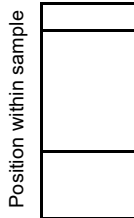




Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test

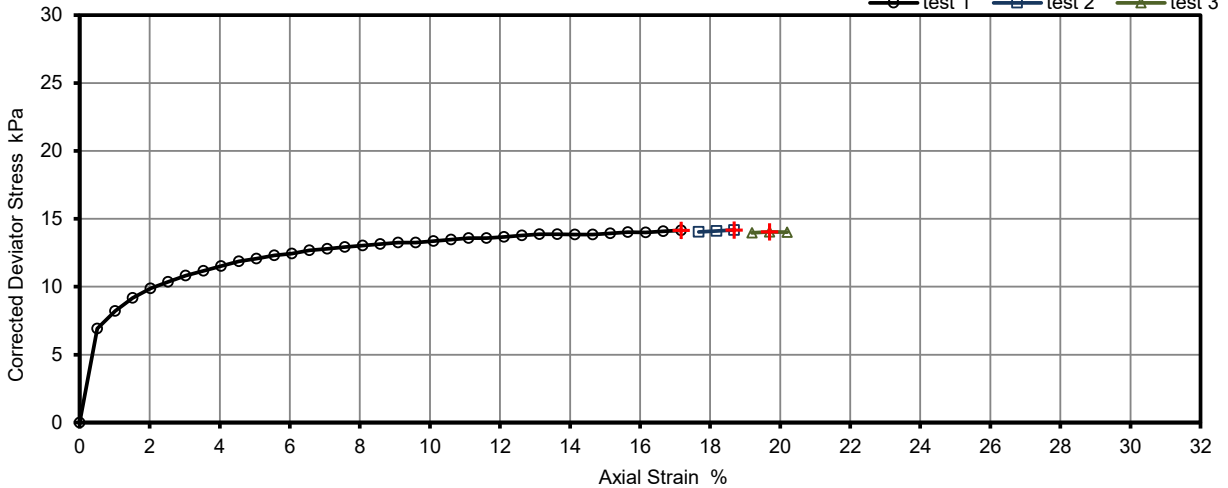
Job Ref	31765			
Borehole/Pit No.	BH1			
Site Name	Phoenix Wharf, Port Talbot			
Sample No.	-			
Project No.	2111006.003	Client: TEC		
Soil Description	Extremely low strength black clayey amorphous PEAT			
			Depth Top	6.40 m
			Depth Base	6.80 m
			Sample Type	U
	Samples received	28/04/2022		
	Schedules received	28/04/2022		
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specimen			
	Date of test	13/05/2022		

Remarks

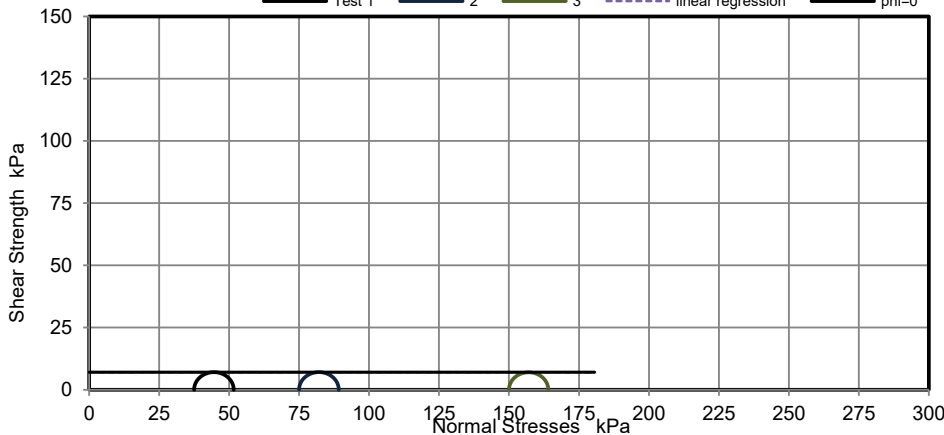


Length	mm	198.0		
Diameter	mm	103.0		
Bulk Density	Mg/m ³	1.63		
Moisture Content	%	59		
Dry Density	Mg/m ³	1.02		
Rate of Strain	%/min	2.00		
Stage Number		1	2	3
Cell Pressure	kPa	38	75	150
Axial Strain	%	17.2	18.7	19.7
Deviator Stress, (σ ₁ - σ ₃)f	kPa	14.2	14.2	14.0
Shear strength, cu	kPa	7.1	7.1	7.0
Mode of failure		Compound		

Deviator Stress v Axial Strain



Mohr Circles



φ_u = 0
Average c_u = 7 kPa

Linear Regression
φ_u = 0.0 °
c_u = 7 kPa

Mohr circles and their interpretation is not covered by BS1377. These are provided for information only.



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Checked and Approved
 Initials: J.P
 Date: 26/05/2022

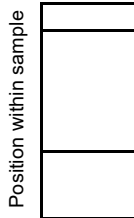
MSF-5 R8a



**Unconsolidated Undrained Triaxial
Compression Test without measurement of
pore pressure - Multistage test**

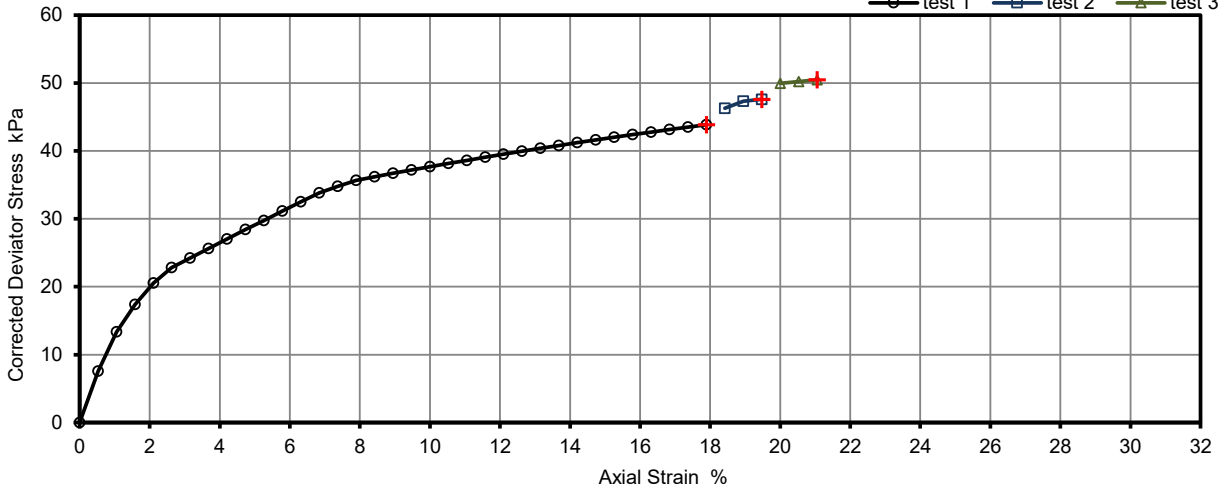
Job Ref	31765		
Borehole/Pit No.	BH2		
Site Name	Phoenix Wharf, Port Talbot		
Sample No.	-		
Project No.	2111006.003	Client: TEC	
Soil Description	Liquid black slightly sandy carbonaceous peaty silty CLAY becoming @ 11.35 m low strength dark grey slightly sandy carbonaceous peaty silty CLAY with frequent pockets of decayed wood fragments	Depth Top	11.00 m
		Depth Base	11.60 m
		Sample Type	U
		Samples received	28/04/2022
Schedules received	28/04/2022		
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specimen		
Date of test	13/05/2022		

Remarks

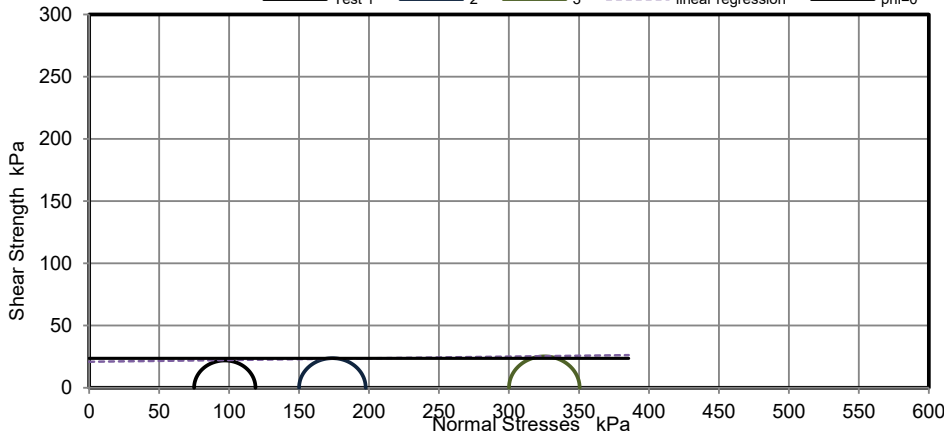


Length	mm	76.0		
Diameter	mm	38.0		
Bulk Density	Mg/m3	1.17		
Moisture Content	%	155		
Dry Density	Mg/m3	0.46		
Rate of Strain	%/min	2.00		
Stage Number		1	2	3
Cell Pressure	kPa	75	150	300
Axial Strain	%	17.9	19.5	21.1
Deviator Stress, (σ ₁ - σ ₃) _f	kPa	43.9	47.6	50.5
Shear strength, cu	kPa	21.9	23.8	25.2
Mode of failure		Compound		

Deviator Stress v Axial Strain



Mohr Circles



φ_u = 0
 Average cu 24 kPa

Linear Regression
 φ_u 0.8 °
 cu 21 kPa

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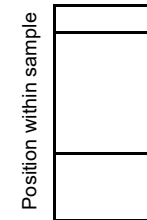
MSF-5 R8a



Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test

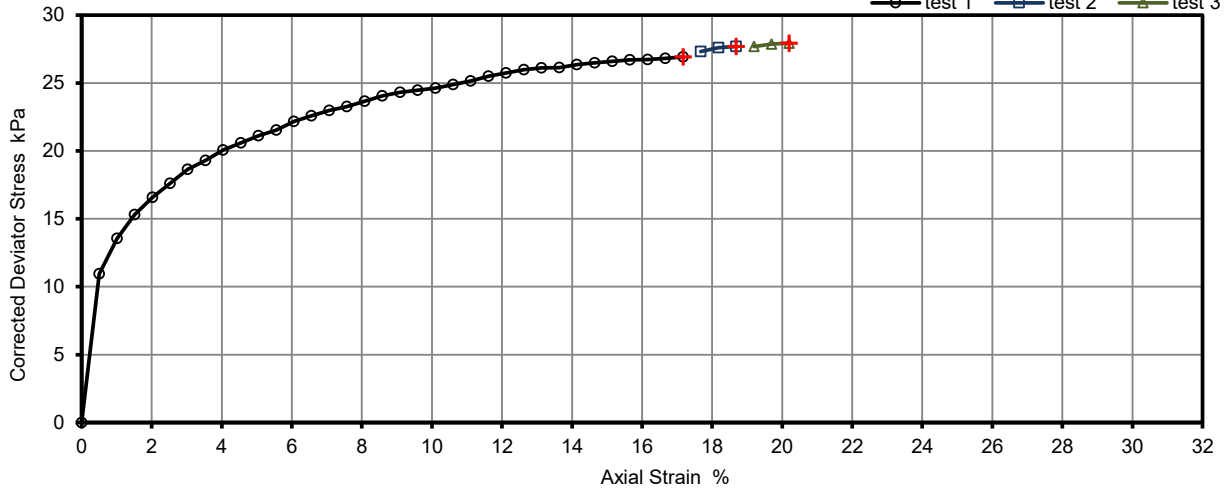
Job Ref	31765		
Borehole/Pit No.	BH3A		
Site Name	Phoenix Wharf, Port Talbot		
Sample No.	-		
Project No.	2111006.003	Client: TEC	
Soil Description	Very low strength slightly sandy slightly gravelly slightly peaty organic silty CLAY (gravel is fine calcareous fragments)	Depth Top	5.20 m
		Depth Base	5.65 m
		Sample Type	U
		Samples received	28/04/2022
Schedules received	28/04/2022		
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specimen		
Date of test	13/05/2022		

Remarks

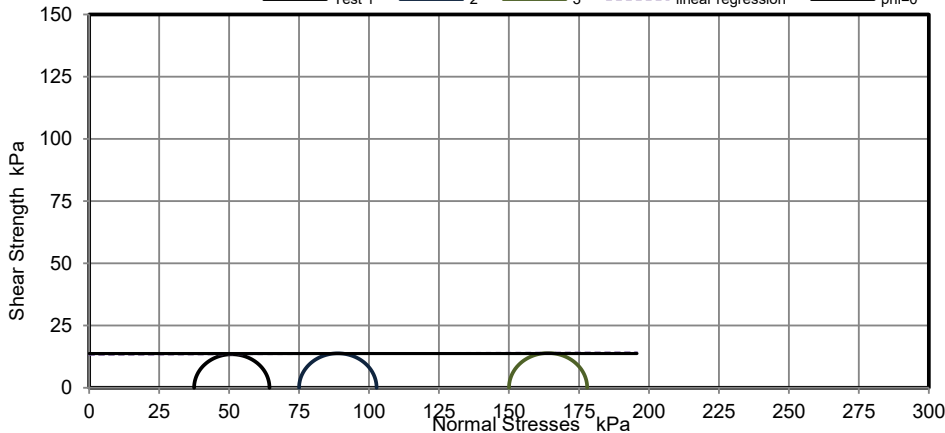


Length	mm	198.0		
Diameter	mm	102.0		
Bulk Density	Mg/m ³	1.90		
Moisture Content	%	38		
Dry Density	Mg/m ³	1.37		
Rate of Strain	%/min	2.00		
Stage Number		1	2	3
Cell Pressure	kPa	38	75	150
Axial Strain	%	17.2	18.7	20.2
Deviator Stress, (σ ₁ - σ ₃)f	kPa	26.9	27.7	27.9
Shear strength, cu	kPa	13.5	13.8	14.0
Mode of failure		Compound		

Deviator Stress v Axial Strain



Mohr Circles



φ_u = 0
 Average c_u = 14 kPa

Linear Regression
 φ_u = 0.2 °
 c_u = 13 kPa

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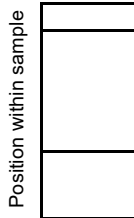
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 Initials: J.P
 Date: 26/05/2022
 MSF-5 R8a



Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test

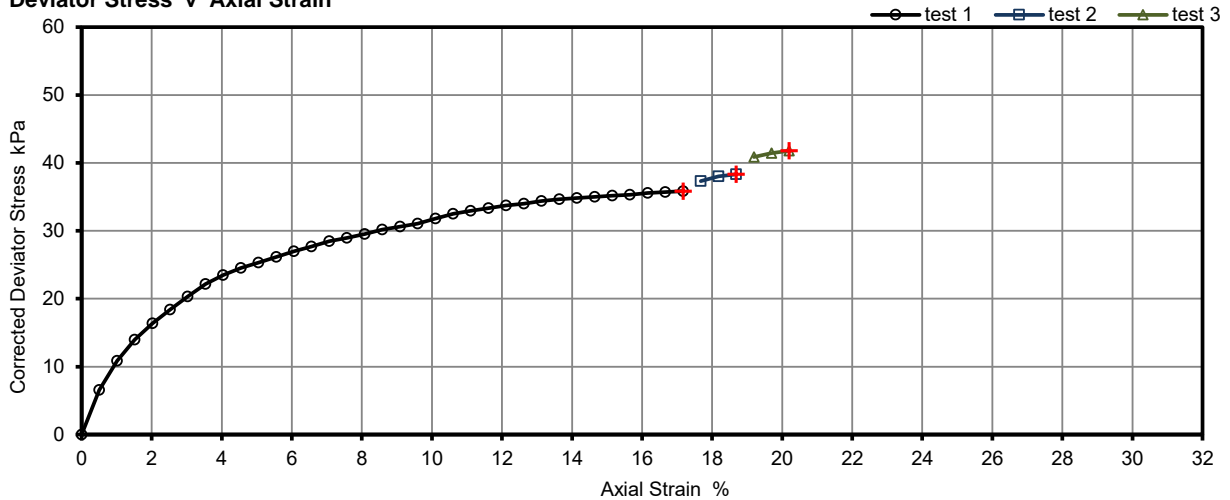
Job Ref	31765		
Borehole/Pit No.	BH3A		
Site Name	Phoenix Wharf, Port Talbot		
Sample No.	-		
Project No.	2111006.003	Client: TEC	
Soil Description	Very low strength spongy clayey pseudo-fibreous PEAT with occasional decayed wood fragments	Depth Top	10.50 m
		Depth Base	10.95 m
		Sample Type	U
		Samples received	28/04/2022
Schedules received	28/04/2022		
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specimen		
Date of test	13/05/2022		

Remarks

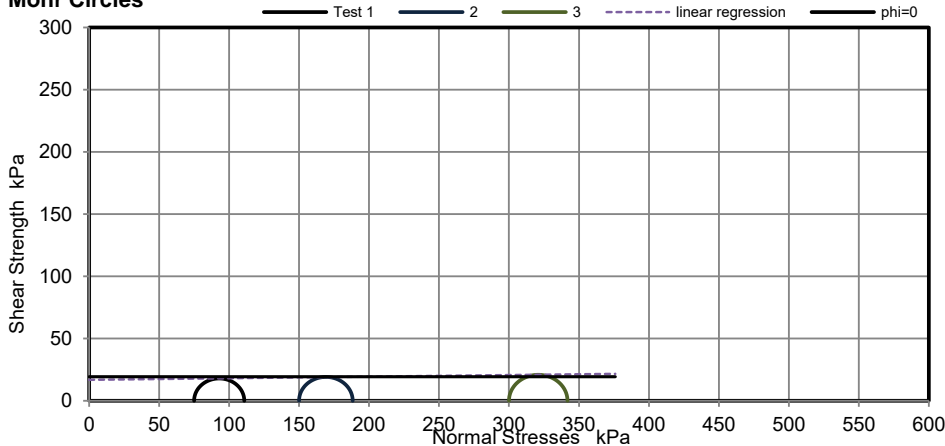


Length	mm	198.0
Diameter	mm	103.0
Bulk Density	Mg/m ³	1.33
Moisture Content	%	119
Dry Density	Mg/m ³	0.61
Rate of Strain	%/min	2.00
Stage Number		1 2 3
Cell Pressure	kPa	75 150 300
Axial Strain	%	17.2 18.7 20.2
Deviator Stress, (σ ₁ - σ ₃) f	kPa	35.8 38.3 41.8
Shear strength, cu	kPa	17.9 19.2 20.9
Mode of failure		Compound

Deviator Stress v Axial Strain



Mohr Circles



φu = 0
 Average cu 19 kPa

Linear Regression
 φu 0.7 °
 cu 17 kPa

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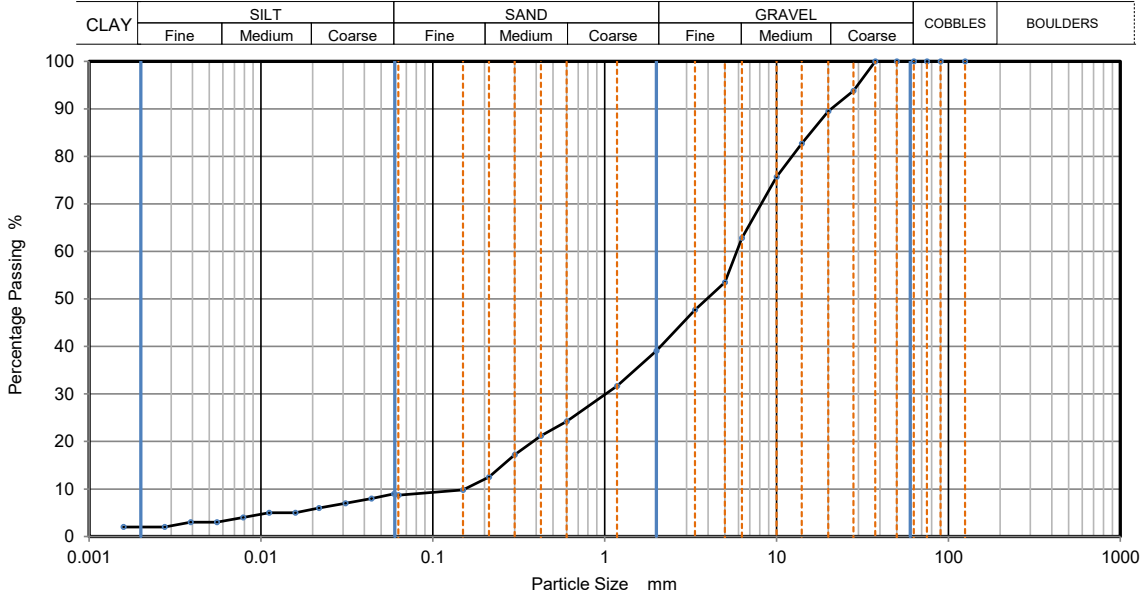
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PARTICLE SIZE DISTRIBUTION

		Job Ref	31765
		Borehole/Pit No.	BH1
Site Name	Phoenix Wharf, Port Talbot	Sample No.	-
Project No.	2111006.003	Client	TEC
Soil Description	Black slightly clayey silty very sandy GRAVEL with carbonaceous fragments (gravel is fmc and sub-angular slate fragments)	Depth Top	1.20 m
		Depth Base	2.20 m
		Sample Type	D
		Samples received	28/04/2022
		Schedules received	28/04/2022
Test Method	BS1377:Part 2: 1990, clause 9.0	Project started	29/04/2022
		Date tested	16/05/2022

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0594	9
90	100	0.0440	8
75	100	0.0310	7
63	100	0.0218	6
50	100	0.0158	5
37.5	100	0.0112	5
28	94	0.0079	4
20	90	0.0055	3
14	83	0.0039	3
10	76	0.0028	2
6.3	63	0.0016	2
5	54		
3.35	48		
2	39		
1.18	32		
0.6	24	Particle density (assumed)	
0.425	21	2.70	Mg/m3
0.3	17		
0.212	13		
0.15	10		
0.063	9		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	60.9
Sand	30.4
Silt	6.6
Clay	2.1

Grading Analysis		
D100	mm	
D60	mm	5.88
D30	mm	1.01
D10	mm	0.154
Uniformity Coefficient		38
Curvature Coefficient		1.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below

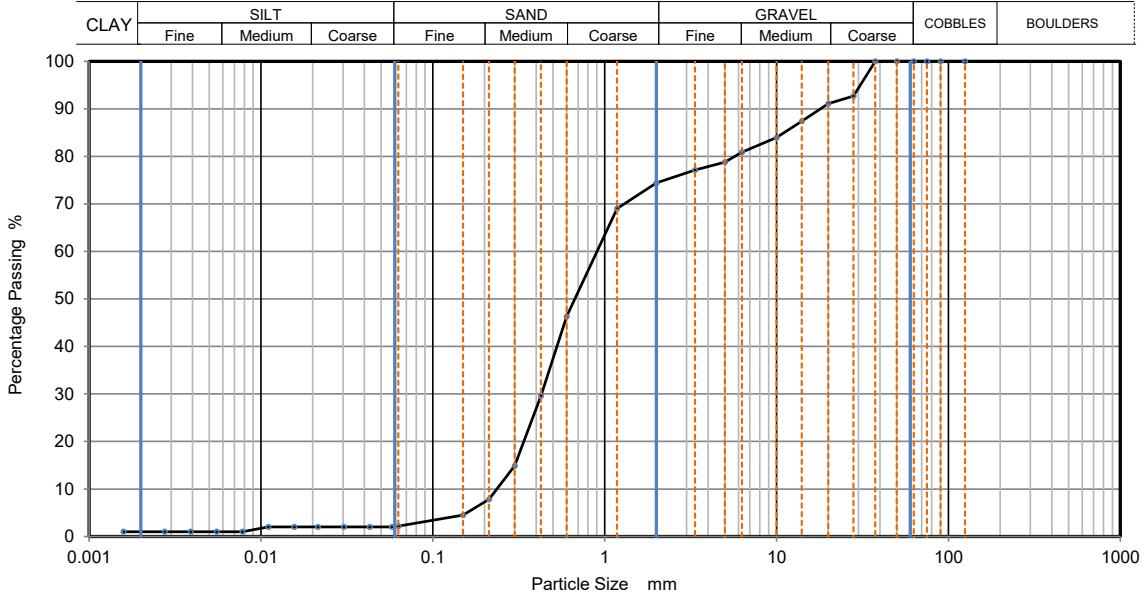
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	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)	
	2519	MSF-5-R3



PARTICLE SIZE DISTRIBUTION

		Job Ref	31765				
		Borehole/Pit No.	BH1				
Site Name	Phoenix Wharf, Port Talbot		Sample No.	-			
Project No.	2111006.003	Client	TEC	Depth Top	11.00	m	
Soil Description	Grey slightly clayey slightly silty very gravelly SAND (gravel is fmc and sub-rounded)			Depth Base	11.60	m	
				Sample Type	D		
				Samples received	28/04/2022		
				Schedules received	28/04/2022		
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	29/04/2022		
<i>These results only apply to the items tested</i>				Date tested	18/05/2022		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0578	2
90	100	0.0429	2
75	100	0.0303	2
63	100	0.0214	2
50	100	0.0156	2
37.5	100	0.0110	2
28	93	0.0078	1
20	91	0.0055	1
14	87	0.0039	1
10	84	0.0028	1
6.3	81	0.0016	1
5	79		
3.35	77		
2	74		
1.18	69		
0.6	46	Particle density (assumed)	
0.425	30	2.70	Mg/m3
0.3	15		
0.212	8		
0.15	5		
0.063	2		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	25.6
Sand	72.3
Silt	1.2
Clay	0.9

Grading Analysis		
D100	mm	
D60	mm	0.902
D30	mm	0.428
D10	mm	0.236
Uniformity Coefficient		3.8
Curvature Coefficient		0.86

Remarks
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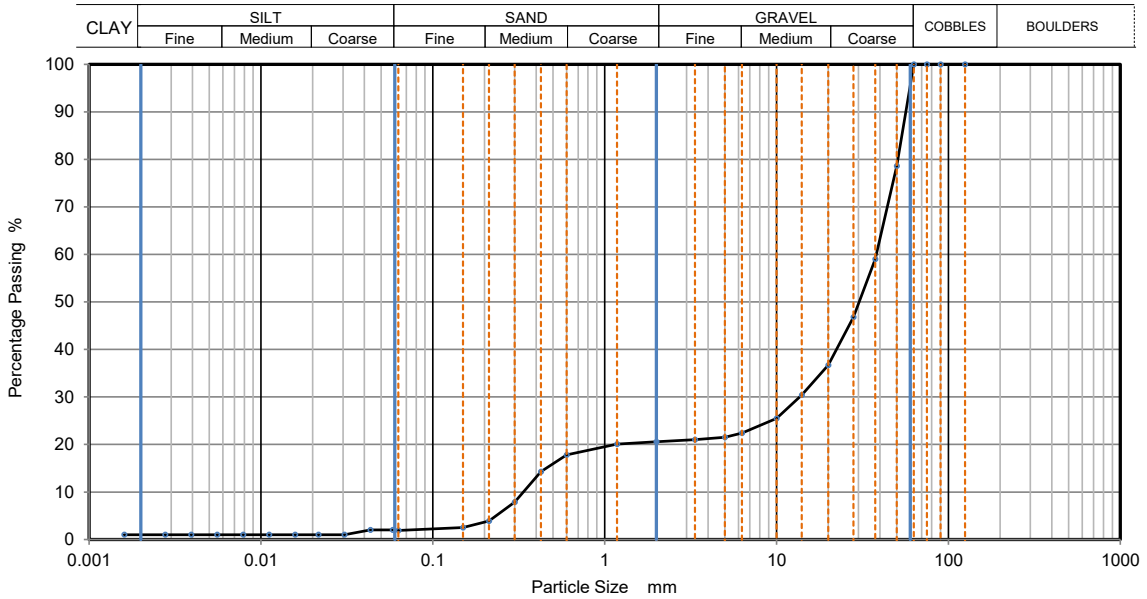
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 Date: 26/05/2022



