRL 4.2	Section 2.2 of report - Mentioned that character areas may change later as development plans progress. The levels of the WWPS are now being set through the review and acceptance of the masterplan and proposed WWPS inlet levels. If any changes later to the character areas, need to be working to the invert levels now being set for the system. Noted in section 2.2 that Castlethorn are progressing planning submission in advance of completing the detailed design. Noting here and as mentioned in previous meetings, UE are highlighting the risk with this approach. If there are changes needed in the detailed design that result in a material change to the planning permission sought, then this is taken at Castlethorns risk where an updated Planning application will be required if this occurs.	Noted	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Padraig Hanly	ADRL 4.3	Section 3 - SI. It is noted that SI has not yet taken place where the proposed WWPS is to be constructed. This I understand will be carried out at a later date by Castlethorn. There are two different SI reports provided, one shows obstruction at 6/7 metres and other 10/11m. When SI carried out at proposed WWPS location, clarity needed from UE on ground conditions expected at WWPS site to determine rock, ground water conditions etc to be dealt with to enable construction. No map provided showing locations of SI in Appendix E	Noted	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Padraig Hanly	ADRL 4.4	Has there been engagement with landowners/residents on the proposed route of the pipe crossing? If the pipe route changes later through design phase / engagement, is this a risk of material change in planning permission? Location of pipework and vent stack on eastern side of motorway may be challenged by residents/landowners	Preliminary Site Investigation work has been carried, additional site investigations at the location of the proposed pumping station will be completed as part of the detail design process. Refer to AtkinsRealis Pump Station report 012446DG0026 for SI works completed to date	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Padraig Hanly	ADRL 4.6	Site Layout Drawing - Important that the sizing etc of above ground structures is conservative to ensure there is no need to make anything bigger after planning has been submitted	Engagement with the landowners to the West of the N11 has taken place. To the East of the N11 no engagement has taken place, however, the proposed HDD receiver pit and associated vent stack is located with public areas or areas in charge of DL RCC	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Padraig Hanly	ADRL 4.7	Are welfare facilities required by Ops? I.e. toilet etc. Is a control building required for a WWPS of this scale rather than kiosks?	Refer to AtkinsRealis drawing ATK-ZZ-ZZ-DR-CE-900572 for pump station layout and associated drawings including plan and elevations of proposed equipment and buildings.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Padraig Hanly	ADRL 4.8	Proposed Storage Tank Cross Section Dwg - this shows the tank close to existing ground level. It is understood the pipe inlet invert level is approx 7m deep. Cross sections to be updated accordingly.	A welfare facility has been provided as part of the proposed Pump Station Building. Refer to AtkinsRealis drawing ATK-ZZ-ZZ-DR-CE-900574 for building layout.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Padraig Hanly	ADRL 4.9	As per Operations comments elsewhere, for WWPS of this depth typically Dry Well arrangement required. This needs to be accommodated in WWPS design before planning submission as it will impact site footprint, layout etc.	Refer to AtkinsRealis drawing ATK-ZZ-ZZ-DR-CE-900575 and ATK-ZZ-ZZ-DR-CE-900576 for cross sections through the proposed tank.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Padraig Hanly	ADRL 4.10	Positioning of gantry etc (if needed) to be included in planning drawings as they are above ground	Design has been updated for Dry Well arrangement.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Padraig Hanly	ADRL 4.11	Are jet mixers or blowers required here for this tank? Blowers require above ground kiosks which will impact planning drawings. Blowers have been required on a similar project with storage tank of this depth	Design has been updated for Dry Well arrangement. Based on the depth of the tank blowers have been provided with above ground kiosks. Refer to AtkinsRealis drawing ATK-ZZ-ZZ-DR-CE-900572	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Padraig Hanly	ADRL 4.12	It was noted at meeting that inlet sewer is coming into the wet well at considerable depth. As noted by Atkins (UE) review comment 4.21, it is imperative to ensure that MH levels have been checked and there is no possibility of upstream network flooding. If TWL level of tank needs to drop, tank gets deeper etc.	DLRCC requested that the EO is via the Foul Drainage network and will discharge to the lowest point on the network within the Phase 1 planning application. The current EO location is manhole F-123 to the North East of the Phase 1 development as indicated on AtkinsRealis Foul Drainage drawing ATK-ZZ-ZZ-DR-CE-900552. DLRCC have confirmed they will not allow for direct overflow to the storm network or existing ditch located to the North of the Pump Station site.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Padraig Hanly	ADRL 4.13			
			12	12	

Asset Delivery Engineering Services (PMO)					
Internal IW Review				ESP Feedback / Comments	
Document	Participant Name	Query ID	IW Observations / Comment	ESP Feedback / Comments	Addressed by
Old Conna LAP Overall Foul Drainage Strategy	Atkins (UE)	ADES 4.1	Each Developer Masterplan should include submission of a layout and pipe size with invert levels leaving their site.	The Foul Drainage Masterplan hydraulic model was completed by AtkinsRéalis and provided to UE for information in May 2026. The hydraulic model has been developed based on the current masterplan proposals for the Old Connaught LAP lands, incorporating residential development areas under the control of Ballymore, Castlethorn and Glenveagh (who AtkinsRéalis is acting on behalf of) along with other Land within the LAP including DL RCC lands and other zoned parcels. Where detailed design information is available, the proposed foul drainage network has been modelled using confirmed layouts, pipe sizes, invert levels and road levels. For areas still at a preliminary design stage, indicative layouts and existing ground levels have been adopted and will be refined as the design progresses. Pipe sizes and Invert levels have been provided as part of the hydraulic model. The proposed foul drainage strategy comprises a strategic gravity sewer network designed to collect and convey flows from the Northern, Central, Southern and Western Character Areas to a central foul pumping station. The network has been sized to accommodate both the immediate development proposals and the ultimate build-out of the LAP lands, ensuring sufficient capacity for forecast future growth. The hydraulic model includes allowances for all identified development lands within the LAP boundary and has been designed to provide an integrated foul drainage solution across the wider catchment. The proposed pumping station has been sized to serve approximately 4,737 residential units, equivalent to 12,790 Population Equivalent (P.E.), and incorporates the required 24-hour emergency storage capacity in accordance with Ulisce Éireann requirements. The modelling assumptions and proposed network arrangement will be subject to review and confirmation through the Ulisce Éireann approval process.	AtkinsRéalis
Old Conna LAP Overall Foul Drainage Strategy	Atkins (UE)	ADES 4.2	The route they propose to get to the proposed WwPs location, include the invert level they propose to gravitate to that point.	Please refer to AtkinsRéalis drawings ATK-ZZ-ZZ-DR-CE-900571 and ATK-ZZ-ZZ-DR-CE-900580 for current routes to the Pump Station. Invert Levels have been provided has part of the hydraulic mode. Drawing indicates inlet location to the proposed Pump Station. The main existing service within the LAP is the existing storm water culvert located along Old Connaught Avenue. An assessment based on know depth of the Culvert at the crossing point with the Foul drainage network from the Southern and Western Character (under the control of Glenveagh and DL RCC). Drawing ATK-ZZ-ZZ-DR-CE-900571 indicates the location of crossing the existing culvert including and clearance distance between the existing storm and proposed foul drainage. Information of crossing also provided in image below.	AtkinsRéalis
Old Conna LAP Overall Foul Drainage Strategy	Atkins (UE)	ADES 4.3	The layouts should note where they plan to cross existing services and the depth of same.	Please refer to AtkinsRéalis drawing ATK-ZZ-ZZ-DR-CE-900580 for route of rising main, M11 road crossing and final tie in location to the existing WW network on Old Connaught Avenue. Note as requested by UE on the 28/07/26 as spur from the PS inlet manhole has been provide to allow for connection from the network to the South.	AtkinsRéalis
Old Conna LAP Overall Foul Drainage Strategy	Atkins (UE)	ADES 4.4	Include Rising main, road crossing and tie in point to existing WW network	Pump Located at level of circa 12.130mOD. Initial pump calculations take account of head within the rising main and head loss along the distance of the rising main.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.5	Inlet invert level indicated in the drawings is 14.277 (Dwg No. 900677) but the pump size calculations consider 21m	Initial Submergence and clearance has been determined, however, final checks to be completed at detailed design stage depending on pump selection.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.6	Required minimum submergence and clearance need to be confirmed with the pump manufacturer to confirm the IL of wet well. This might impact the depth of wet well		AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.7	The calculation sheet requires some corrections to the friction loss calculations, which will result in slightly higher pressure losses. This comment can be taken into account during the finalisation of the pump sizing. Friction loss calculations should include all valves and the flowmeter	Final calculations will be provided to UE as part of the detail design processes including allowance for valves and flowmeter.