PARTICLE SIZE DISTRIBUTION

		Job Ref	31765
		Borehole/Pit No.	BH1
Site Name	Phoenix Wharf, Port Talbot	Sample No.	-
Project No.	2111006.003	Client	TEC
Soil Description	Grey slightly clayey slightly silty sandy GRAVEL (gravel is fmc and sub-angular to rounded)	Depth Top	16.10 m
		Depth Base	17.60 m
		Sample Type	B
		Samples received	28/04/2022
Test Method	BS1377:Part 2: 1990, clause 9.0	Schedules received	28/04/2022
		Project started	29/04/2022
		Date tested	18/05/2022

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0585	2
90	100	0.0433	2
75	100	0.0306	1
63	100	0.0216	1
50	79	0.0158	1
37.5	59	0.0111	1
28	47	0.0079	1
20	37	0.0056	1
14	30	0.0039	1
10	26	0.0028	1
6.3	22	0.0016	1
5	22		
3.35	21		
2	21		
1.18	20		
0.6	18	Particle density (assumed)	
0.425	14	2.70	Mg/m3
0.3	8		
0.212	4		
0.15	3		
0.063	2		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	79.4
Sand	18.7
Silt	1.0
Clay	0.9

Grading Analysis		
D100	mm	
D60	mm	38.1
D30	mm	13.6
D10	mm	0.336
Uniformity Coefficient		110
Curvature Coefficient		14

Remarks
Preparation and testing in accordance with BS1377 unless noted below

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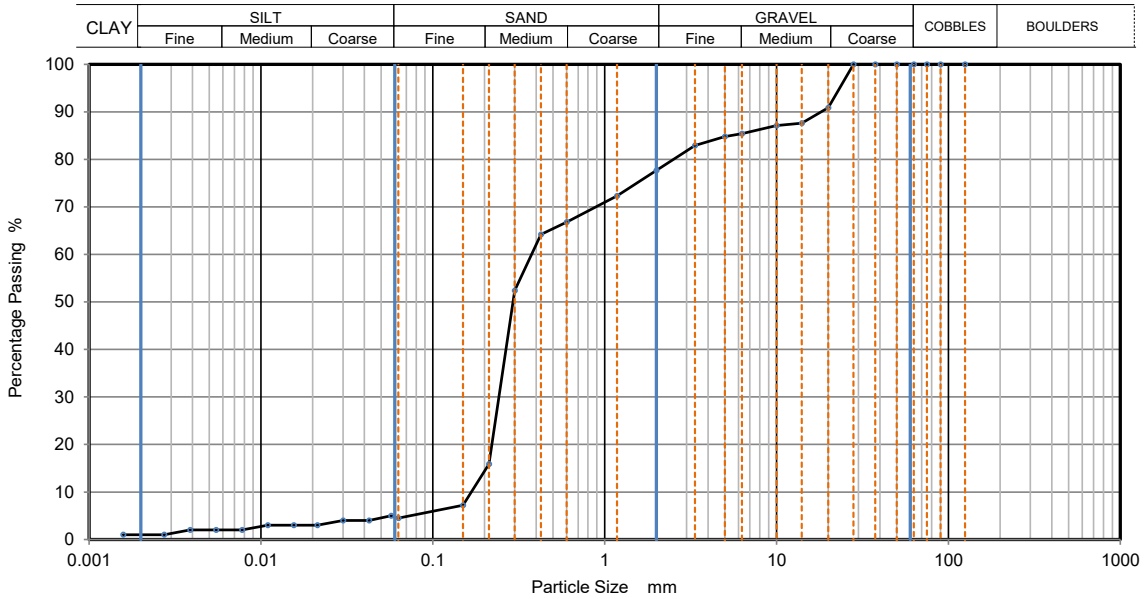
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	2519	MSF-5-R3



PARTICLE SIZE DISTRIBUTION

		Job Ref	31765
		Borehole/Pit No.	BH3
Site Name	Phoenix Wharf, Port Talbot	Sample No.	-
Project No.	2111006.003	Client	TEC
Soil Description	Black slightly clayey slightly silty very gravelly SAND (gravel is fmc and sub-angular)	Depth Top	2.00 m
		Depth Base	3.00 m
		Sample Type	D
		Samples received	28/04/2022
		Schedules received	28/04/2022
Test Method	BS1377:Part 2: 1990, clause 9.0	Project started	29/04/2022
		Date tested	18/05/2022

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0573	5
90	100	0.0426	4
75	100	0.0301	4
63	100	0.0213	3
50	100	0.0155	3
37.5	100	0.0110	3
28	100	0.0078	2
20	91	0.0055	2
14	88	0.0039	2
10	87	0.0027	1
6.3	85	0.0016	1
5	85		
3.35	83		
2	78		
1.18	72		
0.6	67	Particle density (assumed)	
0.425	64	2.70	Mg/m3
0.3	52		
0.212	16		
0.15	7		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	22.3
Sand	73.3
Silt	3.5
Clay	0.9

Grading Analysis		
D100	mm	
D60	mm	0.375
D30	mm	0.242
D10	mm	0.168
Uniformity Coefficient		2.2
Curvature Coefficient		0.93

Remarks
Preparation and testing in accordance with BS1377 unless noted below

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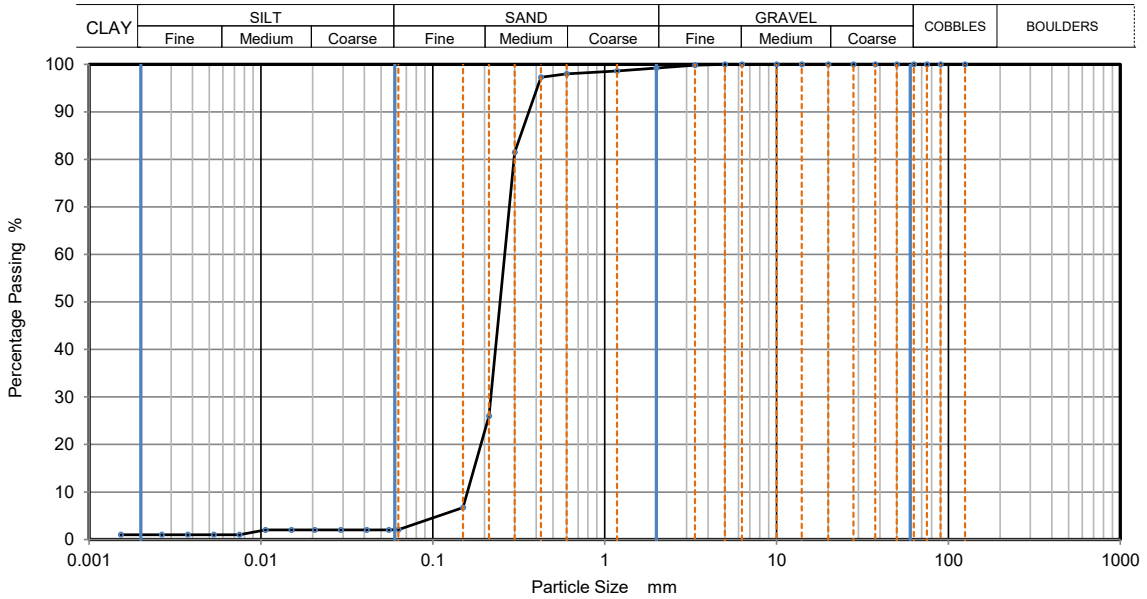
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PARTICLE SIZE DISTRIBUTION

		Job Ref	31765				
		Borehole/Pit No.	BH3				
Site Name	Phoenix Wharf, Port Talbot		Sample No.	-			
Project No.	2111006.003	Client	TEC	Depth Top	4.00	m	
Soil Description	Brown slightly clayey slightly silty SAND with rare fine gravel			Depth Base	5.00	m	
				Sample Type	D		
				Samples received	28/04/2022		
				Schedules received	28/04/2022		
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	29/04/2022		
				Date tested	18/05/2022		

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0554	2
90	100	0.0412	2
75	100	0.0291	2
63	100	0.0206	2
50	100	0.0150	2
37.5	100	0.0106	2
28	100	0.0075	1
20	100	0.0053	1
14	100	0.0037	1
10	100	0.0026	1
6.3	100	0.0015	1
5	100		
3.35	100		
2	99		
1.18	99		
0.6	98	Particle density (assumed)	
0.425	97	2.70	Mg/m3
0.3	82		
0.212	26		
0.15	7		
0.063	2		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	0.8
Sand	97.1
Silt	1.1
Clay	1.0

Grading Analysis		
D100	mm	
D60	mm	0.262
D30	mm	0.217
D10	mm	0.159
Uniformity Coefficient		1.6
Curvature Coefficient		1.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below

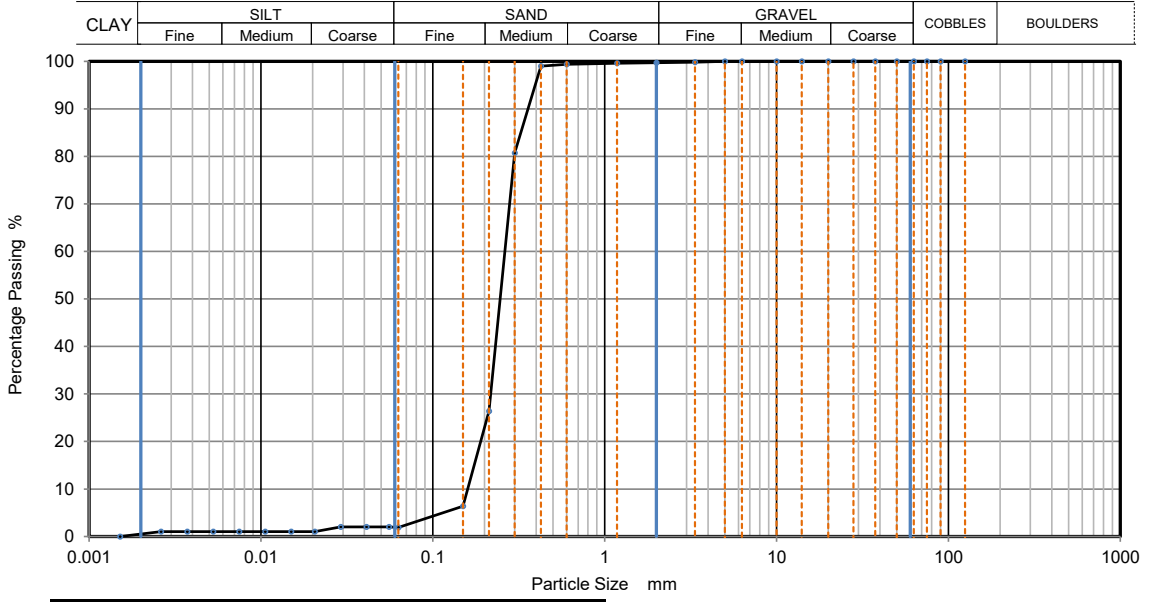
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	2519	MSF-5-R3



PARTICLE SIZE DISTRIBUTION

		Job Ref	31765				
		Borehole/Pit No.	BH3A				
Site Name	Phoenix Wharf, Port Talbot		Sample No.	-			
Project No.	2111006.003	Client	TEC	Depth Top	1.20	m	
Soil Description	Greyish brown slightly clayey slightly silty SAND with occasional fine rootlets			Depth Base	2.20	m	
				Sample Type	D		
				Samples received	28/04/2022		
				Schedules received	28/04/2022		
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	29/04/2022		
<i>These results only apply to the items tested</i>				Date tested	18/05/2022		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0555	2
90	100	0.0411	2
75	100	0.0291	2
63	100	0.0205	1
50	100	0.0150	1
37.5	100	0.0106	1
28	100	0.0075	1
20	100	0.0053	1
14	100	0.0037	1
10	100	0.0026	1
6.3	100	0.0015	0
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99	Particle density (assumed)	
0.425	99	2.70	Mg/m3
0.3	81		
0.212	26		
0.15	6		
0.063	2		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	0.3
Sand	97.8
Silt	1.4
Clay	0.5

Grading Analysis		
D100	mm	
D60	mm	0.263
D30	mm	0.217
D10	mm	0.16
Uniformity Coefficient		1.6
Curvature Coefficient		1.1

Remarks
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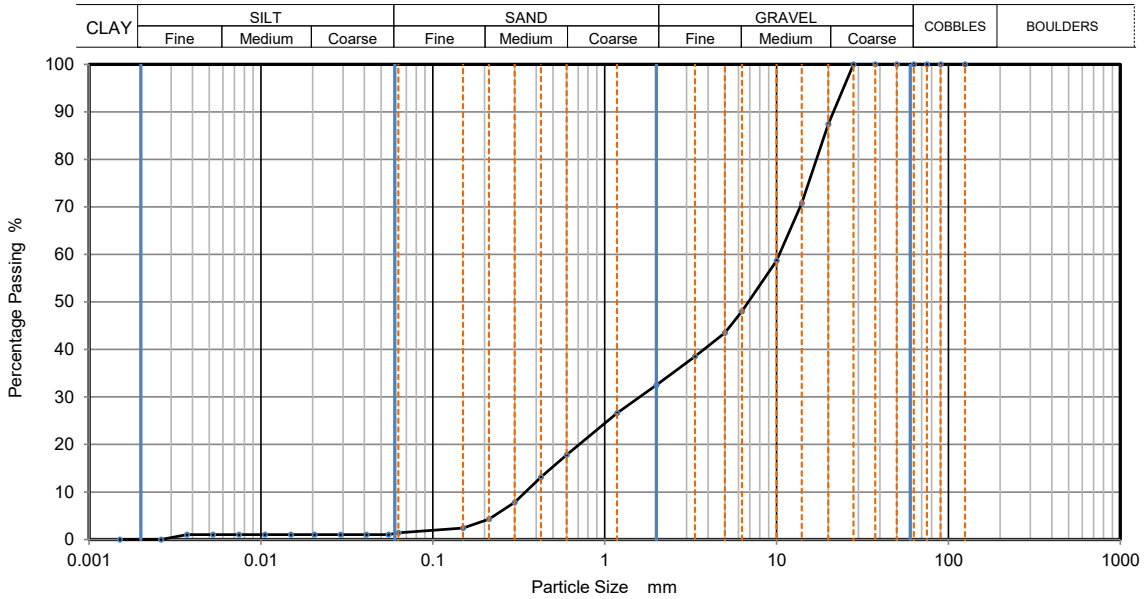
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	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)	
	2519	MSF-5-R3



PARTICLE SIZE DISTRIBUTION

		Job Ref	31765
		Borehole/Pit No.	BH3A
Site Name	Phoenix Wharf, Port Talbot	Sample No.	-
Project No.	2111006.003	Client	TEC
Soil Description	Grey slightly clayey slightly silty very sandy GRAVEL (gravel is fmc and angular to rounded)	Depth Top	14.20 m
		Depth Base	15.20 m
		Sample Type	D
		Samples received	28/04/2022
		Schedules received	28/04/2022
Test Method	BS1377:Part 2: 1990, clause 9.0	Project started	29/04/2022
		Date tested	18/05/2022

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0552	1
90	100	0.0411	1
75	100	0.0290	1
63	100	0.0205	1
50	100	0.0149	1
37.5	100	0.0106	1
28	100	0.0074	1
20	87	0.0053	1
14	71	0.0037	1
10	59	0.0026	0
6.3	48	0.0015	0
5	44		
3.35	39		
2	33		
1.18	27		
0.6	18	Particle density (assumed)	
0.425	13	2.70	Mg/m3
0.3	8		
0.212	4		
0.15	2		
0.063	1		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	67.5
Sand	31.1
Silt	1.1
Clay	0.3

Grading Analysis		
D100	mm	
D60	mm	10.4
D30	mm	1.6
D10	mm	0.346
Uniformity Coefficient		30
Curvature Coefficient		0.71

Remarks
Preparation and testing in accordance with BS1377 unless noted below

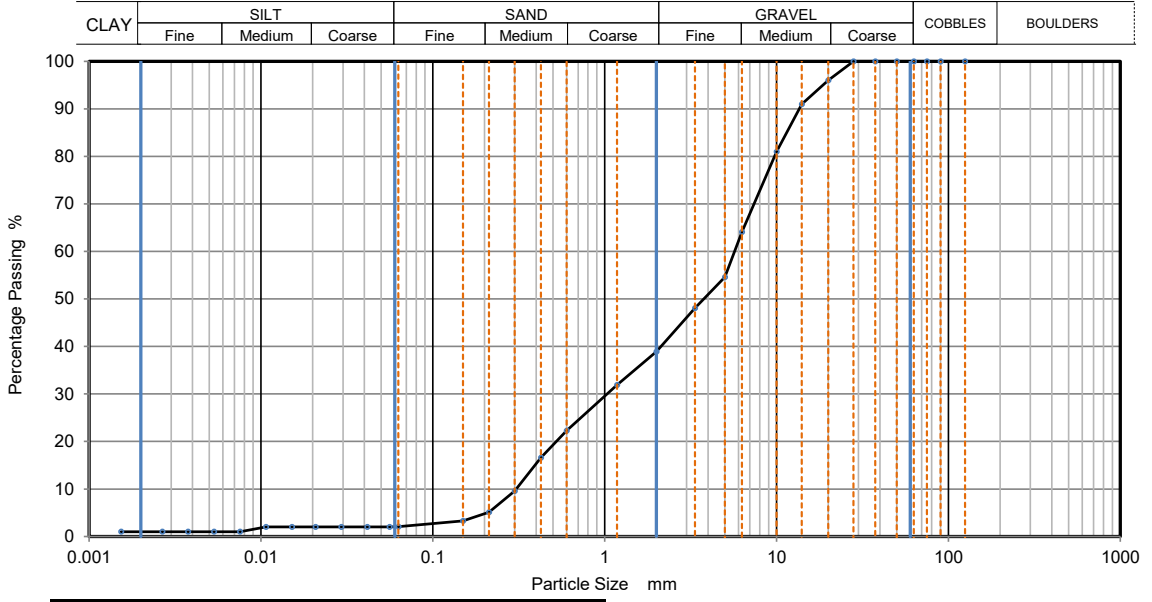
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PARTICLE SIZE DISTRIBUTION

		Job Ref	31765				
		Borehole/Pit No.	BH3A				
Site Name	Phoenix Wharf, Port Talbot		Sample No.	-			
Project No.	2111006.003	Client	TEC	Depth Top	16.30	m	
Soil Description	Grey slightly clayey slightly silty very sandy GRAVEL (gravel is fmc and sub-angular to rounded)			Depth Base	17.30	m	
				Sample Type	D		
				Samples received	28/04/2022		
				Schedules received	28/04/2022		
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	29/04/2022		
<i>These results only apply to the items tested</i>				Date tested	18/05/2022		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0559	2
90	100	0.0416	2
75	100	0.0294	2
63	100	0.0207	2
50	100	0.0151	2
37.5	100	0.0107	2
28	100	0.0076	1
20	96	0.0053	1
14	91	0.0038	1
10	81	0.0027	1
6.3	64	0.0015	1
5	55		
3.35	48		
2	39		
1.18	32		
0.6	22	Particle density (assumed)	
0.425	17	2.70	Mg/m3
0.3	10		
0.212	5		
0.15	3		
0.063	2		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	61.1
Sand	36.8
Silt	1.1
Clay	1.0

Grading Analysis		
D100	mm	
D60	mm	5.7
D30	mm	1.03
D10	mm	0.305
Uniformity Coefficient		19
Curvature Coefficient		0.61

Remarks
Preparation and testing in accordance with BS1377 unless noted below

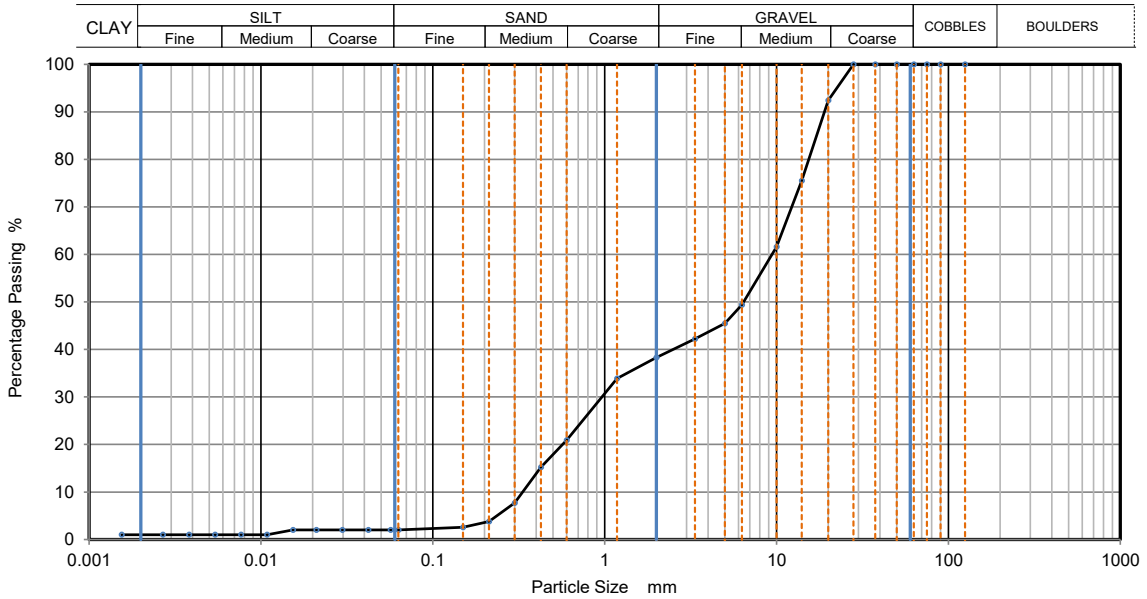
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	2519	MSF-5-R3



PARTICLE SIZE DISTRIBUTION

		Job Ref	31765				
		Borehole/Pit No.	BH3A				
Site Name	Phoenix Wharf, Port Talbot		Sample No.	-			
Project No.	2111006.003	Client	TEC	Depth Top	18.30	m	
Soil Description	Grey slightly clayey slightly silty very sandy GRAVEL (gravel is fmc and sub-angular to rounded)			Depth Base	19.30	m	
				Sample Type	D		
				Samples received	28/04/2022		
				Schedules received	28/04/2022		
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	29/04/2022		
<i>These results only apply to the items tested</i>				Date tested	18/05/2022		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0568	2
90	100	0.0421	2
75	100	0.0298	2
63	100	0.0210	2
50	100	0.0153	2
37.5	100	0.0108	1
28	100	0.0077	1
20	92	0.0054	1
14	76	0.0038	1
10	62	0.0027	1
6.3	49	0.0015	1
5	46		
3.35	42		
2	38		
1.18	34		
0.6	21	Particle density (assumed)	
0.425	15	2.70	Mg/m3
0.3	8		
0.212	4		
0.15	3		
0.063	2		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	61.7
Sand	36.2
Silt	1.5
Clay	0.6

Grading Analysis		
D100	mm	
D60	mm	9.43
D30	mm	0.964
D10	mm	0.334
Uniformity Coefficient		28
Curvature Coefficient		0.3

Remarks
Preparation and testing in accordance with BS1377 unless noted below

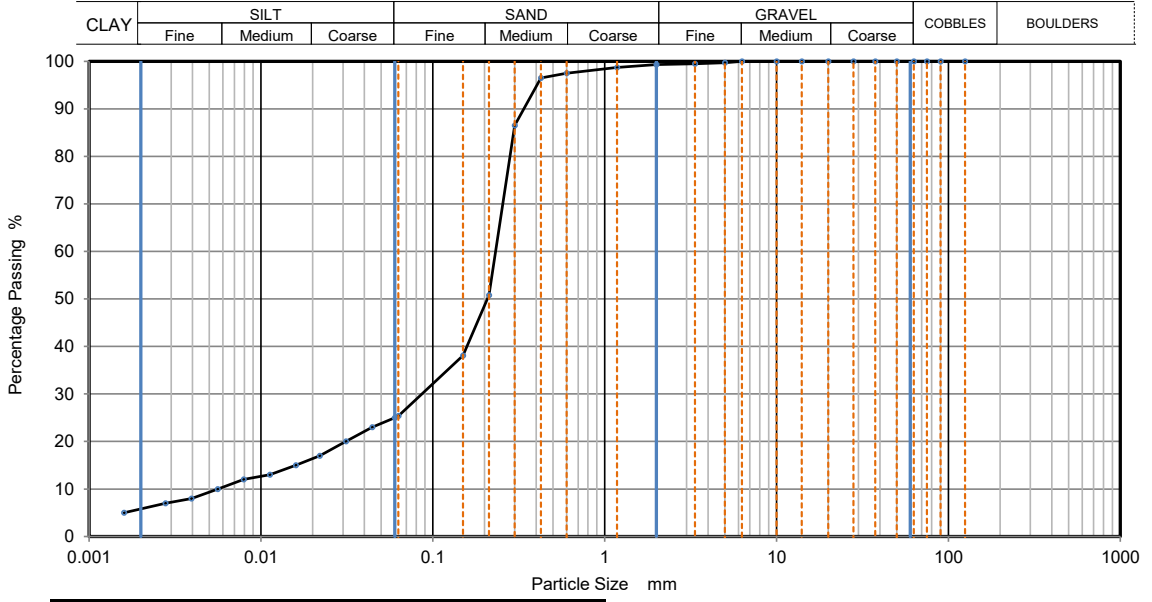
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	2519	MSF-5-R3



PARTICLE SIZE DISTRIBUTION

		Job Ref	31765				
		Borehole/Pit No.	BH4				
Site Name	Phoenix Wharf, Port Talbot		Sample No.	-			
Project No.	2111006.003	Client	TEC	Depth Top	1.00	m	
Soil Description	Brown and grey clayey silty SAND with rare fine gravel			Depth Base	1.20	m	
				Sample Type	D		
				Samples received	28/04/2022		
				Schedules received	28/04/2022		
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	29/04/2022		
<i>These results only apply to the items tested</i>				Date tested	18/05/2022		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0600	25
90	100	0.0444	23
75	100	0.0312	20
63	100	0.0220	17
50	100	0.0160	15
37.5	100	0.0113	13
28	100	0.0079	12
20	100	0.0056	10
14	100	0.0039	8
10	100	0.0028	7
6.3	100	0.0016	5
5	100		
3.35	100		
2	99		
1.18	99		
0.6	98	Particle density (assumed)	
0.425	97	2.70	Mg/m3
0.3	87		
0.212	51		
0.15	38		
0.063	25		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	0.7
Sand	73.9
Silt	19.9
Clay	5.5

Grading Analysis		
D100	mm	
D60	mm	0.232
D30	mm	0.0862
D10	mm	0.00562
Uniformity Coefficient		41
Curvature Coefficient		5.7