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.8	The pump is capable of delivering the required duty at low flow but 1. It is operating at only about 20% of Best Efficiency Point (BEP) flow - operation far from BEP 2. That is a very large turndown ratio and would need verification against Flygt's minimum permissible operating speed for this pump. 3. 28.3 l/s @ 20.8 m point is the normal duty and the 7.5 l/s point is an initial low-flow condition managed through VFD control The proposed tank is located in close proximity to the site boundary, which may present constraints for deep excavation and construction activities. Please confirm the proposed construction methodology for the storage tank and demonstrate that sufficient space is available for excavation support, temporary works, and construction access. Temporary working areas should be identified and included when finalising the red-line boundary	Pump selection has been updated to take account of Duty / Standby set up rather than Duty / Assist / Standby. While an initial assessment has been carried out for pump selection as part of the planning application submission. Final Pump Design is to be completed at detail design stage. Based on the proximity to the site boundary, sheet piling will be required during construction works. Full Construction methodology will be determine at detail design stage in coordination with contractors.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.9			AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.10	The pumping station site layout shall indicate the vent stack location, lighting/temetry poles, access road	Noted, please refer to AtkinsRealis drawing ATK-ZZ-ZZ-DR-CE-900572 for proposed site layout including Odour Control Until, lighting location, access road etc.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.11	Emergency overflow pipework to Ditch is currently clashing with the fence Also no details provided in the section drawing regarding the overflow connection	DLRCC requested that the EO is via the Foul Drainage network and will discharge to the lowest point on the network within the Phase 1 planning application. The current EO location is manhole F-123 to the North East of the Phase 1 development as indicated on AtkinsRealis Foul Drainage drawing ATK-ZZ-ZZ-DR-CE-900552 . DLRCC have confirmed they will not allow for direct overflow to the storm network or existing ditch located to the North of the Pump Station site.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.12	Was 2 cells over 1 big Emergency storage tank considered from cleaning and maintenance perspective as it will have - less pipe work, fewer valves and better hydraulic characteristic	The proposed Emergency storage tank has been split into 2 cells as advised rather than 1 large tank. Refer to AtkinsRealis drawing ATK-ZZ-ZZ-DR-CE-900572 and ATK-ZZ-ZZ-DR-CE-900575 for plans and cross section.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.13	Manhole 2050x1500 - Please indicate what this is for? Is it an access shaft?	Layout has been updated, refer to AtkinsRealis drawing ATK-ZZ-ZZ-DR-CE-900572	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.14	Over pump Bauer connection has not been considered	Design has been revised to a Dry Well pump Station.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.15	It is assumed that the rising main has been routed beneath the chemical bulk tank and dosing kiosk to avoid increasing the overall pumping station footprint, particularly given that the chemical dosing system is intended for interim operation only. However, depending on the anticipated duration of the interim phase, it would be prudent to confirm that the arrangement remains acceptable from an operational and maintenance perspective, as any future requirement for inspection, repair or replacement of the rising main could present access and operational challenges	Layout has been updated with chemical Dosing Units not directly above the rising main. Chemical dosing unit now connected directly into Wet well. Depending on Phasing of the Old Conna LAP and construction stages it will be determine at what stage dosing is required until sufficient PE where dosing can be removed. Further discussions to take place at detail design stage with UE in relation to operational and maintenance requirements.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.16	Pipeline routed through future generator location - need to be reviewed	Layout has been updated, refer to AtkinsRealis drawing ATK-ZZ-ZZ-DR-CE-90072	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.17	The chemical unloading bay with adequate vehicular access, bunding for spill collection arrangement not shown, this needs to be further developed to aling with UE standards.	Layout has been updated, refer to AtkinsRealis drawing ATK-ZZ-ZZ-DR-CE-90055 , Allowance has been made for bundling for spill collection back into the foul drainage network.	AtkinsRéalis

Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.18	Was the option of adopting a single rising main (instead of 2no) , with provision for daily flushing by pumping at a self-cleansing velocity during the interim operating period, considered?	The proposal is to provide 2No. Rising mains. Interim rising main of 100dia to cater for the initial stages of the LAP and the large 200dia for the full LAP build out.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.19	Does the pumping station (PS) layout require a booster tank and pump arrangement for the service water system for washdown/facilities?	Water supply within the area is fed from the new Ballyman reservoirs located to the west of old Conna village, UE has not indicated any low pressure issues within the area with pressure reducing valves to be installed as part of the development. It is therefore not expected that booster tank / pumps are required. Refer to AtkinsRéalis drawing ATK-ZZ-ZZ-DR-CE-902702 for water mains later including supply route to the proposed PS.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.20	From operations feedback WWPS elsewhere being constructed at 9.5m depth required drywell/wet well arrangement to ensure safe operation and maintenance in accordance with H&S requirements	Design has been revised to a Dry Well pump Station.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.21	The emergency overflow is 7m above the inlet sewer level in Wet well. The incoming sewer level will surcharge significantly before even the emergency storage is utilised and may cause upstream network flooding . UE standard TEC-800-04 calls for TWL to be 0.5m lower than the lowest manhole cover level. Has a hydraulic model been developed to verify that the Hydraulic Grade Line (HGL) and TWL remain within acceptable limits and below the specified threshold, thereby preventing flooding in the upstream network?	DLRCC requested that the EO is via the Foul Drainage network and will discharge to the lowest point on the network within the Phase 1 planning application. The current EO location is manhole F-123 to the North East of the Phase 1 development as indicated on AtkinsRéalis Foul Drainage drawing ATK-ZZ-ZZ-DR-CE-900552 . DLRCC have confirmed they will not allow for direct overflow to the storm network or existing ditch located to the North of the Pump Station site.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.22	Permanent lifting arrangement is required as per UE standard - no details has been shown	Design has been revised to a Dry Well pump Station.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.23	The mixing arrangement for the emergency storage tank has not been indicated. In addition, Tank cleaning provisions should be incorporated, taking into account the storage tank capacity and the recommended operational and maintenance requirements.	Tank Mixers have been provided with overground blower kiosk as indicated on AtkinsRéalis drawing ATK-ZZ-ZZ-DR-CE-90072 . Tank has been split into 2 cells reducing the need for cleaning of a single large tank. Full details of cleaning requirements will be provided to UE at detail design stage and agreed prior to construction.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.24	The return discharge from the emergency storage tank is approximately 2.65 m above the wet well floor. Please ensure that adequate energy dissipation measures are incorporated to prevent turbulence and vortex formation at the pump suction. However, in light of the comments noted above, the overall emergency storage tank levels should be reviewed and finalised to ensure satisfactory hydraulic performance.	Design has been revised to a Dry Well pump Station. Return from Emergency storage tank has been revised to a depth of circa 600mm.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.25	Ground investigation flags up high ground water level in the vicinity - has any floatation calculation been undertaken to check structural stability of the tanks	Ground Investigation carried out by DLRCC indicated high ground water levels. The Tanks will be designed at detail design stage to take account of ground water levels including stability and anti flotation requirements.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.26	No details on vent connections from wet well and emergency storage tank to vent stack. Also no details have been incorporated on passive vs active OCU.	An Active OCU has been provided as part of the Dry Well design. Please refer to drawing AtkinsRéalis drawing ATK-ZZ-ZZ-DR-CE-900572 for further details.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.27	The mid and high level cut out are not matching with the calculation provided in Appendix B. Calculation consider 200mm difference between cut in and cut out - volume should be determined from optimised pump start and stop no.	Noted, pump cut in / cut out levels will be further refined at detail design stage and agreed with UE prior to construction stage.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.28	A bypass connection with penstock arrangement shall be considered from inlet manhole to emergency storage tank - no such details available.	Provided, please refer to AtkinsRéalis drawing ATK-ZZ-ZZ-DR-CE-900572 for further details.