Remarks
Preparation and testing in accordance with BS1377 unless noted below

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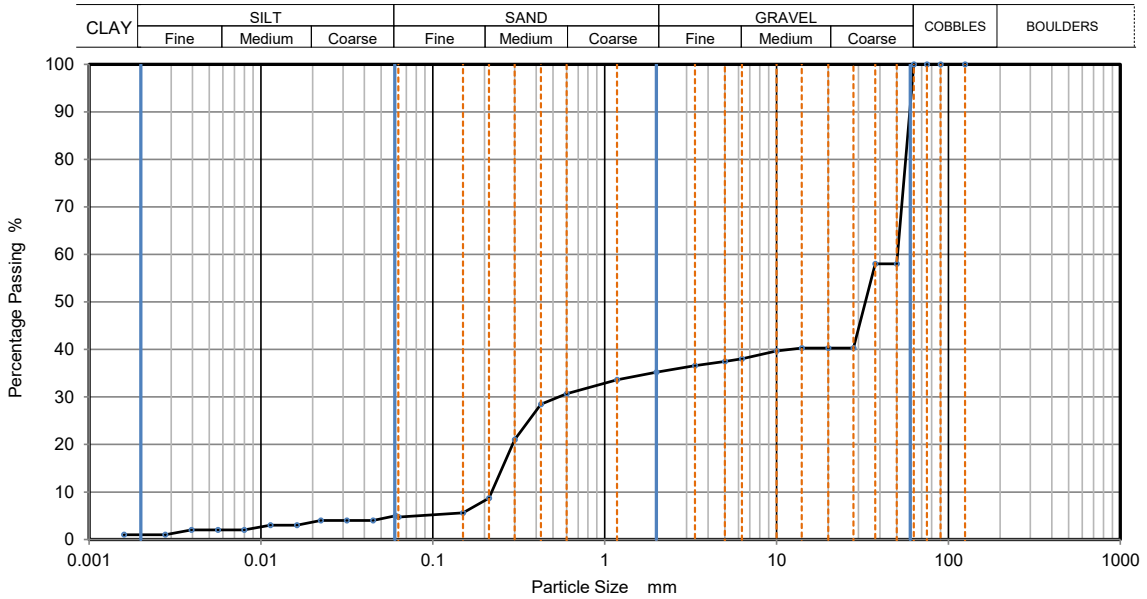
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	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)	
	2519	MSF-5-R3



PARTICLE SIZE DISTRIBUTION

		Job Ref	31765
		Borehole/Pit No.	BH4
Site Name	Phoenix Wharf, Port Talbot	Sample No.	-
Project No.	2111006.003	Client	TEC
Soil Description	Brown slightly clayey slightly silty very sandy GRAVEL with rare rootlets (gravel is fmc and sub-angular to sub-rounded)	Depth Top	2.60 m
		Depth Base	2.70 m
		Sample Type	D
		Samples received	28/04/2022
		Schedules received	28/04/2022
Test Method	BS1377:Part 2: 1990, clause 9.0	Project started	29/04/2022
		Date tested	18/05/2022

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0607	5
90	100	0.0448	4
75	100	0.0315	4
63	100	0.0223	4
50	58	0.0162	3
37.5	58	0.0113	3
28	40	0.0080	2
20	40	0.0056	2
14	40	0.0039	2
10	40	0.0028	1
6.3	38	0.0016	1
5	38		
3.35	37		
2	35		
1.18	34		
0.6	31	Particle density (assumed)	
0.425	29	2.70	Mg/m3
0.3	21		
0.212	9		
0.15	6		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	64.8
Sand	30.5
Silt	3.6
Clay	1.1

Grading Analysis		
D100	mm	
D60	mm	50.6
D30	mm	0.537
D10	mm	0.22
Uniformity Coefficient		230
Curvature Coefficient		0.026

Remarks
Preparation and testing in accordance with BS1377 unless noted below

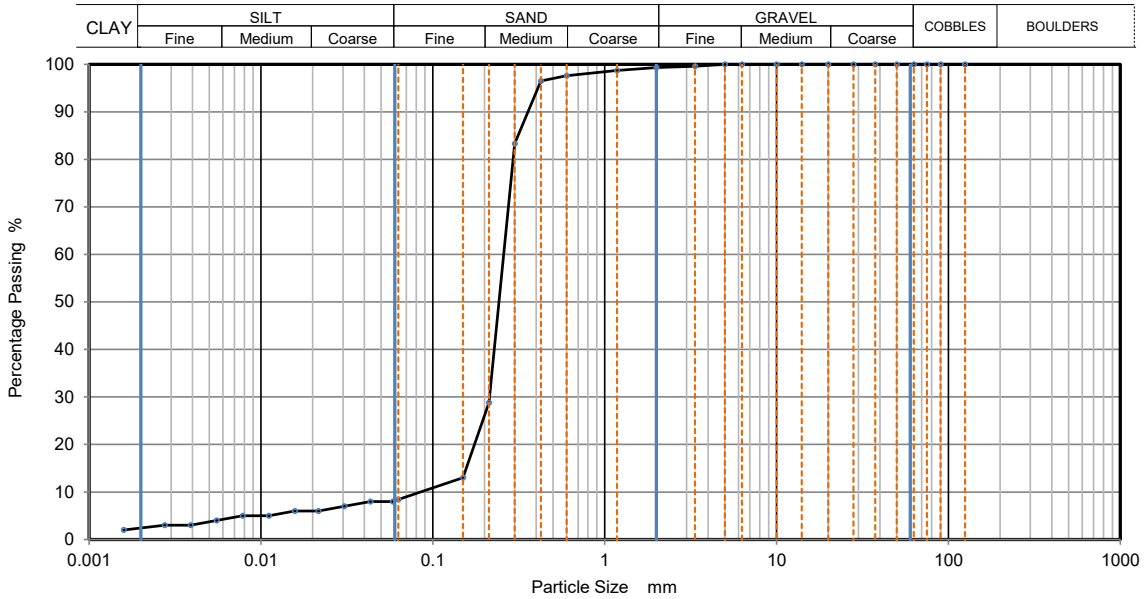
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	2519	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)



PARTICLE SIZE DISTRIBUTION

		Job Ref	31765				
		Borehole/Pit No.	BH4				
Site Name	Phoenix Wharf, Port Talbot		Sample No.	-			
Project No.	2111006.003	Client	TEC	Depth Top	4.00	m	
Soil Description	Greyish brown slightly clayey silty SAND with rare fine gravel			Depth Base	4.20	m	
				Sample Type	D		
				Samples received	28/04/2022		
				Schedules received	28/04/2022		
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	29/04/2022		
<i>These results only apply to the items tested</i>				Date tested	18/05/2022		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0583	8
90	100	0.0433	8
75	100	0.0305	7
63	100	0.0216	6
50	100	0.0157	6
37.5	100	0.0111	5
28	100	0.0078	5
20	100	0.0055	4
14	100	0.0039	3
10	100	0.0028	3
6.3	100	0.0016	2
5	100		
3.35	100		
2	99		
1.18	99		
0.6	98	Particle density (assumed)	
0.425	97	2.70	Mg/m3
0.3	83		
0.212	29		
0.15	13		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	0.7
Sand	90.9
Silt	5.9
Clay	2.5

Grading Analysis		
D100	mm	
D60	mm	0.259
D30	mm	0.214
D10	mm	0.0849
Uniformity Coefficient		3
Curvature Coefficient		2.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below

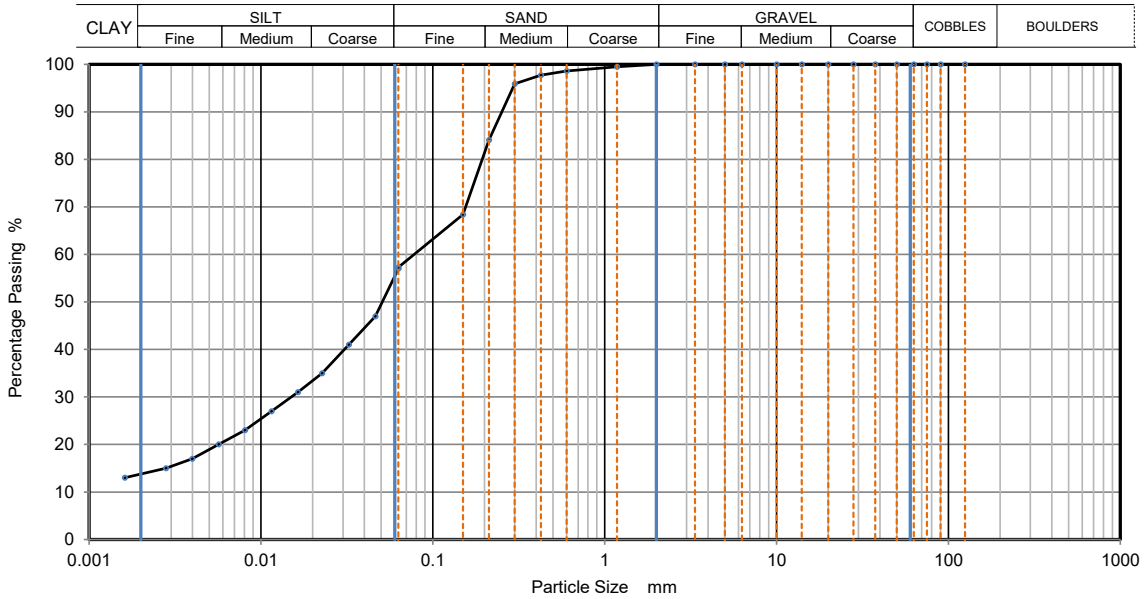
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	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)	
	2519	MSF-5-R3



PARTICLE SIZE DISTRIBUTION

		Job Ref	31765				
		Borehole/Pit No.	BH4				
Site Name	Phoenix Wharf, Port Talbot		Sample No.	-			
Project No.	2111006.003	Client	TEC	Depth Top	13.00	m	
Soil Description	Grey sandy silty CLAY with rare decayed wood fragments			Depth Base	13.10	m	
				Sample Type	D		
				Samples received	28/04/2022		
				Schedules received	28/04/2022		
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	29/04/2022		
<i>These results only apply to the items tested</i>				Date tested	16/05/2022		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	57
90	100	0.0464	47
75	100	0.0324	41
63	100	0.0227	35
50	100	0.0164	31
37.5	100	0.0115	27
28	100	0.0081	23
20	100	0.0057	20
14	100	0.0040	17
10	100	0.0028	15
6.3	100	0.0016	13
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99	Particle density (assumed)	
0.425	98	2.70	Mg/m3
0.3	96		
0.212	84		
0.15	68		
0.063	57		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	0.0
Sand	42.7
Silt	43.8
Clay	13.5

Grading Analysis		
D100	mm	
D60	mm	0.0777
D30	mm	0.0149
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks
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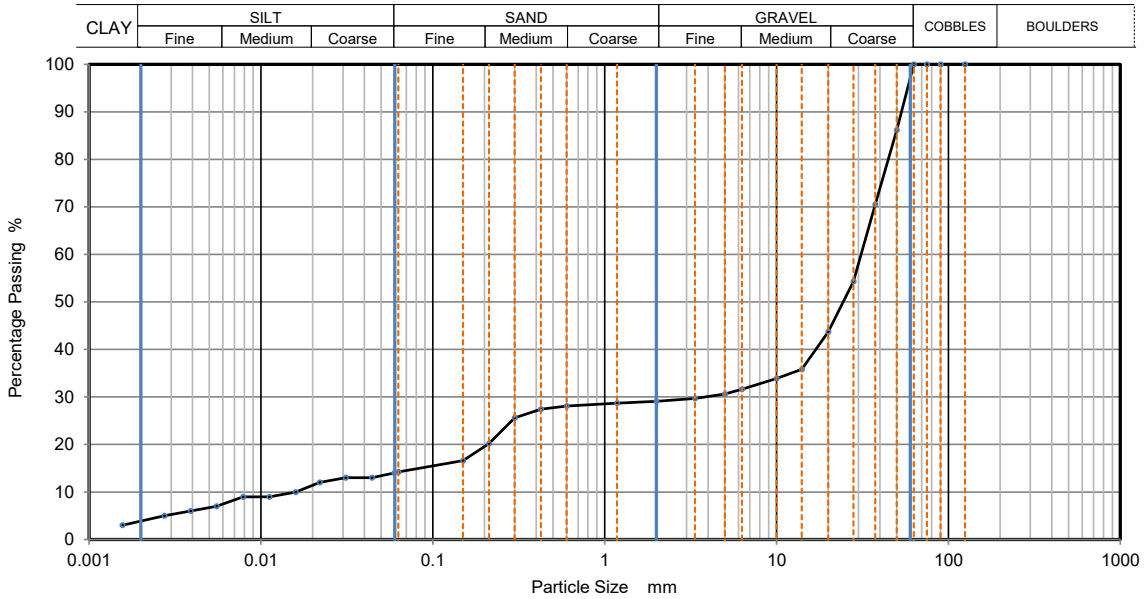
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	2519	MSF-5-R3



PARTICLE SIZE DISTRIBUTION

		Job Ref	31765
		Borehole/Pit No.	BH4
Site Name	Phoenix Wharf, Port Talbot	Sample No.	-
Project No.	2111006.003	Client	TEC
Soil Description	Grey slightly clayey silty sandy GRAVEL (gravel is fmc and sub-angular)	Depth Top	15.00 m
		Depth Base	15.10 m
		Sample Type	B
		Samples received	28/04/2022
Test Method	BS1377:Part 2: 1990, clause 9.0	Schedules received	28/04/2022
		Project started	29/04/2022
		Date tested	16/05/2022

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0597	14
90	100	0.0442	13
75	100	0.0312	13
63	100	0.0219	12
50	86	0.0159	10
37.5	71	0.0112	9
28	54	0.0079	9
20	44	0.0055	7
14	36	0.0039	6
10	34	0.0027	5
6.3	32	0.0016	3
5	31		
3.35	30		
2	29		
1.18	29		
0.6	28	Particle density (assumed)	
0.425	27	2.70	Mg/m3
0.3	26		
0.212	20		
0.15	17		
0.063	14		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	70.9
Sand	14.9
Silt	10.3
Clay	3.9

Grading Analysis		
D100	mm	
D60	mm	31
D30	mm	3.8
D10	mm	0.0137
Uniformity Coefficient		2300
Curvature Coefficient		34

Remarks
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THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 22-40756

Issue: 1

Date of Issue: 27/05/2022

Contact: James Phaure

Customer Details: K4 Soils Laboratory Ltd
Unit 8
Watford
Hertfordshire WD18 9RU

Quotation No: Q22-02658


Order No: Not Supplied

Customer Reference: 31765

Date Received: 20/05/2022

Date Approved: 27/05/2022

Details: Phoenix Wharf, Port Talbot

Approved by: 

Mike Varley, General Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

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Sample Summary

Report No.: 22-40756, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
280276	BH1 5.00	Not Provided	20/05/2022	Silty loam	a
280277	BH1 9.30	Not Provided	20/05/2022	Silty loam	a
280278	BH2 3.90	Not Provided	20/05/2022	Silty loam	a
280279	BH2 10.40	Not Provided	20/05/2022	Silty loam	a
280280	BH3A 10.50	Not Provided	20/05/2022	Silty loam	a
280281	BH3A 12.00	Not Provided	20/05/2022	Silty clayey loam	a
280282	BH4 9.00	Not Provided	20/05/2022	Silty clayey loam	a
280283	BH4 11.50	Not Provided	20/05/2022	Silty loam	a



2683

Results Summary

Report No.: 22-40756, issue number 1

ELAB Reference	280276	280277	280278	280279	280280	280281	280282	280283
Customer Reference								
Sample ID								
Sample Type	DISTURBED	DISTURBED	DISTURBED	DISTURBED	DISTURBED	DISTURBED	DISTURBED	DISTURBED
Sample Location	BH1	BH1	BH2	BH2	BH3A	BH3A	BH4	BH4
Sample Depth (m)	5.00	9.30	3.90	10.40	10.50	12.00	9.00	11.50
Sampling Date	Not Provided	Not Provided	Not Provided	Not Provided	Not Provided	Not Provided	Not Provided	Not Provided

Determinand	Codes	Units	LOD								
Soil sample preparation parameters											
Moisture Content	N	%	0.1	21.0	31.5	43.1	31.2	60.1	23.9	19.3	40.0
Material removed	N	%	0.1	< 0.1	< 0.1	19.3	< 0.1	27.2	< 0.1	< 0.1	17.0
Description of Inert material removed	N		0	None	None	Stones/Wood	None	Stones/Wood	None	None	Stones
Miscellaneous											
Soil Organic Matter	U	%	0.1	2.6	5.8	10	7.2	16	6.5	1.0	15



Method Summary

Report No.: 22-40756, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Soil organic matter	U	Air dried sample	25/05/2022	BS1377:P3	Titrimetry

Report Information

Report No.: 22-40756, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

LOD LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination.
Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed.
ELAB are unable to provide an interpretation or opinion on the content of this report.
The results relate only to the sample received.
PCB congener results may include any coeluting PCBs
Uncertainty of measurement for the determinands tested are available upon request
Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

a	No date of sampling supplied
b	No time of sampling supplied (Waters Only)
c	Sample not received in appropriate containers
d	Sample not received in cooled condition
e	The container has been incorrectly filled
f	Sample age exceeds stability time (sampling to receipt)
g	Sample age exceeds stability time (sampling to analysis)

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month
All water samples will be retained for 7 days following the date of the test report
Charges may apply to extended sample storage

TPH Classification - 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	Aromatics only
2D	GC-GC - Double coil gas chromatography
#1	EH_Total but with humics mathematically subtracted
#2	EH_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry

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THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 22-40182

Issue: 1

Date of Issue: 05/05/2022

Contact: Mitchell Tucker

Customer Details: TEC
The Old Chapel
35A Southover
Wells
SomersetBA5 1UH

Quotation No: Q22-02908

Order No: 2111006.003

Customer Reference: 2111006.003

Date Received: 27/04/2022

Date Approved: 05/05/2022

Details: Phoenix Wharf, Port Talbot

Approved by:

A handwritten signature in black ink, appearing to be 'Catherine Biddiss', written over a horizontal line.

Catherine Biddiss, Organics Laboratory Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

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Sample Summary

Report No.: 22-40182, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
276667	BH1 4.20 - 4.65	04/04/2022	27/04/2022	Sandy silty loam	
276668	BH1 13.50	06/04/2022	27/04/2022	Silty clayey loam	
276669	BH1 16.50	06/04/2022	27/04/2022	Loamy sand	
276670	BH2 3.00 - 3.10	04/04/2022	27/04/2022	Silty clayey loam	fg
276671	BH2 5.00 - 5.40	04/04/2022	27/04/2022	Clayey loam	
276672	BH2 9.50 - 9.95	05/04/2022	27/04/2022	Loamy sand	fg
276673	BH2 12.50 - 12.95	05/04/2022	27/04/2022	Sandy silty loam	
276674	BH3A 3.20 - 4.20	12/04/2022	27/04/2022	Sandy silty loam	
276675	BH3A 6.70 - 7.15	12/04/2022	27/04/2022	Silty clayey loam	fg
276676	BH3A 9.20 - 9.70	12/04/2022	27/04/2022	Silty clayey loam	
276677	BH3A 12.00 - 12.95	13/04/2022	27/04/2022	Silty clayey loam	fg
276678	BH3A 13.50 - 14.20	13/04/2022	27/04/2022	Sandy clayey loam	
276679	BH3A 15.70 - 16.70	13/04/2022	27/04/2022	Loamy sand	
276680	BH3A 17.30 - 18.30	13/04/2022	27/04/2022	Loamy sand	fg
276681	BH4 11.00 - 11.45	12/04/2022	27/04/2022	Silty clayey loam	
276682	BH4 14.00 - 14.45	13/04/2022	27/04/2022	Silty clayey loam	fg



2683



Results Summary

Report No.: 22-40182, issue number 1

ELAB Reference	276667	276668	276669	276670	276671	276672	276673	276674	276675	276676			
Customer Reference													
Sample ID													
Sample Type	DISTURBED	DISTURBED	DISTURBED	DISTURBED	DISTURBED	DISTURBED	DISTURBED	DISTURBED	DISTURBED	DISTURBED			
Sample Location	BH1	BH1	BH1	BH2	BH2	BH2	BH2	BH3A	BH3A	BH3A			
Sample Depth (m)	4.20 - 4.65	13.50	16.50	3.00 - 3.10	5.00 - 5.40	9.50 - 9.95	12.50 - 12.95	3.20 - 4.20	6.70 - 7.15	9.20 - 9.70			
Sampling Date	04/04/2022	06/04/2022	06/04/2022	04/04/2022	04/04/2022	05/04/2022	05/04/2022	12/04/2022	12/04/2022	12/04/2022			
Determinand	Codes	Units	LOD										
Soil sample preparation parameters													
Moisture Content	N	%	0.1	20.9	10.5	10.9	23.7	20.7	20.1	26.6	11.3	16.6	19.3
Material removed	N	%	0.1	10.9	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Description of Inert material removed	N		0	Stones/Clinker	None	None	None	None	None	None	None	None	None
Anions													
Water Soluble Chloride	M	mg/l	20	< 20	119	26	< 20	22	510	1200	314	1020	1110
Water Soluble Nitrate	U	mg/l	20	24	38	< 20	44	40	51	58	58	61	59
Water Soluble Sulphate	M	mg/l	20	138	42	22	201	89	374	874	104	96	323
Inorganics													
Ammonia as NH4	N	mg/kg	0.1	n/t	n/t	n/t	fg 10.1	n/t	fg 1.6	n/t	n/t	fg 30.8	n/t
Ammonia as NH4	N	mg/l	0.1	n/t	n/t	n/t	fg 1.0	n/t	fg 0.2	n/t	n/t	fg 3.1	n/t
Total Sulphur	N	%	0.01	n/t	n/t	n/t	0.72	n/t	0.34	n/t	n/t	0.11	n/t
Miscellaneous													
pH	M	pH units	0.1	7.5	8.0	7.6	7.5	8.0	7.9	7.4	8.0	8.2	7.9



2683



Results Summary

Report No.: 22-40182, issue number 1

ELAB Reference	276677	276678	276679	276680	276681	276682
Customer Reference						
Sample ID						
Sample Type	DISTURBED	DISTURBED	DISTURBED	DISTURBED	DISTURBED	DISTURBED
Sample Location	BH3A	BH3A	BH3A	BH3A	BH4	BH4
Sample Depth (m)	12.00 - 12.95	13.50 - 14.20	15.70 - 16.70	17.30 - 18.30	11.00 - 11.45	14.00 - 14.45
Sampling Date	13/04/2022	13/04/2022	13/04/2022	13/04/2022	12/04/2022	13/04/2022
Determinand	Codes	Units	LOD			
Soil sample preparation parameters						
Moisture Content	N	%	0.1	21.7	15.5	9.4
Material removed	N	%	0.1	< 0.1	< 0.1	< 0.1
Description of Inert material removed	N		0	None	None	None
Anions						
Water Soluble Chloride	M	mg/l	20	1290	985	119
Water Soluble Nitrate	U	mg/l	20	64	61	35
Water Soluble Sulphate	M	mg/l	20	144	36	38
Inorganics						
Ammonia as NH4	N	mg/kg	0.1	fg 16.4	n/t	n/t
Ammonia as NH4	N	mg/l	0.1	fg 1.6	n/t	n/t
Total Sulphur	N	%	0.01	0.61	n/t	n/t
Miscellaneous						
pH	M	pH units	0.1	7.7	7.9	7.5

Method Summary

Report No.: 22-40182, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
pH	M	Air dried sample	05/05/2022	113	Electromeric
Ammonia in soil	N	As submitted sample	05/05/2022	138	Colorimetry
Water soluble anions	M	Air dried sample	29/04/2022	172	Ion Chromatography
Total organic carbon/Total sulphur	N	Air dried sample	29/04/2022	216	IR

Tests marked N are not UKAS accredited

Report Information

Report No.: 22-40182, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

LOD LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination.
Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed.
ELAB are unable to provide an interpretation or opinion on the content of this report.
The results relate only to the sample received.
PCB congener results may include any coeluting PCBs
Uncertainty of measurement for the determinands tested are available upon request
Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

-
- | | |
|---|--|
| a | No date of sampling supplied |
| b | No time of sampling supplied (Waters Only) |
| c | Sample not received in appropriate containers |
| d | Sample not received in cooled condition |
| e | The container has been incorrectly filled |
| f | Sample age exceeds stability time (sampling to receipt) |
| g | Sample age exceeds stability time (sampling to analysis) |

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month
All water samples will be retained for 7 days following the date of the test report
Charges may apply to extended sample storage

TPH Classification - 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	Aromatics only
2D	GC-GC - Double coil gas chromatography
#1	EH_Total but with humics mathematically subtracted
#2	EH_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry