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.29	Inadequate details for Odour control unit, lighting arrangement, fencing, security gate, access road, surface water drainage, welfare facility, wash down	Please refer to AtkinsRéalis drawings ATK-ZZ-ZZ-DR-CE-900572 - ATK-ZZ-ZZ-DR-CE-900580 for further details including OCU. Lighting, fencing, gates, access road, drainage, welfare facility, Pump Station Building, emergency wash down etc.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.30	What is the height of the vent stack? the height shall be clearly indicated - also the PS layout drawing does not show the vent stack	An Active OCU has been provided as part of the Dry Well design. Please refer to drawing AtkinsRéalis drawing ATK-ZZ-ZZ-DR-CE-900572 for further details.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.31	The sewer connection from south is not showing in the drawing - include most updated drawing	Please refer to drawing AtkinsRéalis drawing ATK-ZZ-ZZ-DR-CE-900572 for further details. Connection will terminate outside of the proposal PS fence line to allow for future connections by others.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.32	Access road width, finish, long and cross sections with adequate details are not included	The proposed access road will be 6m wide as indicated on drawing ATK-ZZ-ZZ-DR-CE-900572 . Refer to AtkinsRéalis typical road cross sections within the planning application for build up.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.33	There are close proximity found with existing Tress around the Ps area and also along the rising main. Please include a biodiversity calculation showing net gain through adequate landscape planning. Also the excavation works shall consider adequate exclusion zone as per UE standards	Refer to overall planning application package for Environmental consideration as part of the wider development including Pump Station.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Atkins (UE)	ADES 4.34	No site elevation drawing including the site fencing has been included in the pack	Please refer to AtkinsRéalis drawings ATK-ZZ-ZZ-DR-CE-90072 - ATK-ZZ-ZZ-DR-CE-90080 for further details	AtkinsRéalis

Programme Manager (Required) - Programmes Only					
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Planning WWPS and RM Design Report - Phase A1	Ciaran Ryan	PRM 4.1	Re. Section 2.1 of the report; noted that site selection exercise was completed by DLRC and ARUP consulting engineers which confirmed the preferred location and to which the PS design in this report has been located. This report should be updated to include details of the locations considered and the criteria that identified the preferred location; important same is done to justify the selection of the location if land is not provided by the current landowner by agreement.	ARUP / DLRC report will be included as an appendix to the foul PS report. The purpose of this report was not to carry out the site section process again, but to further develop the site location and detail in line with the UE requirements of 24 hour storage and associated infrastructure to sufficient detail for the LRD planning submission.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Ciaran Ryan	PRM 4.2	Re. Section 2.2 of the report; note the requirement of WS4/5 and HAZOP to occur to complete DD. Note risk of revised planning submission being required, by taking the approach as outlined currently in Section 2.2 of the report.	Significant number of meetings have taken place between UE / DLRC and Castlehorn to determine the site layout and key parameters for the PS design to sufficient detail for the LRD planning submission. Further meetings including WS4/5 and HAZOP will continue to take place in parallel with the planning submission.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Ciaran Ryan	PRM 4.3	Re. Section 2.2 of the report; notes that "The model made allowance for each of the areas as indicated in item 1 above including layouts for each Character area"; have the owners of the Character Areas indicated on drawing no. ATK-ZZ-ZZ-DR-CE-900571 (i.e. Glenveagh sites, Ballymore site, DLRC site) been consulted with and/or agreed with the invert level proposed at the WwPS?	AtkinsRéalis completed the hydraulic model for the LAP on behalf of Castlehorn / Ballymore and Glenveagh including input from DLRC. The model was agreed and accepted by UE.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Ciaran Ryan	PRM 4.4	Re. Section 4.1 of the report; re Emergency Overflow; what environmental, inc. ecological, reports have been prepared as part of a in relation to the Planning Application for the Old Connaught Phase 1?	Please refer to Environmental reports submitted as part of the LRD planning application	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Ciaran Ryan	PRM 4.5	Re. Notes; what documents are been prepared in addition to this report re. the planning application that include scope of the WwPS and RM? Can same transmittal be provided to UE for review and consideration if needs review, in particular Env. Reports.	Please refer to Environmental reports submitted as part of the LRD planning application	AtkinsRéalis
ATK-ZZ-ZZ-DR-CE-900571	Ciaran Ryan	PRM 4.6	Re comment "Existing storm pipe invert level (IL) at this junction is 21.04m. The proposed foul sewer invert level is 17.27m, providing a vertical separation of approximately 3.47m. This separation is considered adequate to prevent any conflict between the existing and proposed networks."; has the storm water management plan of DLR been reviewed to ensure this is adequate separation throughout the proposed ww network?	The hydraulic modelling for the entire LAP has been completed and accepted by UE. A clash detection for the LRD planning application has been completed prior to the planning application to determine no clash between storm and foul drainage. The entire LAP storm drainage management plan has not been hydraulically modelled to determine full clash detection, no design levels or site layout are available at this stage to fully determine the exact network requirement.	AtkinsRéalis
ATK-ZZ-ZZ-DR-CE-900571	Ciaran Ryan	PRM 4.7	Has the layout of the proposed ww network considered existing services and proposed services, through clash detection, for all sites within the LAP?	The hydraulic modelling for the entire LAP has been completed and accepted by UE. A clash detection for the LRD planning application has been completed prior to the planning application to determine no clash between storm and foul drainage. The entire LAP storm drainage management plan has not been hydraulically modelled to determine full clash detection, no design levels or site layout are available at this stage to fully determine the exact network requirement.	AtkinsRéalis
Asset Planning (Required)					
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Planning WWPS and RM Design Report - Phase A1	Keith Kirwan	AP 4.1	As its over 10,000 PE I would like to see facility for a generator in addition to a plug in set up. The plug in will be in detailed design and wont affect planning. The Generator needs to be outlined in planning but it's a future physical requirement when the catchment is at 10,000pe. It wont be installed immediately unless Operations justify it but given the 24hr + storage, the plug in, the bypass arrangement, and finally an EO. I'm not sure it's a phase 1 need.	The revised Pump Station Design has reduced the PE in line with the requirements as set out in the LAP. Refer to AtkinsRéalis report 012446DG0026 for further detail	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Keith Kirwan	AP 4.2	The dirms for a 32t tanker were obtained from Darragh Woods and provided to Atkins so I hope they used this in auto track	Auto tracking has been updated to take account of the 32ton Recycler units. Refer to AtkinsRéalis drawing ATK-ZZ-ZZ-DR-CE-900585 for layout.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Keith Kirwan	AP 4.3	The EO might raise queries and be mistaken for a SWO. I prefer having an EO to the SW system so I would like it to be submitted for planning. Requirement to detail out all the falsifies before this kicks in. EG Duty Standby arrangement, Telemetry on WWPS and alarms.	DLRC requested that the EO is via the Foul Drainage network and will discharge to the lowest point on the network within the Phase 1 planning application. The current EO location is manhole F-123 to the North East of the Phase 1 development as indicated on AtkinsRéalis Foul Drainage drawing ATK-ZZ-ZZ-DR-CE-900552. DLRC have confirmed they will not allow for direct overflow to the storm network or existing ditch located to the North of the Pump Station site.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Keith Kirwan	AP 4.4	24 hr storage tank, Plug in facility for a generator pre 10,000 PE and permanent Generator installation at 10,000 PE. By pass arrangement on the rising main to connect a mobile pump. If they all fail to prevent flooding of public and private property the screened EO will kick in.	24 hr storage tank provided as requested by UE. Diesel Generator and Bunded Diesel Storage Tank provided as indicated on drawing AtkinsRéalis drawing ATK-ZZ-ZZ-DR-CE-900572. By pass arrangement on the rising main to connect to mobile pump provided at Valve Chamber	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Keith Kirwan	AP 4.5	It needs to be very clear in their Env reports its not a SWO. We will need to amend the Shanganagh licence noting an EO after construction.	Noted. Refer to Environmental Reports in relation to SWO.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Keith Kirwan	AP 4.6	I see it's a gravity return from the wet well. I have no issue with this if Ops don't. If this changes after planning at detailed design it will have an impact on gantry position if a pump set is required to be lifted from the storage tank	Arrangement has been revised to a Dry Well. Noted that a Gravity return is still proposed from the Emergency Storage to the Wet well, however, the dry well arrangement has removed the need for gravity return from the wet well	AtkinsRéalis
		AP 4.7			
Asset Operations (Required)					