Appendix E

Generic Quantitative Risk Assessment: Human Health



Project Number: 2111006.003		Lab Sample Number:	2250035	2250036	2250037	2250038	2250039	2250040	2250041	2250042	2250043	2250044	2250045	2250046	2250047	2250048	2250049	2251447	2255199	2255200	2255201	2255202	2255203	
Name: Phoenix Whard, Port Talbot		Sample Reference:	TP01	TP02	TP02	TP03	TP05	TP06	TP07	TP08	TP10	TP11	TP12	TP15	TP16	TP17	TP19	WS07	WS01	WS01	WS02	WS05	WS06a	
Site End Use:		Sample Number:																						
Commercial		Depth (m):	0.15	0.2	2.4	1.2	0.1	1	0.2	0.1	0.1	0.1	0.6	0.8	0.2	0.2	0.2	0.20-0.70	0.40-0.60	3.20-3.50	0.20-0.60	0.20-0.60	0.20-0.50	
		Date Sampled:	12/04/2022	12/04/2022	12/04/2022	12/04/2022	44663	44663	44663	44663	44663	44663	44663	44663	44663	44663	44663	44663	21/04/2022	14/04/2022	14/04/2022	14/04/2022	14/04/2022	14/04/2022
		Time Taken:																						
Determinand	GAC	Units																						
Arsenic	6400 ¹³	mg/kg	12	300	32	13	32	11	9.3	27	16	18	13	64	68	19	11	15	37	52	31	13	21	
Boron	24000 ¹⁴	mg/kg	0.7	0.3	0.9	0.4	0.4	0.3	<0.2	1.1	0.9	0.7	0.4	3.9	2.3	0.7	0.4	0.5	0.4	1.2	0.8	<0.2	0.5	
Cadmium	410 ¹⁵	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	4.8	1.6	1.3	110	5.2	<0.2	<0.2	5	<0.2	3	<0.2	1.5	<0.2	<0.2	
Chromium (total)	8600 ¹⁶	mg/kg	8.7	70	59	8.7	72	11	5.3	140	47	12	84	33	28	12	240	8.6	99	240	31	6.6	6.8	
Chromium (VI)	49 ¹⁷	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	
Copper	68000 ¹⁸	mg/kg	29	67	81	22	140	18	7.3	290	67	350	2200	430	400	120	890	140	56	54	180	33	60	
Lead	2300 ¹⁹	mg/kg	31	260	150	9.7	130	30	4.7	1300	60	40	570	170	520	96	260	17	270	560	120	10	19	
Mercury	360 ²⁰	mg/kg	<0.3	<0.3	0.7	<0.3	<0.3	0.5	<0.3	<0.3	0.5	2	2	38	72	14	35	32	45	28	34	6.2	28	
Nickel	1800 ²¹	mg/kg	8.1	28	36	8.2	46	10	4.6	130	21	15	370	72	14	35	32	45	28	34	6.2	28	28	
Selenium	13000 ²²	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Zinc	730000 ²³	mg/kg	77	460	300	230	340	41	18	770	120	94	1900	360	400	160	720	47	550	890	260	38	31	
Beryllium	12 ²⁴	mg/kg	0.4	1.2	2.2	0.6	1.2	0.34	0.17	1.2	0.76	0.33	0.23	1.1	1.1	0.41	0.84	0.91	1.1	1.5	2.1	0.19	0.81	
Vanadium	9000 ²⁵	mg/kg	17	120	100	15	93	17	11	180	52	20	19	55	55	22	430	25	320	240	51	15	23	
Barium	22000 ²⁶	mg/kg	44	91	250	8.9	340	18	5.1	380	100	46	440	220	390	92	300	250	220	270	13	170	170	
Cyanide (Total)	20 ²⁷	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Phenol (Monohydric)	440 ²⁸	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Sulphide	-	mg/kg	430	110	190	6.2	4.8	4.7	1.1	33	38	1.1	17	11	10	9.2	27	12	21	150	830	2.9	2.2	
Total Organic Carbon (TOC)	-	%	1.8	3.5	2.7	0.6	5.6	0.3	<0.1	2.2	1.8	1.8	1.3	6.4	5.8	5	1.6	6.4	1.3	1.3	2.6	0.4	7.3	
Naphthalene	190 ²⁹	mg/kg	<0.05	1.1	0.51	0.96	0.72	<0.05	<0.05	0.57	<0.05	1.3	<0.05	1.9	<0.05	<0.05	<0.05	9.3	<0.05	0.58	1.3	<0.05	0.81	
Acenaphthylene	8300 ³⁰	mg/kg	<0.05	1.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.4	0.6	<0.05	<0.05	0.28	<0.05	2.6	
Acenaphthene	8400 ³¹	mg/kg	<0.05	0.51	<0.05	0.9	2.5	0.28	0.05	0.86	0.3	2.7	<0.05	3.8	1.1	46	<0.05	6.5	<0.05	<0.05	0.22	<0.05	1.2	
Fluorene	6300 ³²	mg/kg	<0.05	3.4	<0.05	9.3	3	0.23	<0.05	1	0.33	2.7	<0.05	3.2	12	99	0.34	5.4	<0.05	<0.05	0.95	<0.05	10	
Phenanthrene	2200 ³³	mg/kg	1.1	24	1.5	45	29	4.1	<0.05	11	3	28	45	2.2	44	140	950	2.3	93	1.3	0.96	6.9	<0.05	99
Anthracene	52000 ³⁴	mg/kg	0.25	15	0.31	24	8	0.91	<0.05	2.8	0.84	8.1	0.57	14	35	220	0.43	24	0.21	<0.05	1.8	<0.05	38	
Fluoranthene	2300 ³⁵	mg/kg	2.3	27	1.5	45	31	4.5	<0.05	16	4.7	27	45	3	53	180	1100	3.9	110	1.7	1.1	8.8	<0.05	100
Pyrene	9400 ³⁶	mg/kg	2.3	18	1.2	43	27	3.8	<0.05	13	4.3	24	2.6	54	160	900	2.8	120	1.3	0.88	6.3	<0.05	130	
Benzo(a)anthracene	170 ³⁷	mg/kg	1.8	24	1.1	51	14	2.5	<0.05	7.8	2.9	16	1.8	48	100	330	3.1	78	1.2	0.73	5.5	<0.05	130	
Chrysene	350 ³⁸	mg/kg	1.6	16	0.88	33	13	1.6	<0.05	8.3	2.2	16	1.4	36	75	520	2.6	75	0.93	0.64	3.9	<0.05	92	
Benzo(b)fluoranthene	44 ³⁹	mg/kg	2.5	18	0.86	45	12	1.9	<0.05	7	2.3	18	1.9	47	68	330	3	73	0.87	0.68	3.9	<0.05	130	
Benzo(k)fluoranthene	1200 ⁴⁰	mg/kg	1.1	6.6	0.56	17	3.2	0.79	<0.05	3.2	1.1	4.5	0.65	20	50	280	0.85	32	0.64	0.29	2.4	<0.05	43	
Benzo(a)pyrene	35 ⁴¹	mg/kg	2.5	13	0.79	40	9.2	1.7	<0.05	5.7	1.9	15	1.5	44	75	340	1.7	67	0.63	0.45	3	<0.05	150	
Indeno(1,2,3-cd)pyrene	500 ⁴²	mg/kg	1.1	5.5	0.36	15	5.3	0.7	<0.05	3.5	1.2	6.9	0.79	20	36	130	2.5	40	0.38	0.25	1.6	<0.05	55	
Dibenz(a,h)anthracene	3.5 ⁴³	mg/kg	0.34	2.8	<0.05	5.3	1.5	0.21	<0.05	1.1	0.42	2.1	<0.05	5.8	11	62	0.69	9.3	<0.05	<0.05	0.62	<0.05	18	
Benzo(ghi)perylene	3900 ⁴⁴	mg/kg	1.4	5.3	0.47	15	5.3	0.81	<0.05	3.6	1.4	7.3	0.9	23	36	130	5.3	42	0.29	0.31	1.7	<0.05	58	
Speciated Total EPA-16 PAHs	-	mg/kg	18.4	181	9.99	398	165	24	<0.80	84.5	26.9	180	17.2	417	992	5630	29.8	786	9.46	6.82	49.1	<0.80	1040	
Benzene	27 ⁴⁵	µg/kg	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	
Toluene	56000 ⁴⁶	µg/kg	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	
Ethylbenzene	5700 ⁴⁷	µg/kg	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	
p & m-xylene	5900 ⁴⁸	µg/kg	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	
o-xylene	6600 ⁴⁹	µg/kg	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	
MTBE (Methyl Tertiary Butyl Ether)	7900 ⁵⁰	µg/kg	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	
TPH Aliphatic C5 - C6	3200 ⁵¹	mg/kg	-	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	
TPH Aliphatic C6 - C8	7800 ⁵²	mg/kg	-	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	
TPH Aliphatic C9 - C10	2000 ⁵³	mg/kg	-	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	
TPH Aliphatic C10 - C12	9700 ⁵⁴	mg/kg	-	<1.0	3.4	-	<1.0	<1.0	-	<1.0	3.4	-	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	
TPH Aliphatic C12 - C16	5900 ⁵⁵	mg/kg	-	9.4	12	-	<2.0	<2.0	-	14	86	-	9.1	-	5.1	<2.0	-	5.4	<2.0	-	<2.0	<2.0	-	
TPH Aliphatic C16 - C21	160000<																							

Appendix F

Generic Quantitative Risk Assessment: Controlled Waters

Leachability Analysis

Contaminant	Max.	Min.	SSV (µg/l)	No. of Exceedances	DWS ⁽⁴⁾ (µg/l)	No. of Exceedances
Arsenic	8.5	<1.0 ⁽⁶⁾	25 ⁽¹⁾	0	-	-
Barium	160	12	700 ⁽³⁾	0	-	-
Beryllium	0.4	0.2	12 ⁽³⁾	0	-	-
Boron	180	24	7000 ⁽¹⁾	0	-	-
Cadmium	1.6	<0.08 ⁽⁶⁾	0.2 ⁽¹⁾	2	5	0
Chromium	3.5	0.8	4.7 ⁽¹⁾	0	-	-
Copper	25	2.7	3.76 ⁽¹⁾	5	2000	0
Lead	9.4	2.9	1.3 ⁽¹⁾	6	10	0
Mercury	<0.5 ⁽⁶⁾	<0.5 ⁽⁶⁾	0.07 ⁽²⁾	6	1.0	0
Nickel	5.0	2.7	8.6 ⁽¹⁾	0	-	-
Selenium	5.0	< 4.0 ⁽⁶⁾	10 ⁽⁴⁾	0	-	-
Vanadium	11	<1.7 ⁽⁶⁾	100 ⁽¹⁾	0	-	-
Zinc	16	8	6.8 ⁽¹⁾	6	10.9 ⁽⁵⁾	3
Cyanide (Total)	<10 ⁽⁶⁾	<10 ⁽⁶⁾	1 ^(1,7)	6	50	0
Total Phenol (Monohydric)	<10 ⁽⁶⁾	<10 ⁽⁶⁾	7.7 ^(1,7)	6	-	-
Sulphate	90300	2500	400000 ⁽¹⁾	0	--	-
Sulphide	<5.0 ⁽⁶⁾	< 5.0 ⁽⁶⁾	-	-	-	-
pH	8.4	7.7	-	-	-	-
Naphthalene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	4.0 ⁽⁴⁾	0	-	-
Acenaphthylene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-	-	-
Acenaphthene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-	-	-
Fluorene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-	-	-
Phenanthrene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-	-	-
Anthracene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	0.1 ⁽¹⁾	0	-	-
Fluoranthene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-	-	-
Pyrene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-	-	-
Benzo(a)anthracene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-	-	-
Chrysene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-	-	-
Benzo(b)fluoranthene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-	-	-
Benzo(k)fluoranthene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-	-	-
Benzo(a)pyrene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	0.00017 ^(1,7)	6	0.01 ⁽⁴⁾	0
Indeno(1,2,3-cd)pyrene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-	-	-
Benzo(g,h,i)perylene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-	-	-
Dibenz(a,h)anthracene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-	-	-
Total PAH	< 0.2 ⁽⁶⁾	< 0.2 ⁽⁶⁾	-	-	-	-

Notes:

- 1 EQS, Annual Average (AA) – Coastal Waters
- 2 EQS, Maximum Allowable Concentrations (MAC) – Coastal Waters
- 3 WHO Guidelines for Drinking Water Quality (2008)
- 4 Water Supply (Water Quality) Regulations 2018 – Drinking Water Standards (DWS)
- 5 EQS, Annual Average (AA) – Freshwater
- 6 Laboratory Limit of Detection
- 7 Laboratory Limit of Detection greater than SSV

Perched Water (Made Ground) and Upper Groundwater (Superficial Tidal Flat Deposits) Analysis

Contaminant	Max.	Min.	SSV (µg/l)	No. of Exceedances	DWS ⁽⁴⁾ (µg/l)	No. of Exceedances
Antimony	7.3	0.9	5 ⁽⁴⁾	1	-	-
Arsenic	49.8	2.91	25 ⁽¹⁾	1	-	-
Barium	140	24	700 ⁽³⁾	0	-	-
Beryllium	<0.1 ⁽⁶⁾	<0.1 ⁽⁶⁾	12 ⁽³⁾	0	-	-
Boron	610	130	7000 ⁽¹⁾	0	-	-
Cadmium	0.07	<0.02 ⁽⁶⁾	0.2 ⁽¹⁾	0	-	-
Chromium	0.6	<0.2 ⁽⁶⁾	4.7 ⁽¹⁾	0	-	-
Copper	1.8	<0.5 ⁽⁶⁾	3.76 ⁽¹⁾	0	-	-
Cobalt	12	2.2	3.0 ⁽¹⁾	5	-	-
Lead	5.7	0.2	1.3 ⁽¹⁾	1	10	0
Manganese	5200	1200	-	-	-	-
Mercury	<0.05 ⁽⁶⁾	<0.05 ⁽⁶⁾	0.07 ⁽²⁾	0	-	-
Nickel	14	1.8	8.6 ⁽¹⁾	2	20	0
Selenium	6.2	<0.6 ⁽⁶⁾	10 ⁽⁴⁾	0	-	-
Vanadium	6.4	1.1	100 ⁽¹⁾	0	-	-
Zinc	8.8	1.5	6.8 ⁽¹⁾	2	-	-
Cyanide (Total)	<10 ⁽⁶⁾	<10 ⁽⁶⁾	1 ^(1,7)	6	50	0
Total Phenol (Monohydric)	<10 ⁽⁶⁾	<10 ⁽⁶⁾	7.7 ^(1,7)	6	-	-
Sulphate	833000	16600	400000 ⁽¹⁾	1	-	-
Sulphide	54	<5.0 ⁽⁶⁾	-	-	-	-
Ammoniacal Nitrogen as NH ₄	7400	<15 ⁽⁶⁾	-	-	-	-
pH	7.8	7.1	-	-	-	-
Naphthalene	5.37	<0.01 ⁽⁶⁾	4.0 ⁽⁴⁾	1	-	-
Acenaphthylene	6.16	<0.01 ⁽⁶⁾	-	-	-	-
Acenaphthene	3.48	<0.01 ⁽⁶⁾	-	-	-	-
Fluorene	9.34	<0.01 ⁽⁶⁾	-	-	-	-
Phenanthrene	39.1	<0.01 ⁽⁶⁾	-	-	-	-
Anthracene	23.6	<0.01 ⁽⁶⁾	0.1 ⁽¹⁾	4	-	-
Fluoranthene	75.9	<0.01 ⁽⁶⁾	-	-	-	-
Pyrene	69.9	<0.01 ⁽⁶⁾	-	-	-	-
Benzo(a)anthracene	31.5	<0.01 ⁽⁶⁾	-	-	-	-
Chrysene	32.4	<0.01 ⁽⁶⁾	-	-	-	-
Benzo(b)fluoranthene	32.4	<0.01 ⁽⁶⁾	-	-	-	-
Benzo(k)fluoranthene	8.86	<0.01 ⁽⁶⁾	-	-	-	-
Benzo(a)pyrene	20.5	<0.01 ⁽⁶⁾	0.00017 ^(1,7)	6	0.01 ⁽⁴⁾	5
Indeno(1,2,3-cd)pyrene	7.07	<0.01 ⁽⁶⁾	-	-	-	-
Benzo(g,h,i)perylene	9.67	<0.01 ⁽⁶⁾	-	-	-	-
Dibenz(a,h)anthracene	2.5	<0.01 ⁽⁶⁾	-	-	-	-
Total PAH	357	<0.16 ⁽⁶⁾	-	-	-	-
TPH-CWG - Aliphatic >EC5 - EC6	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	15000 ⁽³⁾	0	-	-
TPH-CWG - Aliphatic >EC6 - EC8	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	15000 ⁽³⁾	0	-	-
TPH-CWG - Aliphatic >EC8 - EC10	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	300 ⁽³⁾	0	-	-
TPH-CWG - Aliphatic >EC10 - EC12	<10 ⁽⁶⁾	<10 ⁽⁶⁾	300 ⁽³⁾	0	-	-
TPH-CWG - Aliphatic >EC12 - EC16	<10 ⁽⁶⁾	<10 ⁽⁶⁾	300 ⁽³⁾	0	-	-
TPH-CWG - Aliphatic >EC16 - EC21	<10 ⁽⁶⁾	<10 ⁽⁶⁾	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	<10 ⁽⁶⁾	<10 ⁽⁶⁾	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	10 ⁽³⁾	0	-	-

Contaminant	Max.	Min.	SSV (µg/l)	No. of Exceedances	DWS ⁽⁴⁾ (µg/l)	No. of Exceedances
TPH-CWG - Aromatic >EC7 - EC8	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	700 ⁽³⁾	0	-	-
TPH-CWG - Aromatic >EC8 - EC10	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	300 ⁽³⁾	0	-	-
TPH-CWG - Aromatic >EC10 - EC12	43	<10 ⁽⁶⁾	500 ⁽³⁾	0	-	-
TPH-CWG - Aromatic >EC12 - EC16	300	<10 ⁽⁶⁾	90 ⁽³⁾	3	-	-
TPH-CWG - Aromatic >EC16 - EC21	2800	<10 ⁽⁶⁾	90 ⁽³⁾	3	-	-
TPH-CWG - Aromatic >EC21 - EC35	820	<10 ⁽⁶⁾	90 ⁽³⁾	2	-	-
Benzene	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	8 ⁽¹⁾	0	-	-
Toluene	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	74 ⁽¹⁾	0	-	-
Ethylbenzene	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	300 ⁽³⁾	0	-	-
p & m-xylene	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	30 ⁽¹⁾	0	-	-
o-xylene	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾			-	-
MTBE	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	15 ⁽⁸⁾	0	-	-
Mineral Oil(C10-C40)	<10 ⁽⁶⁾	<10 ⁽⁶⁾	-	-	-	-
Diesel Range Organics (C10-C25)	3100	<10 ⁽⁶⁾	-	-	-	-

Notes:

- 1 EQS, Annual Average (AA) – Coastal Waters
- 2 EQS, Maximum Allowable Concentrations (MAC) – Coastal Waters
- 3 WHO Guidelines for Drinking Water Quality (2008)
- 4 Water Supply (Water Quality) Regulations 2018 – Drinking Water Standards (DWS)
- 5 EQS, Annual Average (AA) – Freshwater
- 6 Laboratory Limit of Detection
- 7 Laboratory Limit of Detection greater than SSV
- 8 WHO Taste and Odour Threshold Values

Deeper Groundwater (Superficial Sand/Gravels and South Wales Middle coal Measure Formation) Analysis

Contaminant	Max.	Min.	SSV (µg/l)	No. of Exceedances	DWS ⁽⁴⁾ (µg/l)	No. of Exceedances
Antimony	0.6	<0.4 ⁽⁶⁾	5 ⁽⁴⁾	0	-	-
Arsenic	2.93	0.96	25 ⁽¹⁾	0	-	-
Barium	97	26	700 ⁽³⁾	0	-	-
Beryllium	<0.1 ⁽⁶⁾	<0.1 ⁽⁶⁾	12 ⁽³⁾	0	-	-
Boron	1000	420	7000 ⁽¹⁾	0	-	-
Cadmium	0.24	<0.02 ⁽⁶⁾	0.2 ⁽¹⁾	1	5	0
Chromium	<0.2 ⁽⁶⁾	<0.2 ⁽⁶⁾	4.7 ⁽¹⁾	0	-	-
Copper	0.7	<0.5 ⁽⁶⁾	3.76 ⁽¹⁾	0	-	-
Cobalt	3.9	2.9	3.0 ⁽¹⁾	3	-	-
Lead	<0.2 ⁽⁶⁾	<0.2 ⁽⁶⁾	1.3 ⁽¹⁾	0	-	-
Manganese	4400	1400	-	-	-	-
Mercury	<0.05 ⁽⁶⁾	<0.05 ⁽⁶⁾	0.07 ⁽²⁾	0	-	-
Nickel	6.3	1.6	8.6 ⁽¹⁾	0	-	-
Selenium	7.8	2.6	10 ⁽⁴⁾	0	-	-
Vanadium	1.2	<0.2 ⁽⁶⁾	100 ⁽¹⁾	0	-	-
Zinc	6.0	1.5	6.8 ⁽¹⁾	0	-	-
Cyanide (Total)	<10 ⁽⁶⁾	<10 ⁽⁶⁾	1 ^(1,7)	4	50	0
Total Phenol (Monohydric)	<10 ⁽⁶⁾	<10 ⁽⁶⁾	7.7 ^(1,7)	4	-	-
Sulphate	411000	142000	400000 ⁽¹⁾	1	-	-
Sulphide	<5.0 ⁽⁶⁾	<5.0 ⁽⁶⁾	-	-	-	-
Ammoniacal Nitrogen as NH ₄	4400	2200	-	-	-	-
pH	7.3	6.8	-	-	-	-
Naphthalene	<0.01 ⁽⁶⁾	<0.01 ⁽⁶⁾	4.0 ⁽⁴⁾	0	-	-
Acenaphthylene	<0.01 ⁽⁶⁾	<0.01 ⁽⁶⁾	-	-	-	-
Acenaphthene	<0.01 ⁽⁶⁾	<0.01 ⁽⁶⁾	-	-	-	-
Fluorene	<0.01 ⁽⁶⁾	<0.01 ⁽⁶⁾	-	-	-	-
Phenanthrene	<0.01 ⁽⁶⁾	<0.01 ⁽⁶⁾	-	-	-	-
Anthracene	<0.01 ⁽⁶⁾	<0.01 ⁽⁶⁾	0.1 ⁽¹⁾	0	-	-
Fluoranthene	<0.01 ⁽⁶⁾	<0.01 ⁽⁶⁾	-	-	-	-
Pyrene	<0.01 ⁽⁶⁾	<0.01 ⁽⁶⁾	-	-	-	-
Benzo(a)anthracene	<0.01 ⁽⁶⁾	<0.01 ⁽⁶⁾	-	-	-	-
Chrysene	<0.01 ⁽⁶⁾	<0.01 ⁽⁶⁾	-	-	-	-
Benzo(b)fluoranthene	<0.01 ⁽⁶⁾	<0.01 ⁽⁶⁾	-	-	-	-
Benzo(k)fluoranthene	<0.01 ⁽⁶⁾	<0.01 ⁽⁶⁾	-	-	-	-
Benzo(a)pyrene	<0.01 ⁽⁶⁾	<0.01 ⁽⁶⁾	0.00017 ^(1,7)	4	0.01 ⁽⁴⁾	0
Indeno(1,2,3-cd)pyrene	<0.01 ⁽⁶⁾	<0.01 ⁽⁶⁾	-	-	-	-
Benzo(g,h,i)perylene	<0.01 ⁽⁶⁾	<0.01 ⁽⁶⁾	-	-	-	-
Dibenz(a,h)anthracene	<0.01 ⁽⁶⁾	<0.01 ⁽⁶⁾	-	-	-	-
Total PAH	<0.16 ⁽⁶⁾	<0.16 ⁽⁶⁾	-	-	-	-
TPH-CWG - Aliphatic >EC5 - EC6	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	15000 ⁽³⁾	0	-	-
TPH-CWG - Aliphatic >EC6 - EC8	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	15000 ⁽³⁾	0	-	-
TPH-CWG - Aliphatic >EC8 - EC10	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	300 ⁽³⁾	0	-	-
TPH-CWG - Aliphatic >EC10 - EC12	<10 ⁽⁶⁾	<10 ⁽⁶⁾	300 ⁽³⁾	0	-	-
TPH-CWG - Aliphatic >EC12 - EC16	<10 ⁽⁶⁾	<10 ⁽⁶⁾	300 ⁽³⁾	0	-	-
TPH-CWG - Aliphatic >EC16 - EC21	<10 ⁽⁶⁾	<10 ⁽⁶⁾	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	<10 ⁽⁶⁾	<10 ⁽⁶⁾	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	10 ⁽³⁾	0	-	-

Contaminant	Max.	Min.	SSV (µg/l)	No. of Exceedances	DWS ⁽⁴⁾ (µg/l)	No. of Exceedances
TPH-CWG - Aromatic >EC7 - EC8	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	700 ⁽³⁾	0	-	-
TPH-CWG - Aromatic >EC8 - EC10	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	300 ⁽³⁾	0	-	-
TPH-CWG - Aromatic >EC10 - EC12	<10 ⁽⁶⁾	<10 ⁽⁶⁾	500 ⁽³⁾	0	-	-
TPH-CWG - Aromatic >EC12 - EC16	<10 ⁽⁶⁾	<10 ⁽⁶⁾	90 ⁽³⁾	0	-	-
TPH-CWG - Aromatic >EC16 - EC21	<10 ⁽⁶⁾	<10 ⁽⁶⁾	90 ⁽³⁾	0	-	-
TPH-CWG - Aromatic >EC21 - EC35	<10 ⁽⁶⁾	<10 ⁽⁶⁾	90 ⁽³⁾	0	-	-
Benzene	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	8 ⁽¹⁾	0	-	-
Toluene	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	74 ⁽¹⁾	0	-	-
Ethylbenzene	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	300 ⁽³⁾	0	-	-
p & m-xylene	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	30 ⁽¹⁾	0	-	-
o-xylene	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾			-	-
MTBE	<1.0 ⁽⁶⁾	<1.0 ⁽⁶⁾	15 ⁽⁸⁾	0	-	-
Mineral Oil(C10-C40)	<10 ⁽⁶⁾	<10 ⁽⁶⁾	-	-	-	-
Diesel Range Organics (C10-C25)	<10 ⁽⁶⁾	<10 ⁽⁶⁾	-	-	-	-

Notes:

- 1 EQS, Annual Average (AA) – Coastal Waters
- 2 EQS, Maximum Allowable Concentrations (MAC) – Coastal Waters
- 3 WHO Guidelines for Drinking Water Quality (2008)
- 4 Water Supply (Water Quality) Regulations 2018 – Drinking Water Standards (DWS)
- 5 EQS, Annual Average (AA) – Freshwater
- 6 Laboratory Limit of Detection
- 7 Laboratory Limit of Detection greater than SSV
- 8 WHO Taste and Odour Threshold Values

Appendix G
Ground Gas Monitoring Results



Ground Gas Monitoring Results

Project:	Phoenix Wharf	Gas analyser:	GFM 436	Preceding Weather Conditions	On-site weather conditions	General Site Conditions / Ground Conditions / On-site Activities
Project Number:	2111006.003	Condition:	Good	Atmospheric trend:	1026 - 1028hPa	
Location:	Port Talbot	Well Diameter:	50mm	Temperature range:	15 - 19°C	
Test Date:	09/05/2022 - 10/05/2022	Wellhead Condition:	Good	Rainfall:	0 - 2.54mm	

GAS MONITORING TO BE UNDERTAKEN IN ACCORDANCE WITH TEC METHOD STATEMENT

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments					
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)										
BH ref: BH01	0	0	0	0.0	0.0	21.5	0.0	0	0	2.754mbgl	18.89mbgl	0	0						
	15	0	0	43.0	1.9	10.0	>>>.>	0	0										
	30	0	0	44.0	1.7	10.9	>>>.>	0	0										
	45	0	0	40.1	1.6	11.6	>>>.>	0	0										
Time: 16:47	60	0	0	36.7	1.5	12.4	>>>.>	0	0										
	120	0	0	30.0	1.2	13.9	>>>.>	0	0										
	180	0	0	27.6	1.1	14.4	>>>.>	0	0										
Atmospheric pressure (mb) before: 1020																			
Atmospheric pressure (mb) after: 1018																			
Well Condition: Good																			
Well Diameter: 50mm																			

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments					
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)										
BH ref: BH02	0	3.4	20	0.0	0.0	20.9	0.0	0	0	4.33	24.74	2.261	0.1666						
	15	2.1	10	59.4	4.7	5.9	>>>.>	0	240										
	30	1.5	7	66.0	4.9	5.1	>>>.>	0	480										
	45	2.1	10	66.5	4.9	5.0	>>>.>	0	620										
Time: 15:15	60	1.9	10	66.2	4.8	5.2	>>>.>	0	750										
	120	1.2	6	59.7	4.5	6.8	>>>.>	0	900										
	180	2.1	10	52.0	4.1	8.5	>>>.>	0	860										
Atmospheric pressure (mb) before: 1018																			
Atmospheric pressure (mb) after: 1018																			
Well Condition: Good																			
Well Diameter: 50mm																			

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments					
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)										
BH ref: BH03A	0	0	0	0.0	0.0	20.6	0.0	0	0	3.77	20.03	0	0						
	15	0	0	35.0	1.1	12.0	>>>.>	0	0										
	30	0	0	39.0	1.2	11.1	>>>.>	0	0										
	45	0	0	39.0	1.1	11.1	>>>.>	0	0										
Time: 13:17	60	0	0	38.7	1.1	11.2	>>>.>	0	0										
	120	0	0	35.0	1.0	12.2	>>>.>	0	0										
	180	0	0	30.0	0.9	13.3	>>>.>	0	0										
Atmospheric pressure (mb) before: 1022																			
Atmospheric pressure (mb) after: 1021																			
Well Condition: Good																			
Well Diameter: 50mm																			



Ground Gas Monitoring Results

Project:	Phoenix Wharf	Gas analyser:	GFM 436	Preceding Weather Conditions		On-site weather conditions	General Site Conditions / Ground Conditions / On-site Activities
Project Number:	2111006.003	Condition:	Good	Atmospheric trend:	1026 - 1028hPa	Dry and Sunny	
Location:	Port Talbot	Well Diameter:	50mm	Temperature range:	15 - 19°C		
Test Date:	09/05/2022 - 10/05/2022	Wellhead Condition:	Good	Rainfall:	0 - 2.54mm		