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Planning WWPS and RM Design Report - Phase A1	Owen Shiell	AO 4.1	I don't see an inlet sewer isolation penstock and divert to storage tank arrangements, although it is mentioned. E.g. to allow for wet well deep cleaning	A Penstock valve has been provided on the inlet manhole to the wet well chamber with an overflow connection to the 24 Emergency Storage Tank, this will allow for isolation of the wet well for deep clean.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Owen Shiell	AO 4.2	Is this an 8.5 metre deep wet well pumping station? Which would not be in accordance with STD-WW-28A Rev3. Deep stations like should be Dry Well Layout.	Noted, the design has been updated as a Dry Well Pump Station.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Owen Shiell	AO 4.3	Twin mains is welcome and helps with low population on start-up. Chemical dosing appears to be injected into rising main manifold. Can this be a dribble bar into the wet well to allow for mixing and septicity prevention during wet well retention?	Design revised to allow for Chemical Dosing directly into the the proposed wet well chamber. Refer to AtkinsRéalis drawing ATK-ZZ-ZZ-DR-CE-900572	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Owen Shiell	AO 4.4	Can unused rising main be blanked with a pressure transducer and be left under some sort of pressure to allow burst detection for duration pipe is not in use?	Details of pressure transducer to be determined at detail design stage and agreed with UE prior to construction.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Owen Shiell	AO 4.5	What is determining the vent stack location? It appears quite distant from the tanks requiring a long run of 100mm dia. vent pipe. This vent pipe may be a blockage risk over time by condensation or infiltration. Can this be at a specified fall or other mitigation	Vent Stack update to Odour Control Unit. The Odour Control until has been located directly adjacent to the wet well. Refer to AtkinsRéalis drawing ATK-ZZ-ZZ-DR-CE-900572	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Owen Shiell	AO 4.6	What is determining the Wet Kiosk location? It seems rather isolated. The water supply pipe to it appears to be on a fence line or mislabelled as a fence	Noted, the design has been updated as a Dry Well Pump Station.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Owen Shiell	AO 4.7	A WwPS of this size should warrant a large access cover at the flowmeter chamber, over the flowmeter. For example, a 1200 x 900 Technover type opening with fall arrest grid	Details of manhole covers and fall arrest grid to be determined at detail design stage and agreed with UE prior to construction.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Owen Shiell	AO 4.8	Please advise if float switches are primary pump control. STD-WW-28A requires ultrasonic level instrument and this would be expected for major WwPSs under TEC-800-02 with probes as backup control for resilience	In accordance with STD-WW-28A, ultrasonic level instrument will be provided as part of the dry well WwPSs with probes as backup.	AtkinsRéalis

Planning WWPS and RM Design Report - Phase A1	Owen Shiell	AO 4.9	Scour Valve Chamber at Ch 272 needs careful design. It seems very deep relative to ground level. Local surface drainage to be considered as well	Details of Scour Valve to be determined at detail design stage following SI testing for HDD drilling and rising main design.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Owen Shiell	AO 4.10	Vehicle used for tracking is too small. UE owned 32ton Recycler Units must be used for this exercise	Auto tracking has been updated to take account of the 32ton Recycler units.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Owen Shiell	AO 4.11	Panel drawing has 2no 15kW VSD noted on panel but Wet Well drawing has 3no Pumps	Current design is for a Duty standby arrangement. Pump Design at detail stage will be provided and agreed with UE prior to construction stage.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Owen Shiell	AO 4.12	Floor level around chemical tank should be designed with drainage and spill containment considered. Shower in Woodbrook had no adequate drainage which is a frost risk in winter and a no drainage pathway for a chemical spill to drain into wet well	A bund area has been provided to the Chemical Dosing delivery area. The Emergency show area is provided with a gully directly below to drain back to the foul network with a liner drainage channel adjacent to provide pathway from the chemical holding area to the wet well.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Mike McLoughlin	AO 4.13	Auto track to be carried out for correct size articulated lorry to ensure there is no issue with access for this vehicle both through the housing development as well as into and out of the WWPS site	Articulated Vehicle if required will access the site from the new North South Avenue road. Note that the road is straight access into the PS with no allowance for turning of such vehicles within the site.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Mike McLoughlin	AO 4.14	Enhanced welfare facilities will be required due to scale of the WWPS and the presence of chemical dosing. Developer to review similar UE sites such as the WWPS being constructed in North Drogheda which includes a control building including welfare, canteen, MCC room, pump area etc...	Similar set up has been provided for the proposed pump station building with tea room also provide. Pump Station Building includes WC, MCC, pump area and access stair to dry well.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Mike McLoughlin	AO 4.15	Lifting arrangement to be clarified and included in planning drawings as necessary.	Noted, the design has been updated as a Dry Well Pump Station. Pumps can be accessed via stairs to dry well or lifted to pump room as required.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Brendan Keogh	AO 4.16	Could additional sleeves be added if crossing M1 motorway	Discussions to take place with TII at detail design stage to determine if additional sleeves are required as part of the HDD drilling for the 100dia and 200dia rising mains.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Mike McLoughlin	AO 4.17	Emergency overflow - details of what this is, where it will discharge and how it will operate to be clarified.	DLRCC requested that the EO is via the Foul Drainage network and will discharge to the lowest point on the network within the Phase 1 planning application. The current EO location is manhole F-123 to the North East of the Phase 1 development as indicated on AtkinsRealis Foul Drainage drawing ATK-ZZ-ZZ-DR-CE-900552. DLRCC have confirmed they will not allow for direct overflow to the storm network or existing ditch located to the North of the Pump Station site.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Brendan Keogh	AO 4.18	Lighting around the site to be considered if a planning impact. Lighting also in particular around Wet Well/Dry well	Noted, the design has been updated as a Dry Well Pump Station with Pump Station Building. Light has been provided around the external areas of the site. Refer to AtkinsRealis drawing ATK-ZZ-ZZ-DR-CE-900572.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Brendan Keogh	AO 4.19	Provision of space for a skip at WWPS site	Temporary skip can be provided adjacent to Diesel Generator.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Owen Shiell	AO 4.20	Dry Well configuration appropriate. Sandford Storm Tank and North Drogheda Strategic WwPS are both similar cases where dry well configuration was required, by UE and Tech Assurance ESP	Noted, the design has been updated as a Dry Well Pump Station.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Owen Shiell	AO 4.21	External equipment. A wet well configuration without a pumphouse; there could be several items above ground and become an eyesore. MCC Kiosk, Wet kiosk, Permanent Lifting Gantry, Permanent Handrailing foul pump opening (would be my request), WC or larger prefab welfare unit. These can all be contained / hidden within a pumphouse over dry well. I'm sure there will be a cost increase for these but the need should outweigh the short term cost	Noted, the design has been updated as a Dry Well Pump Station with Pump Station Building. Light has been provided around the external areas of the site. Refer to AtkinsRealis drawing ATK-ZZ-ZZ-DR-CE-900572.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A1	Owen Shiell	AO 4.22	MCC should be a Form 4 panel	Form 4 panel will be provided within the MCC room of the Pump Station Building. Full detail will be determined at detail design stage and agreed with UE prior to construction.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A2	Owen Shiell	AO 4.13	MCC should have a section reserved for future standby generator Auto Changeover Breaker (ACB)	MCC room design will be completed at detail design stage and agreed with UE prior to construction.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A3	Owen Shiell	AO 4.14	MIC and MCC may need to accommodate storage tank mixing equipment. Note I always prefer Tipping Buckets which only require a minor actuated valve, in terms of electrical supply.	To be determined at detail design stage.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A4	Owen Shiell	AO 4.15	In addition to requiring a wider plot, I would recommend a separation distance between WwPS fence and nearest residence. Keep out of view of children and teenagers if possible. Do DLR have space to shift their apartment block to the East? DLR seemed open getting the land allocation agreed as soon as possible	Current PS location submitted as part of the planning application is agreed with DLRCC. The further building that will be located to the east of the PS site is not designed at this stage and will need to take full account of the proposed PS site.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A5	Owen Shiell	AO 4.16	Will Transient Hydraulic Study be done before planning? Would be nice to know if not needed, for arranging other facilities on site	Transient Hydraulic Stud (Surge Analysis) will be completed as part of the detail design stage. An allowance for a surge vessel has been made located adjacent to the dry well.	AtkinsRéalis
Planning WWPS and RM Design Report - Phase A6	Owen Shiell	AO 4.17	Bypass to Storage Tank required. Mentioned on 06/08/2026 meeting and Garry agreed. Needed for wet well deep cleaning regardless if wet or dry well configuration	A bypass to the storage tank has been proved at the inlet manhole to the wet well.	AtkinsRéalis
		AO 4.18			
		AO 4.19			
		AO 4.20			
		AO 4.21			
		AO 4.22			

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