GAS MONITORING TO BE UNDERTAKEN IN ACCORDANCE WITH TEC METHOD STATEMENT

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)					
BH ref: BH04	0	0	0	0.0	0.0	20.8	0.0	0	0	5.674	19.31	0	0	
	15	0	0	0.0	1.6	19.6	0.0	0	0					
	30	0	0	0.0	1.7	19.4	0.0	0	0					
Time: 14:18	45	0	0	0.0	1.7	19.4	0.0	0	0					
Atmospheric pressure (mb) before:	60	0	0	0.0	1.7	19.3	0.0	0	0					
1018	120	0	0	0.0	1.8	19.3	0.0	0	0					
	180	0	0	0.0	1.8	19.2	0.0	0	0					
Atmospheric pressure (mb) after:														
1018														
Well Condition: Good														
Well Diameter: 50mm														

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)					
BH ref: WS01	0	0	0	0.0	0.0	20.5	0.0	0	0	1.895	2.696	0	0	
	15	0	0	0.0	0.0	20.6	0.0	0	0					
	30	0	0	0.0	0.0	20.7	0.0	0	0					
Time: 10:54	45	0	0	0.0	0.0	20.7	0.0	0	0					
Atmospheric pressure (mb) before:	60	0	0	0.0	0.0	20.6	0.0	0	0					
1016	120	0	0	0.0	0.0	20.6	0.0	0	0					
	180	0	0	0.0	0.0	20.5	0.0	0	0					
Atmospheric pressure (mb) after:														
1018														
Well Condition: Good														
Well Diameter: 50mm														

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)					
BH ref: WS03A	0	0	0	0.0	0.0	20.4	0.0	0	0	1.696	3.694	0	0	
	15	0.1	0	0.0	0.0	20.5	0.0	0	0					
	30	0	0	0.0	0.0	20.5	0.0	0	0					
Time: 09:26	45	0	0	0.0	0.0	20.5	0.0	0	0					
Atmospheric pressure (mb) before:	60	0	0	0.0	0.0	20.5	0.0	0	0					
1018	120	0	0	0.0	0.0	20.4	0.0	0	0					
	180	0	0	0.0	0.0	20.3	0.0	0	0					
Atmospheric pressure (mb) after:														
1016														
Well Condition: Good														
Well Diameter: 50mm														



Ground Gas Monitoring Results

Project:	Phoenix Wharf	Gas analyser:	GFM 436	Preceding Weather Conditions:		On-site weather conditions:	General Site Conditions / Ground Conditions / On-site Activities
Project Number:	2111006.003	Condition:	Good	Atmospheric trend:	1026 - 1028hPa	Dry and Sunny	
Location:	Port Talbot	Well Diameter:	50mm	Temperature range:	15 - 19°C		
Test Date:	09/05/2022 - 10/05/2022	Wellhead Condition:	Good	Rainfall:	0 - 2.54mm		

GAS MONITORING TO BE UNDERTAKEN IN ACCORDANCE WITH TEC METHOD STATEMENT

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments					
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)										
BH ref: WS06	0	-10	-70	0.0	0.0	14.6	0.0	0	0	0.345	5.835	0	0.0004						
	15	-4.8	-31	8.5	2.2	14.6	>>>>	0	0										
	30	-1.2	-6	10.3	2.3	14.1	>>>>	0	0										
	45	-1.2	-6	10.5	2.3	14.0	>>>>	0	0										
Time: 07:30	60	-1	-5	10.5	2.3	14.0	>>>>	0	0										
	120	-0.3	-1	10.6	2.3	13.6	>>>>	0	0										
Atmospheric pressure (mb) before: 1016																			
Atmospheric pressure (mb) after: 1017																			
Well Condition: Good																			
Well Diameter: 50mm																			

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments				
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)									
BH ref: WS07	0	0	0	0.0	0.1	20.4	0.0	0	0	0.62	4.15	0	0					
	15	0	0	0.0	0.1	20.4	0.0	0	0									
	30	0	0	0.0	0.1	20.4	0.0	0	0									
	45	0	0	0.0	0.1	20.4	0.0	0	0									
Time: 08:15	60	-0.2	-1	0.0	0.1	20.4	0.0	0	0									
	120	0	0	0.0	0.1	20.1	0.0	0	0									
	180	0	0	0.0	0.1	20.0	0.0	0	0									
Atmospheric pressure (mb) before: 1017																		
Atmospheric pressure (mb) after: 1017																		
Well Condition: Good																		
Well Diameter: 50mm																		

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments				
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)									
BH ref: WS10	0	0	0	0.0	0.0	20.5	0.0	0	0	2.095	4.92	0	0					
	15	0	0	0.0	0.0	20.5	0.0	0	0									
	30	0	0	0.0	0.0	20.5	0.0	0	0									
	45	0	0	0.0	0.0	20.5	0.0	0	0									
Time: 10:19	60	0	0	0.0	0.0	20.5	0.0	0	0									
	120	0	0	0.0	0.0	20.4	0.0	0	0									
	180	0	0	0.0	0.0	20.3	0.0	0	0									
Atmospheric pressure (mb) before: 1017																		
Atmospheric pressure (mb) after: 1017																		
Well Condition: Good																		
Well Diameter: 50mm																		



Ground Gas Monitoring Results

Project:	Phoenix Wharf	Gas analyser:	GFM 436	Preceding Weather Conditions		On-site weather conditions	General Site Conditions / Ground Conditions / On-site Activities
Project Number:	2111006.003	Condition:	Good	Atmospheric trend:	1026 - 1028hPa	Dry and Sunny	
Location:	Port Talbot	Well Diameter:	50mm	Temperature range:	15 - 19°C		
Test Date:	09/05/2022 - 10/05/2022	Wellhead Condition:	Good	Rainfall:	0 - 2.54mm		

GAS MONITORING TO BE UNDERTAKEN IN ACCORDANCE WITH TEC METHOD STATEMENT

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments				
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)									
BH ref: WS11	0	0.4	2	0.0	0.0	20.4	0.0	0	0	1.22	3.41	0	0.0004					
	15	0.2	1	0.0	0.0	20.4	0	0	0									
	30	0.1	0	0.0	0.0	20.4	0	0	0									
Time: 08:51	45	0	0	0.0	0.0	20.4	0	0	0									
	60	0	0	0.0	0.0	20.4	0	0	0									
Atmospheric pressure (mb) before: 1017	120	0	0	0.0	0.1	20.2	0	0	0									
	180	0	0	0.0	0.1	20.2	0	0	0									
Atmospheric pressure (mb) after: 1017																		
Well Condition: Good																		
Well Diameter: 50mm																		

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)					
												0	0	

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)					
												0	0	



Ground Gas Monitoring Results

Project:	Phoenix Wharf	Gas analyser:	GFM 436	Preceding Weather Conditions		On-site weather conditions	General Site Conditions / Ground Conditions / On-site Activities
Project Number:	2111006.003	Condition:	Good	Atmospheric trend:	1020 - 10215hPa	Dry and Sunny	
Location:	Port Talbot	Well Diameter:	50mm	Temperature range:	13 - 15°C		
Test Date:	17/05/2022	Wellhead Condition:	Good	Rainfall:	0 - 2.54mm		

GAS MONITORING TO BE UNDERTAKEN IN ACCORDANCE WITH TEC METHOD STATEMENT

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments					
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)										
BH ref: BH01	0	0	0	0.0	0.0	20.9	0.0	0	0	2.14	18.66	0	0.0001						
	15	0.1	0	0.0	0.1	20.9	0	0	0										
	30	0.1	0	0.0	0.1	20.7	0	0	0										
	45	0.1	0	0.0	0.1	20.7	0	0	0										
Time: 10:55	60	0.1	0	0.0	0.0	20.7	0	0	0										
	120	0	0	0.0	0.0	20.7	0	0	0										
	180	0	0	0.0	0.0	20.7	0	0	0										
Atmospheric pressure (mb) before: 1010																			
Atmospheric pressure (mb) after: 1010																			
Well Condition: Good																			
Well Diameter: 50mm																			

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments				
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)									
BH ref: BH02	0	0	0	0.0	0.0	20.9	0.0	0	0	3.95	24.46	2.673	0.2211					
	15	3.3	18	74.9	6.5	1.1	>>>.>	0	410									
	30	1.6	8	80.6	6.7	0.6	>>>.>	0	590									
	45	1.8	10	81.0	6.6	1.0	>>>.>	0	830									
Time: 12:33	60	1.2	6	76.8	5.8	2.4	>>>.>	0	970									
	120	0.2	1	60.5	4.5	6.2	>>>.>	0	1050									
	180	0	0	49.6	3.9	8.6	>>>.>	0	930									
Atmospheric pressure (mb) before: 1015																		
Atmospheric pressure (mb) after: 1015																		
Well Condition: Good																		
Well Diameter: 50mm																		

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments				
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)									
BH ref: BH03A	0	0	0	0.0	0.0	20.8	0.0	0	0	3.32	20.02	0	0					
	15	0	0	18.6	0.8	15.9	>>>.>	0	0									
	30	0	0	21.0	0.8	15.6	>>>.>	0	0									
	45	0	0	20.2	0.8	15.9	>>>.>	0	0									
Time: 13:09	60	0	0	19.7	0.8	16.0	>>>.>	0	0									
	120	0	0	17.6	0.7	16.4	>>>.>	0	0									
	180	0	0	14.9	0.6	17.2	>>>.>	0	0									
Atmospheric pressure (mb) before: 1010																		
Atmospheric pressure (mb) after: 1010																		
Well Condition: Good																		
Well Diameter: 50mm																		



Ground Gas Monitoring Results

Project:	Phoenix Wharf	Gas analyser:	GFM 436	Preceding Weather Conditions		On-site weather conditions	General Site Conditions / Ground Conditions / On-site Activities
Project Number:	2111006.003	Condition:	Good	Atmospheric trend:	1020 - 10215hPa	Dry and Sunny	
Location:	Port Talbot	Well Diameter:	50mm	Temperature range:	13 - 15°C		
Test Date:	17/05/2022	Wellhead Condition:	Good	Rainfall:	0 - 2.54mm		

GAS MONITORING TO BE UNDERTAKEN IN ACCORDANCE WITH TEC METHOD STATEMENT

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)					
BH ref: BH04	0	0	0	0.0	0.0	20.9	0.0	0	0	5.27	19.35	0	0	
	15	0	0	50.5	2.1	7.9	>>>.>	0	0					
	30	0	0	55.7	2.2	7.6	>>>.>	0	0					
Time: 12:10	45	0	0	55.7	2.1	7.9	>>>.>	0	0					
Atmospheric pressure (mb) before:	60	0	0	53.3	2.0	8.4	>>>.>	0	0					
1013	120	0	0	45.8	1.8	10.2	>>>.>	0	0					
	180	0	0	39.0	1.5	11.7	>>>.>	0	0					
Atmospheric pressure (mb) after:														
1013														
Well Condition: Good														
Well Diameter: 50mm														

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)					
BH ref: WS01	0	0	0	0.0	0.0	20.9	0.0	0	0	1.94	2.73	0	0	
	15	0	0	0.0	0.4	18.4	0.0	0	70					
	30	0	0	0.0	0.4	18.4	0.0	0	50					
Time: 12:22	45	0	0	0.0	0.4	18.5	0.0	0	40					
Atmospheric pressure (mb) before:	60	0	0	0.0	0.3	19.1	0.0	0	40					
1012	120	0	0	0.0	0.3	19.1	0.0	0	25					
	180	0	0	0.0	0.3	19.1	0.0	0	0					
Atmospheric pressure (mb) after:														
1015														
Well Condition: Good														
Well Diameter: 50mm														

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)					
BH ref: WS03A	0	0	0	0.0	0.0	20.9	0.0	0	0	1.82	2.37	0	0	
	15	0	0	0.0	1.1	18.2	0.0	0	0					
	30	0	0	0.0	1.1	18.0	0.0	0	0					
Time: 09:26	45	0	0	0.0	1.2	17.9	0.0	0	0					
Atmospheric pressure (mb) before:	60	0	0	0.0	1.2	17.8	0.0	0	0					
1018	120	0	0	0.0	1.4	17.5	0.0	0	0					
	180	0	0	0.0	1.6	17.2	0.0	0	0					
Atmospheric pressure (mb) after:														
1016														
Well Condition: Good														
Well Diameter: 50mm														



Ground Gas Monitoring Results

Project:	Phoenix Wharf	Gas analyser:	GFM 436	Preceding Weather Conditions:		On-site weather conditions:	General Site Conditions / Ground Conditions / On-site Activities:
Project Number:	2111006.003	Condition:	Good	Atmospheric trend:	1020 - 10215hPa	Dry and Sunny	
Location:	Port Talbot	Well Diameter:	50mm	Temperature range:	13 - 15°C		
Test Date:	17/05/2022	Wellhead Condition:	Good	Rainfall:	0 - 2.54mm		

GAS MONITORING TO BE UNDERTAKEN IN ACCORDANCE WITH TEC METHOD STATEMENT

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments					
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)										
BH ref: WS06	0	0	0	0.0	0.0	21.0	0.0	0	0	0.32	3.14	0	0						
	15	0	0	0.0	0.2	21.0	0	0	0										
	30	0	0	0.0	0.2	20.8	0	0	0										
	45	0	0	0.0	0.2	20.8	0	0	0										
Time: 11:18	60	0	0	0.0	0.2	20.8	0	0	0										
	120	0	0	0.0	0.1	20.8	0	0	0										
	180	0	0	0.0	0.1	20.8	0	0	0										
Atmospheric pressure (mb) before: 1010																			
Atmospheric pressure (mb) after: 1010																			
Well Condition: Good																			
Well Diameter: 50mm																			

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments					
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)										
BH ref: WS07	0	0	0	0.0	0.0	20.9	0.0	0	0	0.55	3.22	0	0						
	15	0	0	0.0	0.3	20.8	0.0	0	0										
	30	0	0	0.0	0.2	20.8	0.0	0	0										
	45	0	0	0.0	0.2	20.8	0.0	0	0										
Time: 11:08	60	0	0	0.0	0.1	20.8	0.0	0	0										
	120	0	0	0.0	0.1	20.9	0.0	0	0										
	180	0	0	0.0	0.0	20.8	0.0	0	0										
Atmospheric pressure (mb) before: 1010																			
Atmospheric pressure (mb) after: 1010																			
Well Condition: Good																			
Well Diameter: 50mm																			

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments					
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)										
BH ref: WS10	0	0	0	0.0	0.0	20.9	0.0	0	0	Dry	4.91	0	0						
	15	0	0	0.0	1.2	18.1	0.0	0	0										
	30	0	0	0.0	1.3	17.8	0.0	0	0										
	45	0	0	0.0	1.4	17.6	0.0	0	0										
Time: 12:54	60	0	0	0.0	1.5	17.3	0.0	0	0										
	120	0	0	0.0	2.0	16.2	0.0	0	0										
	180	0	0	0.0	2.4	14.8	0.0	0	0										
Atmospheric pressure (mb) before: 1010																			
Atmospheric pressure (mb) after: 1010																			
Well Condition: Good																			
Well Diameter: 50mm																			



Ground Gas Monitoring Results

Project:	Phoenix Wharf	Gas analyser:	GFM 436	Preceding Weather Conditions	On-site weather conditions	General Site Conditions / Ground Conditions / On-site Activities
Project Number:	2111006.003	Condition:	Good	Atmospheric trend:	1000 - 1013hPa (Falling)	
Location:	Port Talbot	Well Diameter:	50mm	Temperature range:	11 - 13°C	
Test Date:	24/05/2022	Wellhead Condition:	Good	Rainfall:	0 - 2.54mm	

GAS MONITORING TO BE UNDERTAKEN IN ACCORDANCE WITH TEC METHOD STATEMENT

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments				
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)									
BH ref: BH01	0	0.4	2	0.0	0.0	21.1	0.0	0	0	2.22	18.59	0	0.0004					
	15	0	0	0.0	0.0	20.7	0.0	0	0									
Time: 11:00	30	0.1	0	0.0	0.1	20.6	0.0	0	0									
	45	0.1	0	0.0	0.1	20.6	0.0	0	0									
Atmospheric pressure (mb) before: 1012	60	0	0	0.0	0.0	20.6	0.0	0	0									
	120	0	0	0.0	0.0	20.6	0.0	0	0									
	180	0	0	0.0	0.0	20.6	0.0	0	0									
Atmospheric pressure (mb) after: 1012																		
Well Condition: Good																		
Well Diameter: 50mm																		

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments			
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)								
BH ref: BH02	0	0	0	0.0	0.0	20.4	0.0	0	0	4.82	24.235	0	0				
	15	0	0	64.0	5.9	3.5	>>>>	0	230								
Time: 12:59	30	0	0	71.1	6.0	3.1	>>>>	0	420								
	45	0	0	65.8	5.0	5.1	>>>>	0	600								
Atmospheric pressure (mb) before: 1005	60	0	0	60.2	4.7	6.4	>>>>	0	690								
	120	0	0	49.3	4.1	8.3	>>>>	0	800								
	180	0	0	39.4	3.4	10.9	>>>>	0	730								
Atmospheric pressure (mb) after: 1005																	
Well Condition: Good																	
Well Diameter: 50mm																	

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments			
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)								
BH ref: BH03A	0	0	0	0.0	0.0	20.5	0.0	0	0	4.4	20.01	0	0				
	15	0	0	0.0	0.7	20.8	0.0	0	0								
Time: 12:00	30	0	0	0.0	0.9	20.5	4.5	0	0								
	45	0	0	0.2	0.9	20.5	10.9	0	0								
Atmospheric pressure (mb) before: 1007	60	0	0	0.6	1.0	20.4	16.7	0	0								
	120	0	0	0.1	1.2	20.5	12.4	0	0								
	180	0	0	0.0	1.4	20.6	0.0	0	0								
Atmospheric pressure (mb) after: 1007																	
Well Condition: Good																	
Well Diameter: 50mm																	



Ground Gas Monitoring Results

Project:	Phoenix Wharf	Gas analyser:	GFM 436	Preceding Weather Conditions		On-site weather conditions	General Site Conditions / Ground Conditions / On-site Activities
Project Number:	2111006.003	Condition:	Good	Atmospheric trend:	1000 - 1013hPa (Falling)	Overcast	
Location:	Port Talbot	Well Diameter:	50mm	Temperature range:	11 - 13°C		
Test Date:	24/05/2022	Wellhead Condition:	Good	Rainfall:	0 - 2.54mm		

GAS MONITORING TO BE UNDERTAKEN IN ACCORDANCE WITH TEC METHOD STATEMENT

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)					
BH ref: BH04	0	0	0	0.0	0.1	20.4	0.0	0	0	5.4	19.37	0	0	
	15	0	0	12.2	2.1	4.6	>>>.>	0	0					
	30	0	0	71.9	2.5	3.9	>>>.>	0	0					
Time: 12:41	45	0	0	71.3	2.4	4.4	>>>.>	0	0					
Atmospheric pressure (mb) before: 1007	60	0	0	69.0	2.4	4.9	>>>.>	0	0					
	120	0	0	58.7	2.1	7.3	>>>.>	0	0					
	180	0	0	49.0	1.8	9.4	>>>.>	0	0					
Atmospheric pressure (mb) after: 1006														
Well Condition: Good														
Well Diameter: 50mm														

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)					
BH ref: WS01	0	0	0	0.0	0.1	20.1	0.0	0	0	2	2.62	0	0	
	15	0	0	0.0	0.0	21.1	0.0	0	70					
	30	0	0	0.0	0.0	21.0	0.0	0	50					
Time: 12:50	45	0	0	0.0	0.0	20.9	0.0	0	40					
Atmospheric pressure (mb) before: 1006	60	0	0	0.0	0.0	20.9	0.0	0	40					
	120	0	0	0.0	0.0	20.9	0.0	0	25					
	180	0	0	0.0	0.0	20.9	0.0	0	0					
Atmospheric pressure (mb) after: 1003														
Well Condition: Good														
Well Diameter: 50mm														

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)					
BH ref: WS03A	0	0	0	0.0	0.1	20.6	0.0	0	0	1.88	2.35	0	0	
	15	0	0	0.0	1.8	16.9	0.0	0	0					
	30	0	0	0.0	1.9	16.5	0.0	0	0					
Time: 12:22	45	0	0	0.0	1.9	16.4	0.0	0	0					
Atmospheric pressure (mb) before: 1007	60	0	0	0.0	1.9	16.4	0.0	0	0					
	120	0	0	0.0	1.9	16.4	0.0	0	0					
	180	0	0	0.0	1.9	16.4	0.0	0	0					
Atmospheric pressure (mb) after: 1005														
Well Condition: Good														
Well Diameter: 50mm														



Ground Gas Monitoring Results

Project:	Phoenix Wharf	Gas analyser:	GFM 436	Preceding Weather Conditions	On-site weather conditions	General Site Conditions / Ground Conditions / On-site Activities
Project Number:	2111006.003	Condition:	Good	Atmospheric trend:	1000 - 1013hPa (Falling)	
Location:	Port Talbot	Well Diameter:	50mm	Temperature range:	11 - 13°C	Overcast
Test Date:	24/05/2022	Wellhead Condition:	Good	Rainfall:	0 - 2.54mm	

GAS MONITORING TO BE UNDERTAKEN IN ACCORDANCE WITH TEC METHOD STATEMENT

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments					
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)										
BH ref: WS06	0	0	0	0.0	0.0	20.3	0.0	0	0	0.37	2.93	0	0						
	15	-11	0	0.0	0.3	20.5	0.0	0	0										
	30	-3.7	0	0.0	0.3	20.3	0.0	0	0										
	45	-1	0	0.0	0.4	20.3	0.0	0	0										
Time: 11:21	60	0	0	0.0	0.4	20.2	0.0	0	0										
	120	0	0	0.0	0.5	20.2	0.0	0	0										
Atmospheric pressure (mb) before: 1011																			
Atmospheric pressure (mb) after: 1011																			
Well Condition: Good																			
Well Diameter: 50mm																			

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments					
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)										
BH ref: WS07	0	0	0	0.0	0.0	21.0	0.0	0	0	0.69	3.195	0	0						
	15	0	0	0.0	0.3	20.7	0.0	0	0										
	30	0	0	0.0	0.3	20.6	0.0	0	0										
	45	0	0	0.0	0.3	20.5	0.0	0	0										
Time: 11:12	60	0	0	0.0	0.3	20.5	0.0	0	0										
	120	0	0	0.0	0.3	20.5	0.0	0	0										
	180	0	0	0.0	0.3	20.5	0.0	0	0										
Atmospheric pressure (mb) before: 1012																			
Atmospheric pressure (mb) after: 1011																			
Well Condition: Good																			
Well Diameter: 50mm																			

Borehole Information	Time (s)	Borehole Flow Rate (l/hr)	DP (Pa)	Gas Concentrations						Groundwater Level	Borehole Depth	Methane - Hazardous Flow Rate CH4 Qhg (l/hr)	Carbon Dioxide - Hazardous Flow Rate CO2 Qhg (l/hr)	Comments					
				CH4 (%v/v)	CO2 (%v/v)	O2 (%v/v)	LEL (%)	CO (ppm)	H2S (ppm)										
BH ref: WS10	0	0	0	0.0	0.1	20.4	0.0	0	0	2.12	4.8	0	0						
	15	0	0	0.0	2.3	15.2	0.0	0	0										
	30	0	0	0.0	2.4	14.5	0.0	0	0										
	45	0	0	0.0	2.4	14.2	0.0	0	0										
Time: 12:31	60	0	0	0.0	2.5	14.2	0.0	0	0										
	120	0	0	0.0	2.8	13.7	0.0	0	0										
	180	0	0	0.0	3.2	13.0	0.0	0	0										
Atmospheric pressure (mb) before: 1006																			
Atmospheric pressure (mb) after: 1007																			
Well Condition: Good																			
Well Diameter: 50mm																			

Appendix H

Risk Methodologies and Evaluation

Risk Evaluation

The qualitative assessment methodology presented in CIRIA publication C552 (2001) titled '*Contaminated Land Risk Assessment: A Guide to Good Practice*' has been used by TEC for the basis of evaluating potential risk.

The method requires an assessment of the:

- magnitude of the probability or likelihood of the risk occurring (Table 1); and
- magnitude of the potential consequence or severity of the risk occurring (Table 2)

Table 1. Classification of Probability

Classification	Definition
High likelihood	There is a pollution linkage and an event that either appears very likely in the short-term and almost inevitable over the long-term, or there is evidence at the receptor of harm or pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short-term and likely over the long-term.
Low likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such an event would take place, and is less likely in the short-term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long-term.

Table 2. Classification of Consequence

Classification	Definition	Examples
Severe	Short-term (acute) risk to human health likely to result in "significant harm" as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resource. (Note: Water Resources Act contains no scope for considering significance of pollution). Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem, or organisation forming part of such ecosystem (note: the definitions of ecological systems within the draft circular on Contaminated Land, DETR, 2000).	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled water. Explosion, causing building collapse (can also equate to a short-term human health risk if buildings are occupied).
Medium	Chronic damage to human health ("significant harm" as defined in DETR, 2000). Pollution of sensitive water resources. (Note: Water Resources Act contains no scope for considering significance of pollution). A significant change in a particular ecosystem, or organism forming part of such ecosystem, (note: the definitions of ecological systems within draft circular on Contaminated Land, DETR, 2000).	Concentration of a contaminant from site exceeding the generic or site-specific assessment criteria. Leaching of contaminants from a site to a major or minor aquifer. Death of a species within a designated nature reserve.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ("significant harm" as defined in the draft circular on Contaminated Land, DETR, 2000). Damage to sensitive buildings/structures/services or the environment.	Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy (for example foundation damage resulting in instability).
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc), easily repairable effects of damage to buildings, structures and services.	The presence of contaminants at such concentrations that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discolouration of concrete.

The combination of the two factors is determined using Table 3 and the resulting level of risk is described in Table 4. The evaluation can be applied to each of the scenarios identified in the risk model and the overall risk assessed.

Table 3. Combination of Consequence with Probability

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate/Low Risk
	Likely	High Risk	Moderate Risk	Moderate/Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate/Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate/Low Risk	Low Risk	Very Low Risk	Very Low Risk

Table 4. Description of risks and likely action required

Very High Risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, or there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short-term and are likely over the longer-term.
Moderate Risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the long-term.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

Using the risk model the pollutant linkages are identified and a preliminary estimate of risk undertaken. If there is no pollutant linkage identified, then there is no risk. If the estimate of risk for all the linkages and exposure scenarios is very low at this stage then it is likely that no further assessment will be required.

Calculated by:	faye tomlin
Site name:	Project Dragon
Site location:	Port Talbot

Site Details

Latitude:	51.58342°
Longitude:	3.78416°
Reference:	13149327
Date:	Jun 07 2023 08:

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Runoff estimation approach

FEH Statistical

Site characteristics

Total site area (ha):	9.95
-----------------------	------

Methodology

Q_{MED} estimation method:	Calculate from BFI and SAAR
BFI and SPR method:	Specify BFI manually
HOST class:	N/A
BFI / BFIHOST:	0.726
Q_{MED} (l/s):	
Q_{BAR} / Q_{MED} factor:	1.08

Notes

(1) Is $Q_{BAR} < 2.0$ l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is $SPR/SPRHOST \leq 0.3$?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Hydrological characteristics

	Default	Edited
SAAR (mm):	1176	1143
Hydrological region:	9	9
Growth curve factor 1 year:	0.88	0.88
Growth curve factor 30 years:	1.78	1.78
Growth curve factor 100 years:	2.18	2.18
Growth curve factor 200 years:	2.46	2.46

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):		37.74
1 in 1 year (l/s):		33.21
1 in 30 years (l/s):		67.18
1 in 100 year (l/s):		82.28
1 in 200 years (l/s):		92.85

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement , which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.



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FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	1 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

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1	06/06/2023	IFFC Issued For Feed (Consolidated)	C. Laquel	D. Paris	M. Allan
0	12/04/2023	IFRC Issued For Review (Consolidated)	S. DJEROUROU	N. DJERAMBETE	C. LAQUEL
DOCUMENT REVISIONS					

Sections changed in last revision are identified by a vertical line in the margin

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PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	2 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

CONTENTS

1. INTRODUCTION.....4

2. SCOPE OF DOCUMENT4

3. DEFINITIONS AND ABBREVIATIONS.....4

 3.1 Definitions.....4

 3.2 Abbreviations.....5

4. REFERENCE DOCUMENTS6

 4.1 CONTRACTOR Specific Reference Documents (Hold):.....7

5. FRAMEWORK ENVIRONMENTAL MANAGEMENT PLANS8

6. FINAL CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN10

7. POLICY AND PLANNING11

 7.1 Environmental Policy Statement11

 7.2 Sustainability Policy Statement11

 7.3 CEMP Implementation11

8. ENVIRONMENTAL MANAGEMENT RESPONSABILITIES.....14

9. DETAILED CONTRACTOR RESPONSIBILITIES PRIOR TO CONSTRUCTION19

10. DETAILED CONTRACTOR RESPONSIBILITIES DURING CONSTRUCTION20

11. CONSTRUCTION PLANNING21

12. CONSTRUCTION LAYDOWN AND WELFARE FACILITIES.....23

13. TRAFFIC MANAGEMENT AND OFF SITE DELIVERY ROUTES23

14. SPOIL MANAGEMENT24

15. ENVIRONMENTAL CONTROL PLANS27

APPENDIX A: CONTRACTOR HSES POLICY28

APPENDIX B: ESG ROADMAP 2022-202330

APPENDIX C: PROJECT SUSTAINABILITY POLICY [HOLD].....32



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	3 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Table of Holds

Reference	Page No	Description



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	4 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

1. INTRODUCTION

LanzaTech UK Ltd is exploring the installation of a 30M gal/year (ca. 115million litres/year) Alcohol-to-Jet (ATJ) plant in Port Talbot, Wales. The ATJ plant is to consist of two technologies, an Ethanol to Ethylene (ETE) and a Ethylene to Jet Fuel (ETJ) technology. A project feasibility study was completed in 2018.

This Framework CEMP provides the initial plan based on the FEED project definition. A final CEMP, taking account of the detailed engineering design and outcomes of the Environmental Statement will be developed in due course. T.EN will support the planning and permitting process which is seen as a key success factor for the project. T.EN shall provide inputs to this process to support the third-party subcontractors which have been employed by LanzaTech for the project.

2. SCOPE OF DOCUMENT

The scope of this document is to describe the Environmental Management Plan requirements for Construction activities.

The procedures contained and referenced within this Framework CEMP do not prejudice any statutory requirements and guidelines that might be in force anytime within the Project life. Relevant impacts from new legislation or change of standards will be communicated to staff through project bulletins and training as required. These will also be included within a revision of CEMP where they impact the works.

This Framework CEMP will be reviewed on a minimum annual basis or in response to any significant changes, e.g. changes to site activities, legal and client requirements or immediately following a significant environmental incident.

3. DEFINITIONS AND ABBREVIATIONS

3.1 Definitions

COMPANY: LanzaTech

CONTRACTOR: Technip Energies

Construction Subcontractor: TBC



PROJECT DRAGON

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PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	5 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

3.2 Abbreviations

Abbreviation	Definition
AiP	Approval in Principle
BMS	Business Management System
BOD	Basis Of Design
BS	British Standards
CEMP	Construction Environmental Management Plan
CWA	Construction Work Area
EDMS	Electronic Document Management System
EMP	Environmental Management Plan
EMS	Environmental Management System
ENVID	Environmental Aspect/Impact Identification
ES	Environmental Statement
FEED	Front End Engineering Design
HEMP	Handover Environmental Management Plan
HGV	Heavy Goods Vehicle
KPI	Key Performance Indicator
MMS	Material Management System
NRW	Natural Resources Wales
RAMS	Risk Assessment and Method Statement
REAC	Register of Environmental Actions and Commitments
SOW	Scope Of Work
SPA	Supplementary Project Agreement

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FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	6 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

TBC	To Be Confirmed
WFD	Water Framework Directive

4. REFERENCE DOCUMENTS

Document Number		Document Title
COMPANY	CONTRACTOR	
	202947C-000-PP-00104	Project Execution Plan (for FEED)
	202947C-050-PP-00903	FEED Construction and Commissioning Work Plan, organisation and Staffing
	In 202947C-000-PP-00104	Project Controls Plan
	202947C-050-PLG-00301	Consolidated Feed Project Master Schedule
	202947C-000-RT-00803	Constructability Study Report
	202947C-050-PP-00801	Project Construction Plan
	202947C-050-PP-0814	Framework Construction Environmental Management Plan (this document)
	202947C-050-PP-00811	HSE Site Security Plan
	202947C-000-PP-00501	Project Quality Plan
	202947C-050-PP-00802	Temporary Site Facilities Plan

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	7 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

4.1 CONTRACTOR Specific Reference Documents (Hold):

Document Number	Owner	Document Title
	Be issued during Execution preparation	Environmental Policy
	Be issued during Execution preparation	Sustainability Policy
	Be issued during Execution preparation	Project Management Plan
	Be issued during Execution preparation	Environmental Risks and Opportunities Assessment
	Be issued during Execution preparation	Environmental Incidents
	Be issued during Execution preparation	Major Pollution Incident Plan
	Be issued during Execution preparation	Emergency Spillage Response Plan
	Be issued during Execution preparation	Seven steps for Environmental incident planning
	Be issued during Execution preparation	Example operational Environmental Incident Action
	Be issued during Execution preparation	Environmental Incident Severity Classification Table
	Be issued during Execution preparation	Environment Incident Regulator Reporting Thresholds
	Be issued during Execution preparation	Environmental Incident Reporting Guidance for operators
	Be issued during Execution preparation	Incident Reporting and Investigation
	Be issued during Execution preparation	Risk Assessment & Method Statement
	Be issued during Execution preparation	Site Induction Records
	Be issued during Execution preparation	Environmental Training Records

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	8 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

	Be issued during Execution preparation	Plant Maintenance and Defect Reports
	Be issued during Execution preparation	Waste Carrier Licences, Waste Transfer Notes, Consignment Notes, Environmental Permits,
	Be issued during Execution preparation	Environmental Complaints regarding site activities
	Be issued during Execution preparation	Environmental Inspections and Audits
	Be issued during Execution preparation	Environmental Briefings / Toolbox Talks
	Be issued during Execution preparation	Emergency Response Plan
	Be issued during Execution preparation	Project Organisation and Emergency Arrangements Chart
	Be issued during Execution preparation	Personnel Emergency Evacuation Plan
	Be issued during Execution preparation	Monitoring / Sampling Results required for Consent / Permit /Licence compliance

5. FRAMEWORK ENVIRONMENTAL MANAGEMENT PLANS

A framework Construction Environmental Management Plan (CEMP) has been produced at the FEED phase. The "Framework CEMP" is a document containing a series of outline environmental management plans and related documents for the Proposed Development, which is produced by the Project/COMPANY during the design stage of the Proposed Development.

The framework CEMP demonstrates how the commitments in the ES could be implemented. It also sets out the monitoring and auditing activities designed to demonstrate that such mitigation measures are carried out and that they are effective and how mitigation measures to reduce environmental impacts during the construction phase will be delivered and how compliance with environmental legislation will be reached.

The framework CEMP sets out a series of proposed measures that would be applied by the contractor to provide effective planning, management and control during



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	9 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

construction to control potential impacts upon people, businesses and the environment.

The framework CEMP sets out the approach that will be used by CONTRACTOR to update the document to the Final CEMP once the design and construction plans have been finalised at the Detailed Design stage. Procedures and mitigation measures summarised in this iteration of the CEMP (the final CEMP) will be mandatory.

This approach, where CONTRACTOR is responsible for preparing the CEMP, aims to ensure that all potential environmental impacts identified in the ES and at the Detailed Design stage are fully addressed and suitable mitigation measures implemented. Design development is assessed against the requirements assessed in these documents.

The final CEMP will be managed alongside the CONTRACTOR'S generic and site-specific environmental management plan and systems, meeting ISO14001 requirements. The final CEMP will be a live document and must be maintained and updated throughout the life of the project by CONTRACTOR. Environmental mitigation measures identified must be followed by all parties.

Prior to the commencement of construction, the final CEMP will take account of detailed design and construction planning and the outcome of the planning process. It will be maintained and revised during the construction period to take account of any changes in design or external factors such as regulations and standards, any unforeseen circumstances as they arise, such as new protected species or new archaeological finds, and any failings in environmental performance identified from routine inspections and audits.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	10 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

6. FINAL CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

The final Construction Environmental Management Plan will be written at the detailed design stage and covers the main construction works.

The overall objectives of the final CEMP are to:

- to provide a mechanism for ensuring that measures to mitigate potentially adverse environmental impacts identified in the Environment Statement’s (ES) are implemented,
- to ensure that good construction practices are adopted throughout the construction of the works,
- to provide a framework for mitigating impacts that may be unforeseen or that are not identified until construction is underway,
- to provide assurance to third parties that their requirements with respect to environmental performance will be met,
- to provide a mechanism for ensuring compliance with environmental legislation,
- to provide a framework for compliance auditing and inspection, to enable CPY and CTR to be assured that their aims with respect to environmental performance are being met,
- to provide trained and experienced environmental personnel to satisfy the requirements of the CPY Environmental Statement.

This Final CEMP takes due consideration of the assessments undertaken and reported within the published ES presented as part of planning application The final CEMP identifies mitigation and environmental issues associated with the following phases of construction:

- Prior to construction (e.g. advanced works, site preparation, vegetation clearance);
- During construction (e.g. works);
- Post construction, or pre-occupation, including demobilisation.

This final CEMP will be produced to ensure that all necessary measures identified during planning are incorporated into the project during the phases listed above. This

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	11 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

final CEMP should also be read alongside the following key documents which are contained in the Appendices of this document (once developed these documents will be included in the final CEMP at execution Phase).

7. POLICY AND PLANNING

7.1 Environmental Policy Statement

The project has an Environmental Policy that meets the requirements of ISO 14001:2015. The policy statement will be displayed on the site notice boards, publicised to all site staff and operatives, and made available to interested parties upon request.

A copy of the CONTRACTOR Environmental policy is included in Appendix A.

7.2 Sustainability Policy Statement

The project has a ESG Road Map that supports its Sustainability objectives. The policy statement will be displayed on the site notice boards, publicised to all site staff and operatives, and made available to interested parties upon request.

A copy of the 2022/2023 CONTRACTOR ESG Roadmap is included in Appendix B

A copy of the Project Sustainability Policy is included in Appendix C (Hold).

7.3 CEMP Implementation

CONTRACTOR, along with all subcontractors and suppliers will comply with the requirements of the CEMP.

The CEMP is based on the 'Plan, Do, Check, Act' model and has been developed to incorporate and take account of the environmental requirements of International Standard ISO14001:2015 and the CONTRACTOR'S Management System.

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

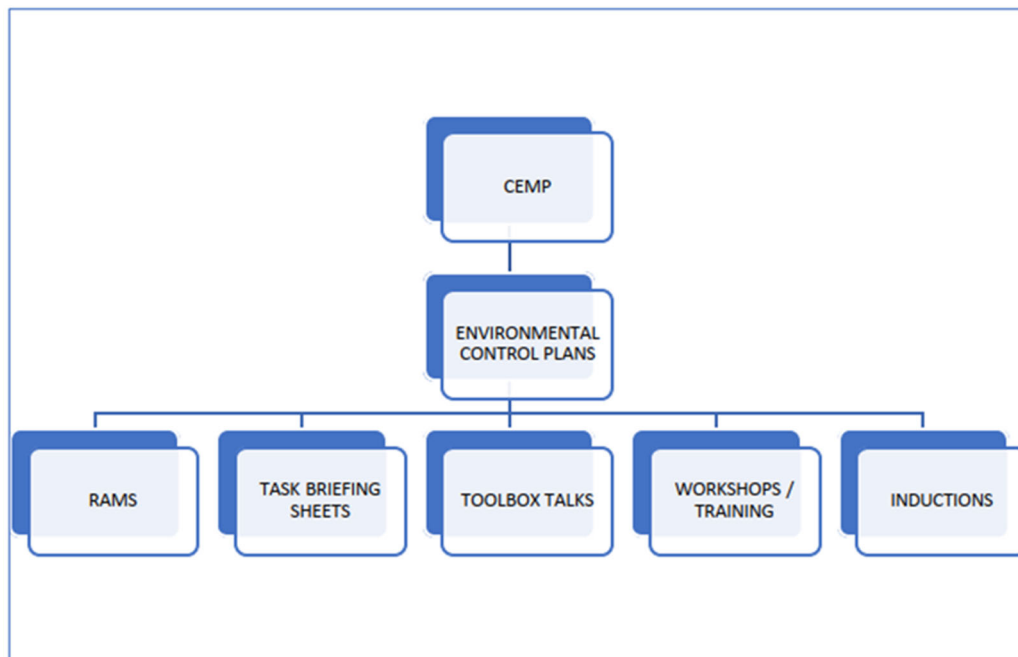
ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	12 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	



The CEMP provides a framework to manage all contract environmental requirements and applicable legislation. The CEMP is supported by Environmental Control Plans that define the arrangement to manage the project’s environmental risks and support on site environmental performance. Task specific requirements are detailed within Risk Assessment and Method Statements (RAMS). Awareness of environmental controls will be communicated to those working for, or on behalf of the project via site induction, workshops/training, pre start briefings and tool box talks. This arrangement is shown below.

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	13 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	



All contractors providing a product or service will be required to provide evidence to show how they will control their environmental risks if their activities are deemed to potentially create an environmental impact. This will be reviewed against this Final CEMP, relevant specification, Scope of Works (SOW) and legislative requirements, etc. by the project environmental team at the supplier approval stage.

Inspections and audits of site activities, management, training and documentation will be conducted in order to monitor compliance with the CEMP. All documentation will be saved in CONTRACTOR’S EDMS (GAIA). All supplier requirements are defined on the SDRL (Supplier document requirements list).



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	14 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

8. ENVIRONMENTAL MANAGEMENT RESPONSABILITIES

Everyone working for, or on behalf of, the project has a responsibility for environmental performance. Site inductions will be delivered to the entire workforce, regardless of role, to raise awareness of measures/procedures/practices implemented through this plan.

COMPANY and delegated consultants acting on their behalf, CONTRACTOR and their subcontractors are all responsible for complying with the project's environmental policies, relevant environmental legislation and regulations. It is a requirement that all persons on site will be made aware of their duty of care to the environment and will be provided with sufficient training, supervision, or instruction through Site Inductions, Toolbox Talks and specific method statements as necessary.

Responsibilities for the site environmental management will be delegated to key personnel by CONTRACTOR who will manage all reporting and monitoring of environmental mitigation during the project. Where required, environmental specialists will be consulted to provide advice on specific issues or site activities, in consultation with CONTRACTOR.

The main environmental roles and responsibilities are shown in the table below.

Further details of responsibilities will be documented in individual job descriptions/appointment letters and for subcontractors, in their contract documentation.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	15 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Role	Main responsibilities
CONTRACTOR Project Director	<p>Leadership and commitment to communicate and support the delivery of the works in line with the project’s environmental and sustainability visions.</p> <p>Providing leadership and commitment with respect to the environmental management system.</p> <p>The environmental performance of the project and for encouraging others to improve the effectiveness of the EMS and performance.</p> <p>Promoting sustainable design and construction objectives.</p> <p>Setting the project’s behavioural culture for sustainability, ensuring that all aspects of the final CEMP and Sustainability Action Plan are embraced by the delivery team, including the supply chain partners.</p> <p>Responsible for assigning appropriate roles and responsibilities within the Project Management Team that they adequately reflect the significant environmental risk and opportunities that have been identified to ensure that legal compliance obligations can be met and delivered.</p> <p>Providing direction to other supporting roles in the project to ensure overall targets are met.</p> <p>Ensuring that critical objectives, aspects, performance metrics and results are continually communicated effectively to all stakeholders.</p> <p>Ensuring continual improvement can be achieved.</p>
CONTRACTOR HSES Manager	<p>Providing leadership and commitment with respect to the environmental management system (EMS).</p> <p>Overall responsibility for management of environmental matters</p> <p>Allocation of sufficient resources within the Health, Safety, Environment & Sustainability (HSES) Project Team.</p> <p>Resolution of findings from audits and inspections</p> <p>Chair monthly site HSES meeting.</p> <p>Supporting Environment & Sustainability Manager (E&SM) in meeting project E&S objectives.</p>



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	16 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

<p>CONTRACTOR Environmental and Sustainability Manager</p>	<p>Oversee the environmental components of the project. Act as main contact for all environmental issues on site. Co-ordination of all environmental specialists to ensure compliance with the environmental requirements of the project</p>
<p>CONTRACTOR Environmental and Sustainability Advisor</p>	<p>Co-ordinating site environmental management compliance. Ensure Scheme remains compliant with the CEMP, including compliance with environmental legislation, best practice, consents, commitments and objectives set. Updating and reviewing the CEMP throughout the works. Ensuring the project team have sufficient environmental training and co-ordinate delivery of additional training/inductions/Toolbox Talks where required. Liaison with regulatory bodies. Reporting environmental near misses, incidents or supply chain partner innovations. Carry out an environmental review of suppliers and sub-contractors. To assess environment management system arrangements and key policies. Assessing and checking survey results and updating databases, Environmental Control Plans (ECPs) etc. with any new information. To co-ordinate with the design and construction teams to ensure that works are planned and delivered in accordance with legal and contractual requirements. To undertake assurance activities such as periodic audits and weekly inspections of work sites. To review documentation (incl. RAMS) for work activities. To facilitate the investigation of complaints, incidents or exceedances. To provide support and direction to Stakeholder Manager to ensure compliance with the commitments register is achieved. To review monitoring data as provided by Specialists. To monitor and report environmental performance of the supply chain. To lead a positive environmental culture on the project to transform behaviours where required. To prepare environmental requirements for supply chain contracts. To undertake and co-ordinate specific environmental training to the construction team and workforce as required. To attend site meetings. To advise on environmental best practice.</p>



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	17 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Role	Main responsibilities
CONTRACTOR Site HSE Advisor	<p>Providing support to the Environmental Manager.</p> <p>Provide site induction on environmental practices, toolbox talks, organise specialist surveys, and oversee monitoring and testing of materials as required.</p> <p>Monitor CONTRACTOR site environmental compliance, supervising works and construction activities on site, auditing/reviewing works and procedures including method statements as required.</p> <p>Ensure hours of working meet accepted noise and vibration limits set in consultation with Environmental Health Officer (EHO).</p> <p>Develop with Principal Contractor Site Health & Safety Officer, an Emergency Spillage Response Plan and associated protocols for incidents.</p> <p>Ensure Environment Agency and other stakeholder requirements are implemented for consents and permits.</p> <p>Recording and reporting the progress of environmental works.</p> <p>Report any product or service environment non-conformances.</p>
CONTRACTOR Environmental Engineer (Ecologist, Landscape Architect, Archaeologist, Noise/Air Quality Specialist, Material/Waste Management Specialist, Contaminated Land Specialist, Occupational Health Specialist, etc.)	<p>Individual Environmental Specialists will be responsible for the inputs into the environmental assessment and final detailed designs.</p> <p>Will provide support to the construction project team in the form of pre-construction surveys, applications for licenses/consents, watching briefs and other specific issues such as protected species and landscape planting supervision.</p> <p>Oversee mitigation throughout the project.</p> <p>Provide specialist advice and instruction to the supply chain.</p>
CONTRACTOR Community Liaison Officer (CLO)	<p>Key liaison with all the above and COMPANY'S Communications Lead, Stakeholder Lead and Customer lead.</p> <p>Single contact point on site for the community and general public.</p> <p>Maintain and develop Community Relations Strategy.</p> <p>Maintain comment and enquiries log and disseminate identified comment for response and implementation of action.</p>

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	18 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Role	Main responsibilities
Delivery Team (including Procurement Team)	<ul style="list-style-type: none"> To attend the project induction prior to commencing work. To provide their own environmental management plan and risk assessments in RAMS as required. To promote a right first time approach. To ensure environmental sustainability reporting data is submitted accurately and on time. To ensure environmental measures are implemented in line with the method statements and risk assessments. To work considerately with a good working ethic to minimise adverse environmental impacts and follow all site rules communicated during the briefings and project training sessions. To adhere to instructions provided by an Ecological Clerk of Works, Archaeologist, etc. To report near misses, positive interventions and all incidents no matter how minor. To comply with any environmental consents required to complete the planned works.

Contact information for personnel with environmental responsibilities is as follows (Hold):

Name	Position	Organisation	Contact Details
	Project Director	COMPANY	Email: Phone Number:
	Project Director	CONTRACTOR	Email: Phone Number:
	Site Manager	CONTRACTOR	Email: Phone Number:
	HSES Manager	CONTRACTOR	Email: Phone Number:
	Construction Manager	CONTRACTOR	Email: Phone Number:
	Community Liaison Officer	CONTRACTOR	Email: Phone Number:

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	19 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

9. DETAILED CONTRACTOR RESPONSIBILITIES PRIOR TO CONSTRUCTION

CONTRACTOR is responsible for approving the appointment of the Environment and Sustainability Manager/Director and any environmental specialists prior to any work starting on site.

CONTRACTOR is responsible for the following prior to construction commencement;

- Developing final CEMP (using this framework CEMP as a basis).
- Defining roles and responsibilities for their own and their key sub-contractors' personnel relating to environmental issues (see Section 8);
- Developing an environmental training plan covering all personnel;
- Developing a programme of internal and sub-contractor inspections/monitoring;
- Developing project-specific emergency procedures for environmental incidents;
- Finalising and implementing a programme for works to allow all preconstruction surveys to be arranged and completed within the required timeframe;
- Agreeing a non-compliance reporting procedure with The COMPANY to manage any environmental incidents or non-compliance events for the project; and
- Developing the required Environmental Control Plans (ECPs), see Section 7 for list. These will be updated as required up to construction commencement to reflect any new, relevant information provided by COMPANY or other statutory consultees (e.g. further consent conditions, landowner agreements) or through design development, construction planning, preconstruction surveys etc.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	20 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

10. DETAILED CONTRACTOR RESPONSIBILITIES DURING CONSTRUCTION

CONTRACTOR is responsible on site for delivering the construction phase commitments in the ES and Register of Environmental Actions and Commitments (REAC), as described within the project design construction models, drawings and specifications, and controlled by this Framework CEMP.

CONTRACTOR will implement the procedures set out in this Framework CEMP with technical advice from competent environmental specialists.

CONTRACTOR is responsible for all their subcontractors on site and for ensuring these sub-contractors comply with the requirements of this Framework CEMP.

CONTRACTOR is responsible for ensuring that there are no breaches in legislation and that good practice is followed throughout the duration of the construction.

CONTRACTOR must ensure that all on-site works are adequately monitored.

Environmental Objectives & Targets will be developed in conjunction with CPY and will be reviewed on a monthly basis at the project progress meetings. A copy of the Project's Objectives and Targets, and associated progress reports, will be held in the Project Environmental Files and included in project monthly reports.

Risk Assessments & Method Statements (RAMS) and Environmental Control Plans (ECPs) and other associated documents (such as Section 61 of Control of Pollution Act 1974, Discharge consent by NRW, etc.) will be used to ensure all environmental commitments are delivered on site. The implementation of the requirements of the RAMS, ECPs and delivery of mitigation measures relating to the project will be the responsibility of CONTRACTOR.

Any improvements or deviations relating to environmental matters required to the RAMS and/or ECPs shall be approved by the Environment and Sustainability Manager (and may be subject to other consents where required). CONTRACTOR will provide regular feedback and information to COMPANY Project Manager and Environmental

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	21 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Manager on the progress and success in delivering all mitigation and commitments on site.

The REAC will be updated to demonstrate progress and will be kept by the project for environmental auditing purposes, with updates periodically sent to COMPANY.

All site personnel have the responsibility and authority to halt works in any activity where environmental commitments are not being successfully delivered or where legal requirements are being breached.

All site personnel will be encouraged to draw attention to any environmental risk or potential environmental risk arising on site (for example, refuelling being carried out too close to a watercourse or working outside the agreed limits of deviation for any aspect of the works). This approach will be promoted in all site inductions and training.

11. CONSTRUCTION PLANNING

The current expectation is that the construction works will be split into phases with the following table providing an indicative construction programme.

Construction working hours will generally be:

- Monday to Friday 07:00 to 19:00 and
- Saturday 07:00 to 13:00,

however, it is likely that some construction activities will be required to be 24 hours at certain times. This is principally construction activities that cannot be stopped, such as concrete pouring. Where on-site works are to be conducted outside the core hours, they will comply with the restrictions stated in this Final CEMP and any other restrictions agreed with the planning authorities.

Activities that could generate a construction noise or light nuisance impact will be assessed for their potential impact prior to being undertaken at night, including but not limited to sheet piling, piling, use of impact wrenches, concrete scabbling, use of reversing sirens, and concrete jack hammering. Construction noise limits will need to be in compliance with the construction noise scheme agreed with relevant planning authority.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	22 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Indicative Construction Planning

The table below to be completed as part of Final CEMP during the detailed engineering phase.

	M-5	M-4	M-3	M-2	M-1	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	
Enabling Works																														
Site Establishment																														
Construction																														
Utilities																														
Commissioning																														

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	23 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

12. CONSTRUCTION LAYDOWN AND WELFARE FACILITIES

Proposed construction laydown areas, including storage, site offices, welfare facilities and car parking, will be located at various places within the site boundary.

13. TRAFFIC MANAGEMENT AND OFF SITE DELIVERY ROUTES

During construction, CONTRACTOR will ensure that the impacts from construction traffic on the local community (including local residents and businesses and users of the surrounding transport network) are minimised, where reasonably practicable. This will be ensured by implementing the measures set out in the Framework Construction Workers' Travel Plan (CWTP) and the Framework Construction Traffic Management Plan (CTMP) respectively; These plans will be developed from the Framework status to be included with this CEMP prior to the start of construction.

The Framework CTMP provides details of the designated routes for Heavy Vehicle movements and this will be set out in accordance with the Transport Assessment and Environmental Statement produced by others.

The use of port facilities are not considered to be part of the project logistic.

Final details of the designated routes for HGV movements and worker car movements will be detailed in the CWTP and CTMP prior site mobilization.

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	24 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

14. SPOIL MANAGEMENT

Spoil will arise from the construction activities of the project. The CONTRACTOR will take all reasonable measures to apply the waste hierarchy which is, in priority order, as follows:



During enabling works and construction, spoil arising will be temporarily stockpiled within the Site boundary before either beneficial re-use on site for use in development platform construction or being taken off-site by HGV for treatment and/or disposal at a local permitted facility (in the local area) or for reuse in other development sites in the area.

Spoil will be stockpiled in areas at low risk of flooding within the Site boundary on the site. The size of the stockpile(s) will be minimised where possible by excavation works being constructed in parallel with development platform construction which will utilise spoil arisings where these are geotechnically or chemically suitable.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	25 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

In addition, there will be progressive off-site removal of geotechnically unsuitable or contaminated materials for re-use, treatment and/or disposal. Stockpile heights will therefore be low and there is sufficient area within the Site boundary to accommodate the volume of spoil expected to be generated.

Suitable measures will be put in place to prevent sediment being washed into watercourses, and the stockpiles will be visually monitored for wash away during and after periods of prolonged rainfall.

The nearest facility for excavated material surplus area is Briton Ferry Recycling Center at Port Talbot.

Spoil will be sampled and any contaminated spoil identified will be managed in accordance with the Site Waste Management Plan (SWMP), Material Management Plan (MMP), Site Preparation Plan and the Site Remediation Plan which will be prepared and appended to this Framework CEMP in the Execute phase.

A Framework Site Waste Management Plan (SWMP) has been developed as part of the Framework CEMP which allows for waste streams to be estimated and monitored and goals set with regards to the waste produced. The MMP will specify that any potentially contaminated soils will be managed in accordance with:

Defra Construction Code of Practice for the Sustainable Use of Soil on Development Sites (Defra, 2009); and

Definition of Waste: Development Industry Code of Practice (CL:AIRE, 2011).

Any suspected contaminated spoil will be placed on an impermeable membrane to prevent the leaching of any contaminants into the subsurface or watercourses. Site specific Screening Verification Criteria for the classification of soils for re-use or disposal will be derived by the Applicants in accordance with the MMP.

All spoil will be processed and managed in accordance with The Waste (England and Wales) Regulations 2011 (as amended).



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	26 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Recycling and Disposing of Waste

In order to control the waste generated on Site during site preparation and construction, CONTRACTOR will separate the main waste streams on Site, prior to them being taken to a waste facility for recycling or disposal. As outlined above spoil will be beneficially used onsite where possible to minimise the amount of spoil that requires treatment or disposing of offsite.

The Site Waste Management Plan (SWMP) appended to this Framework CEMP specifies the waste streams to be estimated and monitored and goals set with regards to the waste produced. Under the DCO requirements, the SWMP must be submitted to and approved by the relevant planning authority before construction works commence.

The SWMP requires the CONTRACTOR segregates waste streams on-site, prior to them being taken to a licensed waste facility for recycling or disposal. All waste to be removed from the Site will be undertaken by fully licensed waste carriers and taken to licensed waste facilities.



FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	27 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

15. ENVIRONMENTAL CONTROL PLANS

A project dedicated control plan will be developed for construction phase. This will take account of construction specific measures in the Environmental Management Plan (EMP) in accordance with the ES by others:

- Built Heritage and Archaeology
- Ground Conditions and Contamination
- Flood Risk and Hydrology
- Transport
- Lighting
- Terrestrial ecology
- Marine ecology
- Landscape and visual
- Socio-economics and human health
- Climate change
- Air quality
- Noise and vibration

Plan will detail the likely sources of emissions that may have an impact on these above Environmental Aspects and the steps that the construction team will put in place to manage and mitigate these.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	28 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

APPENDIX A: CONTRACTOR HSES POLICY



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	29 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	



Global HSE and Security Policy

POL-COR-011-HSE-Rev.2 - Feb 2021

This policy defines Technip Energies absolute commitment to the Health, Safety, Environment and Security (HSES) of all those who can either directly or indirectly be affected by our business activities.

HSES is a key element of our foundational beliefs (combined under the Safety belief) and managed as an integral part of our business, therefore we must never compromise on health, safety, environment or security to achieve our objectives.

We are committed to fostering an incident-free environment worldwide, through:

- Our fundamental conviction that all incidents are preventable
- Setting health, safety, environmental and security objectives specific to Technip Energies for the scope of our activities and extending them in a life cycle perspective to achieve continual improvement of the HSES management system and to continually enhance our HSES performance
- Fostering a leadership culture driven by engagement and accountability to ensure physical and mental health, safety, environment and security and a culture where we look after each other
- Committing and allocating adequate resources and expertise to continually and proactively eliminate hazards, reduce risks and prevent injury, ill health and environmental impact related to our activities, through engineering, process improvements, technologies and on-site execution
- Operating in a manner that protects the environment by providing sustainable solutions to minimize our carbon and environmental footprint while improving our energy and resource efficiency
- Securing our people, assets, technology, sensitive information and reputation
- Fulfilling, and when we deem necessary, exceeding legal, compliance and other obligations to meet our foundational beliefs
- Implementing and encouraging consultation and participation of workers.

Our success and continual improvement will be measured through the reduction of incidents, risks, and environmental footprint with clear and meaningful performance indicators.

HSES is everyone's responsibility. Every person is encouraged and expected to stop any work if they consider conditions are unsafe, in any way.

To comply with this policy is mandatory and the responsibility of all employees and all of those engaged and working to execute our activities. Visible commitment of management is the enabler of this compliance.

Arnaud Pieton
Chief Executive Officer
February 2021



PROJECT DRAGON
LANZATECH
PORT TALBOT, WALES



FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

<i>ENGINEER REFERENCE</i>					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	30 of 33
202947C	050	PP		00814		
<i>CLIENT REFERENCE</i>						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

APPENDIX B: ESG ROADMAP 2022-2023



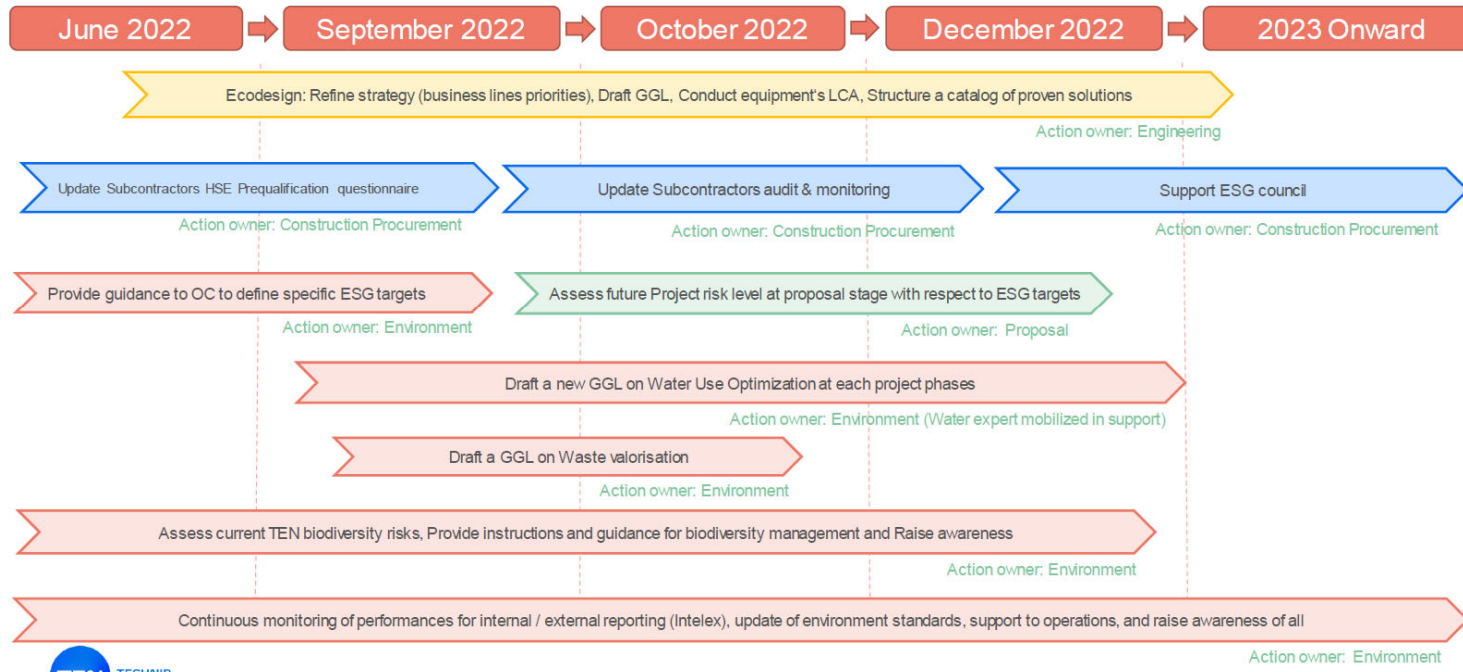
**PROJECT DRAGON
LANZATECH
PORT TALBOT, WALES**



FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	31 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Environmental Action Plan 2022 - 2023



Action owner: Environment



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	32 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

APPENDIX C: PROJECT SUSTAINABILITY POLICY [HOLD]



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	33 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

End of document



Modular Biodiversity Walls



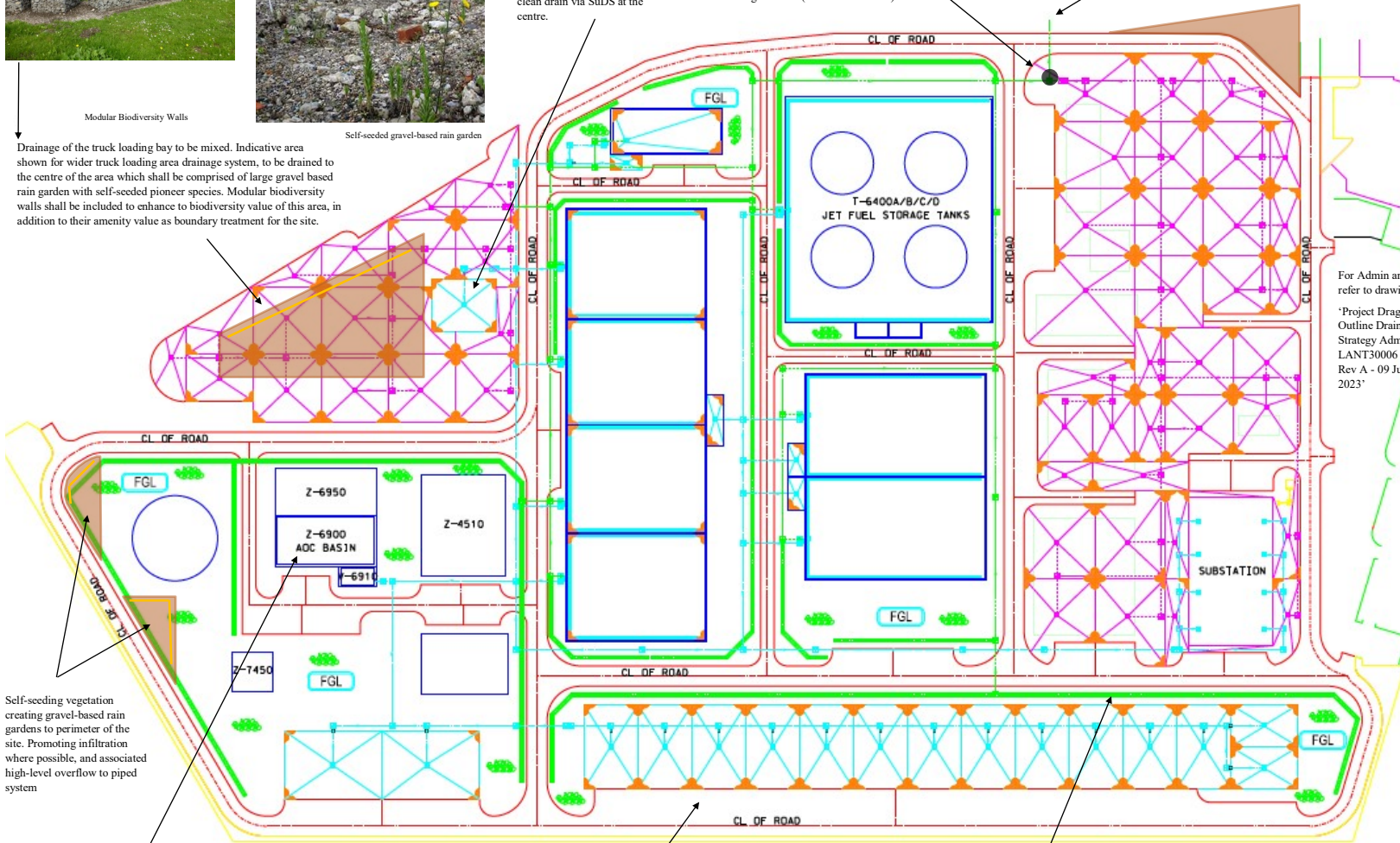
Self-seeded gravel-based rain garden

Drainage of the truck loading bay to be mixed. Indicative area shown for wider truck loading area drainage system, to be drained to the centre of the area which shall be comprised of large gravel based rain garden with self-seeded pioneer species. Modular biodiversity walls shall be included to enhance to biodiversity value of this area, in addition to their amenity value as boundary treatment for the site.

Area of truck loading to drain to Contaminated Drain due to high contamination risk. Wider area to drain ultimately to clean drain via SuDS at the centre.

Clean drain systems converge prior to the outfall of the site to the dock.
Separator provided to mitigate risk of contaminants entering the dock (indicative location)

Clean water drain outfall to Port Talbot dock.
Water discharges at attenuated rate into tidal waterbody.
Invert level to be confirmed. System to drain under gravity.



Self-seeding vegetation creating gravel-based rain gardens to perimeter of the site. Promoting infiltration where possible, and associated high-level overflow to piped system

AOC basin and effluent treatment plant.
Contaminated drain discharge location for treatment of contaminated surface water and process water.
Treated water directed to either the utility tower or cooling tower to be reused in the process streams across the site. (Indicative connection not shown)

Space constraints to this area of the site result in highway flows draining to piped system

Clean water drain to comprise trapezoidal ditches (gravel based swales) to receive flows from the highway. Infiltration to ground promoted if possible, with high-level overflow into piped system if required.



Indicative high-level overflow



Gravel-based swale / trapezoidal ditch

NOTES

1. Preliminary Underground Network provided by Technip Energies, drawing ref 'Preliminary Underground Network—26-05' based from Site Layout provided by Inspire Architects 02 June 2023, drawing reference 2143.01-IA-ZZ-ST-DR-A-0215_Proposed PDZ Layout-P9
2. Do not scale from this drawing. All information and layouts detailed on this drawing are subject to site dimension checks
3. All SuDS features indicative only, with associated precedent images. Further information to be provided at detailed design stage
4. No proposed ground levels have been provided to inform the strategy, thus indicative outline network provided by Technip Energies
5. No detailed hydraulic modelling, geotechnical assessment or engineering assessment has been undertaken at this stage

KEY

- Clean water drain—low hazard areas
- Clean water drain—medium hazard areas
- Contaminated drain
- Road layout
- Vegetated SuDS locations
- Modular Biodiversity Walls (indicative)
- Clean Drain Separator

For Admin area refer to drawing:
'Project Dragon - Outline Drainage Strategy Admin - LANT30006 - Rev A - 09 June 2023'

Copyright: Preliminary Underground Network is the property and copyright of Technip Energies and are not to be used for any purpose without prior written agreement.



Project Dragon

Preliminary Underground Network—Process Area

Drawing Number:
Project Dragon - Preliminary Underground Network - Process Area - LANT30006 - Rev B - 10 August 2023

Drawn by: Faye Tomalin 10/08/2023

Reviewed by: Rene Dobson 10/08/2023



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	1 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

Pages modified under this revision:

Rev	Date DD/MM/YY	STATUS	WRITTEN BY (name & sign)	CHECKED BY (name & sign)	APPROVED BY (name & sign)
2	03/08/2023	IFFC Issued For Feed (Consolidated)	A. Elsalakawy	B. Lynskey	M. Allan
1	06/06/2023	IFFC Issued For Feed (Consolidated)	C. Laquel	D. Paris	M. Allan
0	12/04/2023	IFRC Issued For Review (Consolidated)	S. DJEROUROU	N. DJERAMBETE	C. LAQUEL
DOCUMENT REVISIONS					

Sections changed in last revision are identified by a vertical line in the margin

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	2 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

CONTENTS

- 1. INTRODUCTION.....4
- 2. SCOPE OF DOCUMENT4
- 3. DEFINITIONS AND ABBREVIATIONS.....4
 - 3.1 Definitions.....4
 - 3.2 Abbreviations.....5
- 4. REFERENCE DOCUMENTS6
 - 4.1 CONTRACTOR Specific Reference Documents (Hold):.....7
- 5. FRAMEWORK ENVIRONMENTAL MANAGEMENT PLANS8
- 6. FINAL CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN10
- 7. POLICY AND PLANNING11
 - 7.1 Environmental Policy Statement11
 - 7.2 Sustainability Policy Statement11
 - 7.3 CEMP Implementation11
- 8. ENVIRONMENTAL MANAGEMENT RESPONSABILITIES.....14
- 9. DETAILED CONTRACTOR RESPONSIBILITIES PRIOR TO CONSTRUCTION19
- 10. DETAILED CONTRACTOR RESPONSIBILITIES DURING CONSTRUCTION20
- 11. CONSTRUCTION PLANNING21
- 12. CONSTRUCTION LAYDOWN AND WELFARE FACILITIES.....23
- 13. TRAFFIC MANAGEMENT AND OFF SITE DELIVERY ROUTES23
- 14. SPOIL MANAGEMENT24
- 15. ENVIRONMENTAL CONTROL PLANS27
- APPENDIX A: CONTRACTOR HSES POLICY28
- APPENDIX B: ESG ROADMAP 2022-202330
- APPENDIX C: PROJECT SUSTAINABILITY POLICY [HOLD].....32

Information contained in this document is the work product of one or more legal entities of the Technip Energies and embodies confidential and proprietary information of the applicable entity and/or its client. Use of this information is restricted in accordance with conditions specified by the contract. Technip Energies and its affiliates disclaim any and all liabilities for any changes or modifications to this document which are made by any person other than the entity that issued the document under the applicable client contract.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	3 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Table of Holds

Reference	Page No	Description

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	4 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

1. INTRODUCTION

LanzaTech UK Ltd is exploring the installation of a 30M gal/year (ca. 115million litres/year) Alcohol-to-Jet (ATJ) plant in Port Talbot, Wales. The ATJ plant is to consist of two technologies, an Ethanol to Ethylene (ETE) and a Ethylene to Jet Fuel (ETJ) technology. A project feasibility study was completed in 2018.

This Framework CEMP provides the initial plan based on the FEED project definition. A final CEMP, taking account of the detailed engineering design and outcomes of the Environmental Statement will be developed in due course. T.EN will support the planning and permitting process which is seen as a key success factor for the project. T.EN shall provide inputs to this process to support the third-party subcontractors which have been employed by LanzaTech for the project.

2. SCOPE OF DOCUMENT

The scope of this document is to describe the Environmental Management Plan requirements for Construction activities.

The procedures contained and referenced within this Framework CEMP do not prejudice any statutory requirements and guidelines that might be in force anytime within the Project life. Relevant impacts from new legislation or change of standards will be communicated to staff through project bulletins and training as required. These will also be included within a revision of CEMP where they impact the works.

This Framework CEMP will be reviewed on a minimum annual basis or in response to any significant changes, e.g. changes to site activities, legal and client requirements or immediately following a significant environmental incident.

3. DEFINITIONS AND ABBREVIATIONS

3.1 Definitions

COMPANY: LanzaTech

CONTRACTOR: Technip Energies

Construction Subcontractor: TBC



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	5 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

3.2 Abbreviations

Abbreviation	Definition
AiP	Approval in Principle
BMS	Business Management System
BOD	Basis Of Design
BS	British Standards
CEMP	Construction Environmental Management Plan
CWA	Construction Work Area
EDMS	Electronic Document Management System
EMP	Environmental Management Plan
EMS	Environmental Management System
ENVID	Environmental Aspect/Impact Identification
ES	Environmental Statement
FEED	Front End Engineering Design
HEMP	Handover Environmental Management Plan
HGV	Heavy Goods Vehicle
KPI	Key Performance Indicator
MMS	Material Management System
NRW	Natural Resources Wales
RAMS	Risk Assessment and Method Statement
REAC	Register of Environmental Actions and Commitments
SOW	Scope Of Work
SPA	Supplementary Project Agreement

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	6 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

TBC	To Be Confirmed
WFD	Water Framework Directive

4. REFERENCE DOCUMENTS

Document Number		Document Title
COMPANY	CONTRACTOR	
	202947C-000-PP-00104	Project Execution Plan (for FEED)
	202947C-050-PP-00903	FEED Construction and Commissioning Work Plan, organisation and Staffing
	In 202947C-000-PP-00104	Project Controls Plan
	202947C-050-PLG-00301	Consolidated Feed Project Master Schedule
	202947C-000-RT-00803	Constructability Study Report
	202947C-050-PP-00801	Project Construction Plan
	202947C-050-PP-0814	Framework Construction Environmental Management Plan (this document)
	202947C-050-PP-00811	HSE Site Security Plan
	202947C-000-PP-00501	Project Quality Plan
	202947C-050-PP-00802	Temporary Site Facilities Plan

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	7 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

4.1 CONTRACTOR Specific Reference Documents (Hold):

Document Number	Owner	Document Title
	Be issued during Execution preparation	Environmental Policy
	Be issued during Execution preparation	Sustainability Policy
	Be issued during Execution preparation	Project Management Plan
	Be issued during Execution preparation	Environmental Risks and Opportunities Assessment
	Be issued during Execution preparation	Environmental Incidents
	Be issued during Execution preparation	Major Pollution Incident Plan
	Be issued during Execution preparation	Emergency Spillage Response Plan
	Be issued during Execution preparation	Seven steps for Environmental incident planning
	Be issued during Execution preparation	Example operational Environmental Incident Action
	Be issued during Execution preparation	Environmental Incident Severity Classification Table
	Be issued during Execution preparation	Environment Incident Regulator Reporting Thresholds
	Be issued during Execution preparation	Environmental Incident Reporting Guidance for operators
	Be issued during Execution preparation	Incident Reporting and Investigation
	Be issued during Execution preparation	Risk Assessment & Method Statement
	Be issued during Execution preparation	Site Induction Records
	Be issued during Execution preparation	Environmental Training Records

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	8 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

	Be issued during Execution preparation	Plant Maintenance and Defect Reports
	Be issued during Execution preparation	Waste Carrier Licences, Waste Transfer Notes, Consignment Notes, Environmental Permits,
	Be issued during Execution preparation	Environmental Complaints regarding site activities
	Be issued during Execution preparation	Environmental Inspections and Audits
	Be issued during Execution preparation	Environmental Briefings / Toolbox Talks
	Be issued during Execution preparation	Emergency Response Plan
	Be issued during Execution preparation	Project Organisation and Emergency Arrangements Chart
	Be issued during Execution preparation	Personnel Emergency Evacuation Plan
	Be issued during Execution preparation	Monitoring / Sampling Results required for Consent / Permit /Licence compliance

5. FRAMEWORK ENVIRONMENTAL MANAGEMENT PLANS

A framework Construction Environmental Management Plan (CEMP) has been produced at the FEED phase. The "Framework CEMP" is a document containing a series of outline environmental management plans and related documents for the Proposed Development, which is produced by the Project/COMPANY during the design stage of the Proposed Development.

The framework CEMP demonstrates how the commitments in the ES could be implemented. It also sets out the monitoring and auditing activities designed to demonstrate that such mitigation measures are carried out and that they are effective and how mitigation measures to reduce environmental impacts during the construction phase will be delivered and how compliance with environmental legislation will be reached.

The framework CEMP sets out a series of proposed measures that would be applied by the contractor to provide effective planning, management and control during



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	9 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

construction to control potential impacts upon people, businesses and the environment.

The framework CEMP sets out the approach that will be used by CONTRACTOR to update the document to the Final CEMP once the design and construction plans have been finalised at the Detailed Design stage. Procedures and mitigation measures summarised in this iteration of the CEMP (the final CEMP) will be mandatory.

This approach, where CONTRACTOR is responsible for preparing the CEMP, aims to ensure that all potential environmental impacts identified in the ES and at the Detailed Design stage are fully addressed and suitable mitigation measures implemented. Design development is assessed against the requirements assessed in these documents.

The final CEMP will be managed alongside the CONTRACTOR'S generic and site-specific environmental management plan and systems, meeting ISO14001 requirements. The final CEMP will be a live document and must be maintained and updated throughout the life of the project by CONTRACTOR. Environmental mitigation measures identified must be followed by all parties.

Prior to the commencement of construction, the final CEMP will take account of detailed design and construction planning and the outcome of the planning process. It will be maintained and revised during the construction period to take account of any changes in design or external factors such as regulations and standards, any unforeseen circumstances as they arise, such as new protected species or new archaeological finds, and any failings in environmental performance identified from routine inspections and audits.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	10 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

6. FINAL CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

The final Construction Environmental Management Plan will be written at the detailed design stage and covers the main construction works.

The overall objectives of the final CEMP are to:

- to provide a mechanism for ensuring that measures to mitigate potentially adverse environmental impacts identified in the Environment Statement’s (ES) are implemented,
- to ensure that good construction practices are adopted throughout the construction of the works,
- to provide a framework for mitigating impacts that may be unforeseen or that are not identified until construction is underway,
- to provide assurance to third parties that their requirements with respect to environmental performance will be met,
- to provide a mechanism for ensuring compliance with environmental legislation,
- to provide a framework for compliance auditing and inspection, to enable CPY and CTR to be assured that their aims with respect to environmental performance are being met,
- to provide trained and experienced environmental personnel to satisfy the requirements of the CPY Environmental Statement.

This Final CEMP takes due consideration of the assessments undertaken and reported within the published ES presented as part of planning application The final CEMP identifies mitigation and environmental issues associated with the following phases of construction:

- Prior to construction (e.g. advanced works, site preparation, vegetation clearance);
- During construction (e.g. works);
- Post construction, or pre-occupation, including demobilisation.

This final CEMP will be produced to ensure that all necessary measures identified during planning are incorporated into the project during the phases listed above. This

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	11 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

final CEMP should also be read alongside the following key documents which are contained in the Appendices of this document (once developed these documents will be included in the final CEMP at execution Phase).

7. POLICY AND PLANNING

7.1 Environmental Policy Statement

The project has an Environmental Policy that meets the requirements of ISO 14001:2015. The policy statement will be displayed on the site notice boards, publicised to all site staff and operatives, and made available to interested parties upon request.

A copy of the CONTRACTOR Environmental policy is included in Appendix A.

7.2 Sustainability Policy Statement

The project has a ESG Road Map that supports its Sustainability objectives. The policy statement will be displayed on the site notice boards, publicised to all site staff and operatives, and made available to interested parties upon request.

A copy of the 2022/2023 CONTRACTOR ESG Roadmap is included in Appendix B

A copy of the Project Sustainability Policy is included in Appendix C (Hold).

7.3 CEMP Implementation

CONTRACTOR, along with all subcontractors and suppliers will comply with the requirements of the CEMP.

The CEMP is based on the 'Plan, Do, Check, Act' model and has been developed to incorporate and take account of the environmental requirements of International Standard ISO14001:2015 and the CONTRACTOR'S Management System.

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

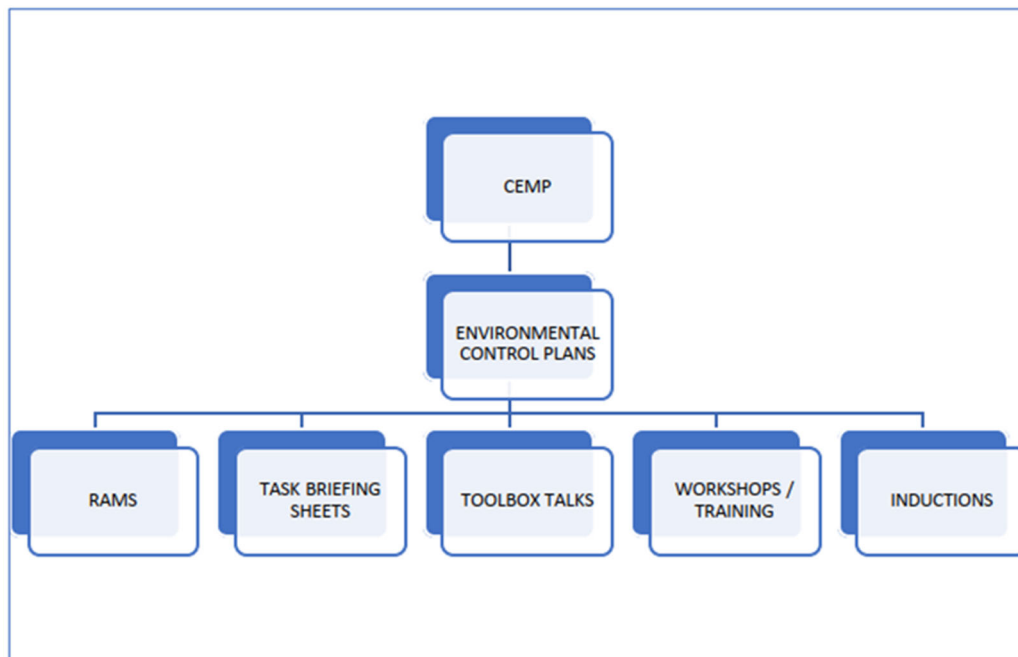
ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	12 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	



The CEMP provides a framework to manage all contract environmental requirements and applicable legislation. The CEMP is supported by Environmental Control Plans that define the arrangement to manage the project’s environmental risks and support on site environmental performance. Task specific requirements are detailed within Risk Assessment and Method Statements (RAMS). Awareness of environmental controls will be communicated to those working for, or on behalf of the project via site induction, workshops/training, pre start briefings and tool box talks. This arrangement is shown below.

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	13 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	



All contractors providing a product or service will be required to provide evidence to show how they will control their environmental risks if their activities are deemed to potentially create an environmental impact. This will be reviewed against this Final CEMP, relevant specification, Scope of Works (SOW) and legislative requirements, etc. by the project environmental team at the supplier approval stage.

Inspections and audits of site activities, management, training and documentation will be conducted in order to monitor compliance with the CEMP. All documentation will be saved in CONTRACTOR’S EDMS (GAIA). All supplier requirements are defined on the SDRL (Supplier document requirements list).



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	14 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

8. ENVIRONMENTAL MANAGEMENT RESPONSABILITIES

Everyone working for, or on behalf of, the project has a responsibility for environmental performance. Site inductions will be delivered to the entire workforce, regardless of role, to raise awareness of measures/procedures/practices implemented through this plan.

COMPANY and delegated consultants acting on their behalf, CONTRACTOR and their subcontractors are all responsible for complying with the project’s environmental policies, relevant environmental legislation and regulations. It is a requirement that all persons on site will be made aware of their duty of care to the environment and will be provided with sufficient training, supervision, or instruction through Site Inductions, Toolbox Talks and specific method statements as necessary.

Responsibilities for the site environmental management will be delegated to key personnel by CONTRACTOR who will manage all reporting and monitoring of environmental mitigation during the project. Where required, environmental specialists will be consulted to provide advice on specific issues or site activities, in consultation with CONTRACTOR.

The main environmental roles and responsibilities are shown in the table below.

Further details of responsibilities will be documented in individual job descriptions/appointment letters and for subcontractors, in their contract documentation.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	15 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Role	Main responsibilities
CONTRACTOR Project Director	<p>Leadership and commitment to communicate and support the delivery of the works in line with the project’s environmental and sustainability visions.</p> <p>Providing leadership and commitment with respect to the environmental management system.</p> <p>The environmental performance of the project and for encouraging others to improve the effectiveness of the EMS and performance.</p> <p>Promoting sustainable design and construction objectives.</p> <p>Setting the project’s behavioural culture for sustainability, ensuring that all aspects of the final CEMP and Sustainability Action Plan are embraced by the delivery team, including the supply chain partners.</p> <p>Responsible for assigning appropriate roles and responsibilities within the Project Management Team that they adequately reflect the significant environmental risk and opportunities that have been identified to ensure that legal compliance obligations can be met and delivered.</p> <p>Providing direction to other supporting roles in the project to ensure overall targets are met.</p> <p>Ensuring that critical objectives, aspects, performance metrics and results are continually communicated effectively to all stakeholders.</p> <p>Ensuring continual improvement can be achieved.</p>
CONTRACTOR HSES Manager	<p>Providing leadership and commitment with respect to the environmental management system (EMS).</p> <p>Overall responsibility for management of environmental matters</p> <p>Allocation of sufficient resources within the Health, Safety, Environment & Sustainability (HSES) Project Team.</p> <p>Resolution of findings from audits and inspections</p> <p>Chair monthly site HSES meeting.</p> <p>Supporting Environment & Sustainability Manager (E&SM) in meeting project E&S objectives.</p>



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	16 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

<p>CONTRACTOR Environmental and Sustainability Manager</p>	<p>Oversee the environmental components of the project. Act as main contact for all environmental issues on site. Co-ordination of all environmental specialists to ensure compliance with the environmental requirements of the project</p>
<p>CONTRACTOR Environmental and Sustainability Advisor</p>	<p>Co-ordinating site environmental management compliance. Ensure Scheme remains compliant with the CEMP, including compliance with environmental legislation, best practice, consents, commitments and objectives set. Updating and reviewing the CEMP throughout the works. Ensuring the project team have sufficient environmental training and co-ordinate delivery of additional training/inductions/Toolbox Talks where required. Liaison with regulatory bodies. Reporting environmental near misses, incidents or supply chain partner innovations. Carry out an environmental review of suppliers and sub-contractors. To assess environment management system arrangements and key policies. Assessing and checking survey results and updating databases, Environmental Control Plans (ECPs) etc. with any new information. To co-ordinate with the design and construction teams to ensure that works are planned and delivered in accordance with legal and contractual requirements. To undertake assurance activities such as periodic audits and weekly inspections of work sites. To review documentation (incl. RAMS) for work activities. To facilitate the investigation of complaints, incidents or exceedances. To provide support and direction to Stakeholder Manager to ensure compliance with the commitments register is achieved. To review monitoring data as provided by Specialists. To monitor and report environmental performance of the supply chain. To lead a positive environmental culture on the project to transform behaviours where required. To prepare environmental requirements for supply chain contracts. To undertake and co-ordinate specific environmental training to the construction team and workforce as required. To attend site meetings. To advise on environmental best practice.</p>

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	17 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Role	Main responsibilities
CONTRACTOR Site HSE Advisor	<p>Providing support to the Environmental Manager.</p> <p>Provide site induction on environmental practices, toolbox talks, organise specialist surveys, and oversee monitoring and testing of materials as required.</p> <p>Monitor CONTRACTOR site environmental compliance, supervising works and construction activities on site, auditing/reviewing works and procedures including method statements as required.</p> <p>Ensure hours of working meet accepted noise and vibration limits set in consultation with Environmental Health Officer (EHO).</p> <p>Develop with Principal Contractor Site Health & Safety Officer, an Emergency Spillage Response Plan and associated protocols for incidents.</p> <p>Ensure Environment Agency and other stakeholder requirements are implemented for consents and permits.</p> <p>Recording and reporting the progress of environmental works.</p> <p>Report any product or service environment non-conformances.</p>
CONTRACTOR Environmental Engineer (Ecologist, Landscape Architect, Archaeologist, Noise/Air Quality Specialist, Material/Waste Management Specialist, Contaminated Land Specialist, Occupational Health Specialist, etc.)	<p>Individual Environmental Specialists will be responsible for the inputs into the environmental assessment and final detailed designs.</p> <p>Will provide support to the construction project team in the form of pre-construction surveys, applications for licenses/consents, watching briefs and other specific issues such as protected species and landscape planting supervision.</p> <p>Oversee mitigation throughout the project.</p> <p>Provide specialist advice and instruction to the supply chain.</p>
CONTRACTOR Community Liaison Officer (CLO)	<p>Key liaison with all the above and COMPANY'S Communications Lead, Stakeholder Lead and Customer lead.</p> <p>Single contact point on site for the community and general public.</p> <p>Maintain and develop Community Relations Strategy.</p> <p>Maintain comment and enquiries log and disseminate identified comment for response and implementation of action.</p>

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	18 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Role	Main responsibilities
Delivery Team (including Procurement Team)	<ul style="list-style-type: none"> To attend the project induction prior to commencing work. To provide their own environmental management plan and risk assessments in RAMS as required. To promote a right first time approach. To ensure environmental sustainability reporting data is submitted accurately and on time. To ensure environmental measures are implemented in line with the method statements and risk assessments. To work considerately with a good working ethic to minimise adverse environmental impacts and follow all site rules communicated during the briefings and project training sessions. To adhere to instructions provided by an Ecological Clerk of Works, Archaeologist, etc. To report near misses, positive interventions and all incidents no matter how minor. To comply with any environmental consents required to complete the planned works.

Contact information for personnel with environmental responsibilities is as follows (Hold):

Name	Position	Organisation	Contact Details
	Project Director	COMPANY	Email: Phone Number:
	Project Director	CONTRACTOR	Email: Phone Number:
	Site Manager	CONTRACTOR	Email: Phone Number:
	HSES Manager	CONTRACTOR	Email: Phone Number:
	Construction Manager	CONTRACTOR	Email: Phone Number:
	Community Liaison Officer	CONTRACTOR	Email: Phone Number:

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	19 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

9. DETAILED CONTRACTOR RESPONSIBILITIES PRIOR TO CONSTRUCTION

CONTRACTOR is responsible for approving the appointment of the Environment and Sustainability Manager/Director and any environmental specialists prior to any work starting on site.

CONTRACTOR is responsible for the following prior to construction commencement;

- Developing final CEMP (using this framework CEMP as a basis).
- Defining roles and responsibilities for their own and their key sub-contractors' personnel relating to environmental issues (see Section 8);
- Developing an environmental training plan covering all personnel;
- Developing a programme of internal and sub-contractor inspections/monitoring;
- Developing project-specific emergency procedures for environmental incidents;
- Finalising and implementing a programme for works to allow all preconstruction surveys to be arranged and completed within the required timeframe;
- Agreeing a non-compliance reporting procedure with The COMPANY to manage any environmental incidents or non-compliance events for the project; and
- Developing the required Environmental Control Plans (ECPs), see Section 7 for list. These will be updated as required up to construction commencement to reflect any new, relevant information provided by COMPANY or other statutory consultees (e.g. further consent conditions, landowner agreements) or through design development, construction planning, preconstruction surveys etc.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	20 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

10. DETAILED CONTRACTOR RESPONSIBILITIES DURING CONSTRUCTION

CONTRACTOR is responsible on site for delivering the construction phase commitments in the ES and Register of Environmental Actions and Commitments (REAC), as described within the project design construction models, drawings and specifications, and controlled by this Framework CEMP.

CONTRACTOR will implement the procedures set out in this Framework CEMP with technical advice from competent environmental specialists.

CONTRACTOR is responsible for all their subcontractors on site and for ensuring these sub-contractors comply with the requirements of this Framework CEMP.

CONTRACTOR is responsible for ensuring that there are no breaches in legislation and that good practice is followed throughout the duration of the construction.

CONTRACTOR must ensure that all on-site works are adequately monitored.

Environmental Objectives & Targets will be developed in conjunction with CPY and will be reviewed on a monthly basis at the project progress meetings. A copy of the Project's Objectives and Targets, and associated progress reports, will be held in the Project Environmental Files and included in project monthly reports.

Risk Assessments & Method Statements (RAMS) and Environmental Control Plans (ECPs) and other associated documents (such as Section 61 of Control of Pollution Act 1974, Discharge consent by NRW, etc.) will be used to ensure all environmental commitments are delivered on site. The implementation of the requirements of the RAMS, ECPs and delivery of mitigation measures relating to the project will be the responsibility of CONTRACTOR.

Any improvements or deviations relating to environmental matters required to the RAMS and/or ECPs shall be approved by the Environment and Sustainability Manager (and may be subject to other consents where required). CONTRACTOR will provide regular feedback and information to COMPANY Project Manager and Environmental

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	21 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Manager on the progress and success in delivering all mitigation and commitments on site.

The REAC will be updated to demonstrate progress and will be kept by the project for environmental auditing purposes, with updates periodically sent to COMPANY.

All site personnel have the responsibility and authority to halt works in any activity where environmental commitments are not being successfully delivered or where legal requirements are being breached.

All site personnel will be encouraged to draw attention to any environmental risk or potential environmental risk arising on site (for example, refuelling being carried out too close to a watercourse or working outside the agreed limits of deviation for any aspect of the works). This approach will be promoted in all site inductions and training.

11. CONSTRUCTION PLANNING

The current expectation is that the construction works will be split into phases with the following table providing an indicative construction programme.

Construction working hours will generally be:

- Monday to Friday 07:00 to 19:00 and
- Saturday 07:00 to 13:00,

however, it is likely that some construction activities will be required to be 24 hours at certain times. This is principally construction activities that cannot be stopped, such as concrete pouring. Where on-site works are to be conducted outside the core hours, they will comply with the restrictions stated in this Final CEMP and any other restrictions agreed with the planning authorities.

Activities that could generate a construction noise or light nuisance impact will be assessed for their potential impact prior to being undertaken at night, including but not limited to sheet piling, piling, use of impact wrenches, concrete scabbling, use of reversing sirens, and concrete jack hammering. Construction noise limits will need to be in compliance with the construction noise scheme agreed with relevant planning authority.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	22 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Indicative Construction Planning

The table below to be completed as part of Final CEMP during the detailed engineering phase.

	M-5	M-4	M-3	M-2	M-1	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24
Enabling Works																													
Site Establishment																													
Construction																													
Utilities																													
Commissioning																													

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	23 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

12. CONSTRUCTION LAYDOWN AND WELFARE FACILITIES

Proposed construction laydown areas, including storage, site offices, welfare facilities and car parking, will be located at various places within the site boundary.

13. TRAFFIC MANAGEMENT AND OFF SITE DELIVERY ROUTES

During construction, CONTRACTOR will ensure that the impacts from construction traffic on the local community (including local residents and businesses and users of the surrounding transport network) are minimised, where reasonably practicable. This will be ensured by implementing the measures set out in the Framework Construction Workers' Travel Plan (CWTP) and the Framework Construction Traffic Management Plan (CTMP) respectively; These plans will be developed from the Framework status to be included with this CEMP prior to the start of construction.

The Framework CTMP provides details of the designated routes for Heavy Vehicle movements and this will be set out in accordance with the Transport Assessment and Environmental Statement produced by others.

The use of port facilities are not considered to be part of the project logistic.

Final details of the designated routes for HGV movements and worker car movements will be detailed in the CWTP and CTMP prior site mobilization.

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	24 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

14. SPOIL MANAGEMENT

Spoil will arise from the construction activities of the project. The CONTRACTOR will take all reasonable measures to apply the waste hierarchy which is, in priority order, as follows:



During enabling works and construction, spoil arising will be temporarily stockpiled within the Site boundary before either beneficial re-use on site for use in development platform construction or being taken off-site by HGV for treatment and/or disposal at a local permitted facility (in the local area) or for reuse in other development sites in the area.

Spoil will be stockpiled in areas at low risk of flooding within the Site boundary on the site. The size of the stockpile(s) will be minimised where possible by excavation works being constructed in parallel with development platform construction which will utilise spoil arisings where these are geotechnically or chemically suitable.



PROJECT DRAGON

LANZATECH

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PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	25 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

In addition, there will be progressive off-site removal of geotechnically unsuitable or contaminated materials for re-use, treatment and/or disposal. Stockpile heights will therefore be low and there is sufficient area within the Site boundary to accommodate the volume of spoil expected to be generated.

Suitable measures will be put in place to prevent sediment being washed into watercourses, and the stockpiles will be visually monitored for wash away during and after periods of prolonged rainfall.

The nearest facility for excavated material surplus area is Briton Ferry Recycling Center at Port Talbot.

Spoil will be sampled and any contaminated spoil identified will be managed in accordance with the Site Waste Management Plan (SWMP), Material Management Plan (MMP), Site Preparation Plan and the Site Remediation Plan which will be prepared and appended to this Framework CEMP in the Execute phase.

A Framework Site Waste Management Plan (SWMP) has been developed as part of the Framework CEMP which allows for waste streams to be estimated and monitored and goals set with regards to the waste produced. The MMP will specify that any potentially contaminated soils will be managed in accordance with:

Defra Construction Code of Practice for the Sustainable Use of Soil on Development Sites (Defra, 2009); and

Definition of Waste: Development Industry Code of Practice (CL:AIRE, 2011).

Any suspected contaminated spoil will be placed on an impermeable membrane to prevent the leaching of any contaminants into the subsurface or watercourses. Site specific Screening Verification Criteria for the classification of soils for re-use or disposal will be derived by the Applicants in accordance with the MMP.

All spoil will be processed and managed in accordance with The Waste (England and Wales) Regulations 2011 (as amended).



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	26 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Recycling and Disposing of Waste

In order to control the waste generated on Site during site preparation and construction, CONTRACTOR will separate the main waste streams on Site, prior to them being taken to a waste facility for recycling or disposal. As outlined above spoil will be beneficially used onsite where possible to minimise the amount of spoil that requires treatment or disposing of offsite.

The Site Waste Management Plan (SWMP) appended to this Framework CEMP specifies the waste streams to be estimated and monitored and goals set with regards to the waste produced. Under the DCO requirements, the SWMP must be submitted to and approved by the relevant planning authority before construction works commence.

The SWMP requires the CONTRACTOR segregates waste streams on-site, prior to them being taken to a licensed waste facility for recycling or disposal. All waste to be removed from the Site will be undertaken by fully licensed waste carriers and taken to licensed waste facilities.



FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	27 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

15. ENVIRONMENTAL CONTROL PLANS

A project dedicated control plan will be developed for construction phase. This will take account of construction specific measures in the Environmental Management Plan (EMP) in accordance with the ES by others:

- Built Heritage and Archaeology
- Ground Conditions and Contamination
- Flood Risk and Hydrology
- Transport
- Lighting
- Terrestrial ecology
- Marine ecology
- Landscape and visual
- Socio-economics and human health
- Climate change
- Air quality
- Noise and vibration

Plan will detail the likely sources of emissions that may have an impact on these above Environmental Aspects and the steps that the construction team will put in place to manage and mitigate these.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	28 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

APPENDIX A: CONTRACTOR HSES POLICY



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	29 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	



Global HSE and Security Policy

POL-COR-011-HSE-Rev.2 - Feb 2021

This policy defines Technip Energies absolute commitment to the Health, Safety, Environment and Security (HSES) of all those who can either directly or indirectly be affected by our business activities.

HSES is a key element of our foundational beliefs (combined under the Safety belief) and managed as an integral part of our business, therefore we must never compromise on health, safety, environment or security to achieve our objectives.

We are committed to fostering an incident-free environment worldwide, through:

- Our fundamental conviction that all incidents are preventable
- Setting health, safety, environmental and security objectives specific to Technip Energies for the scope of our activities and extending them in a life cycle perspective to achieve continual improvement of the HSES management system and to continually enhance our HSES performance
- Fostering a leadership culture driven by engagement and accountability to ensure physical and mental health, safety, environment and security and a culture where we look after each other
- Committing and allocating adequate resources and expertise to continually and proactively eliminate hazards, reduce risks and prevent injury, ill health and environmental impact related to our activities, through engineering, process improvements, technologies and on-site execution
- Operating in a manner that protects the environment by providing sustainable solutions to minimize our carbon and environmental footprint while improving our energy and resource efficiency
- Securing our people, assets, technology, sensitive information and reputation
- Fulfilling, and when we deem necessary, exceeding legal, compliance and other obligations to meet our foundational beliefs
- Implementing and encouraging consultation and participation of workers.

Our success and continual improvement will be measured through the reduction of incidents, risks, and environmental footprint with clear and meaningful performance indicators.

HSES is everyone's responsibility. Every person is encouraged and expected to stop any work if they consider conditions are unsafe, in any way.

To comply with this policy is mandatory and the responsibility of all employees and all of those engaged and working to execute our activities. Visible commitment of management is the enabler of this compliance.

Arnaud Pieton
Chief Executive Officer
February 2021



PROJECT DRAGON
LANZATECH
PORT TALBOT, WALES



FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

<i>ENGINEER REFERENCE</i>					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	30 of 33
202947C	050	PP		00814		
<i>CLIENT REFERENCE</i>						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

APPENDIX B: ESG ROADMAP 2022-2023



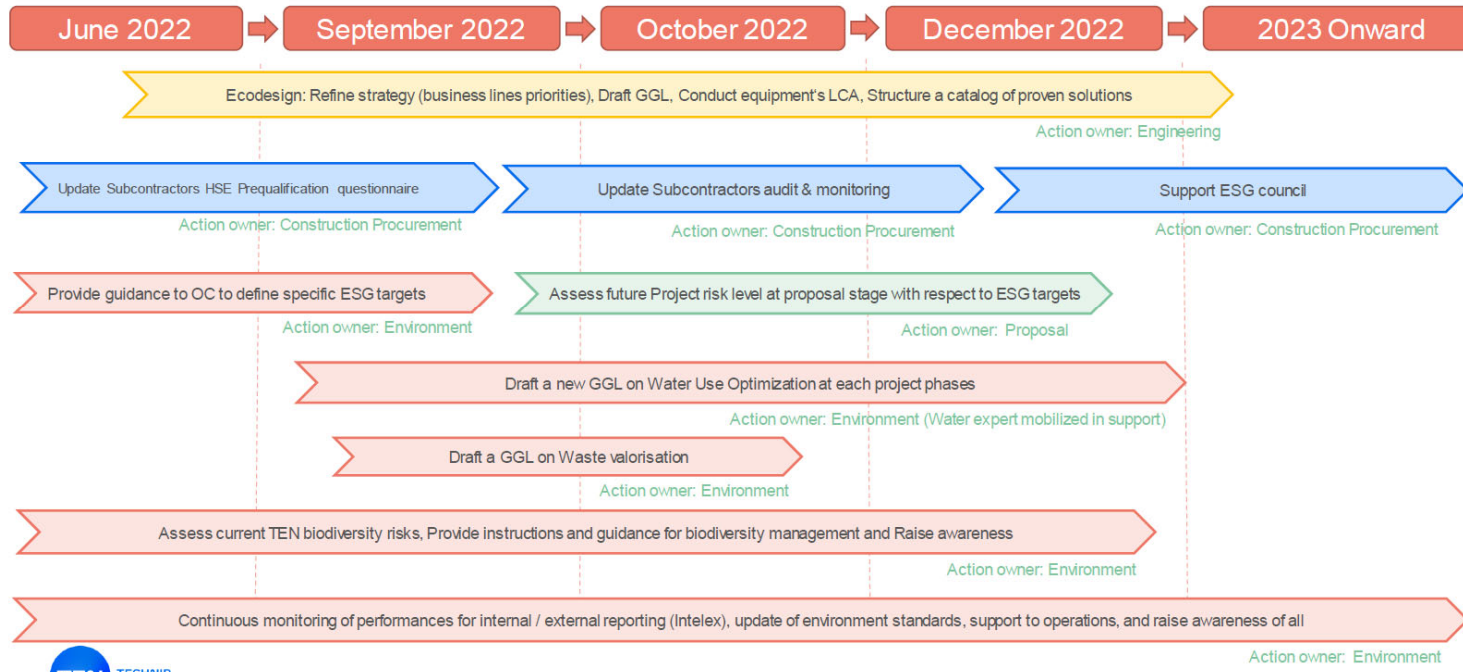
PROJECT DRAGON
LANZATECH
PORT TALBOT, WALES



FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	31 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Environmental Action Plan 2022 - 2023



Action owner: Environment



PROJECT DRAGON

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PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	32 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

APPENDIX C: PROJECT SUSTAINABILITY POLICY [HOLD]



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PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	33 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

End of document



Modular Biodiversity Walls



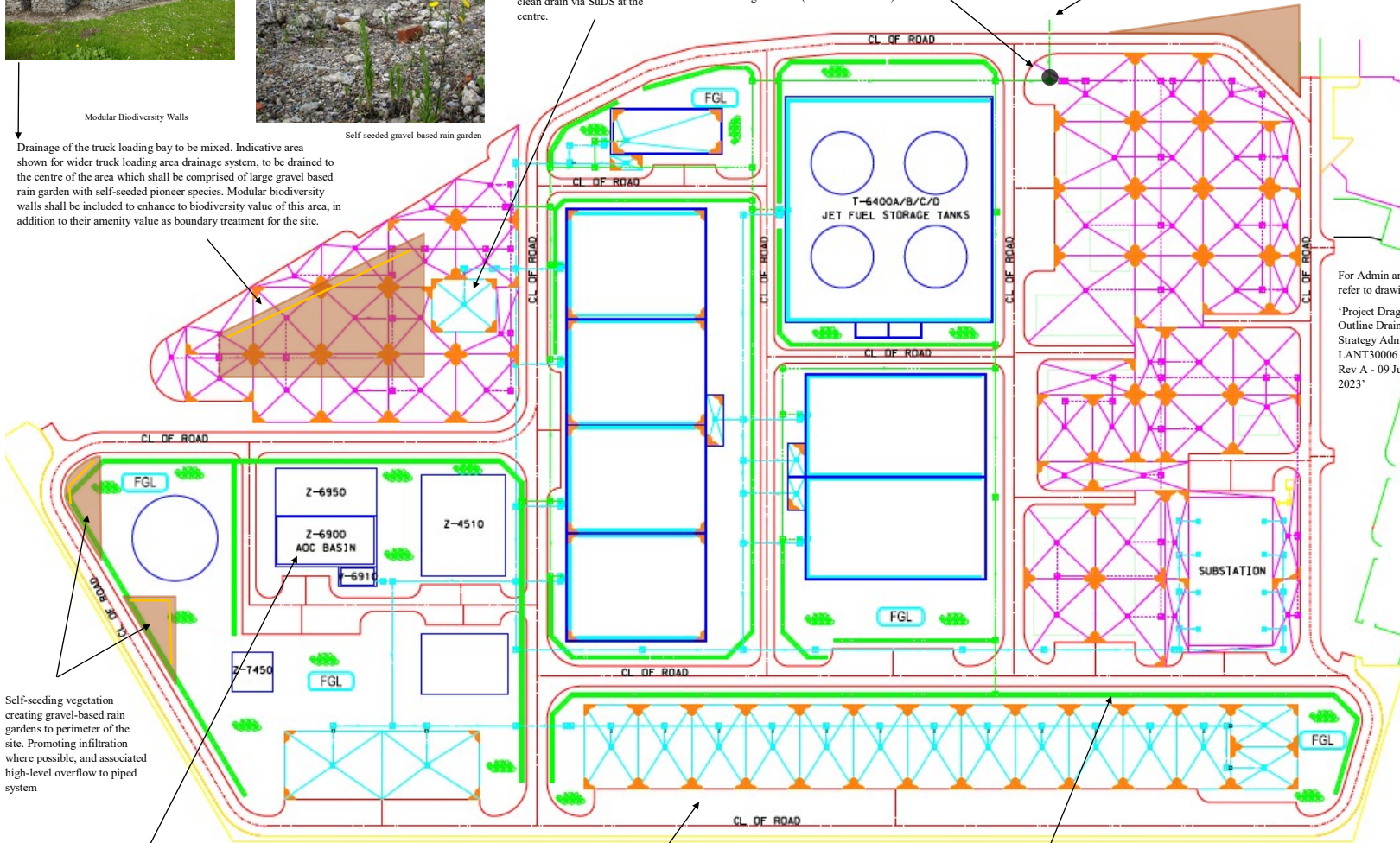
Self-seeded gravel-based rain garden

Drainage of the truck loading bay to be mixed. Indicative area shown for wider truck loading area drainage system, to be drained to the centre of the area which shall be comprised of large gravel based rain garden with self-seeded pioneer species. Modular biodiversity walls shall be included to enhance to biodiversity value of this area, in addition to their amenity value as boundary treatment for the site.

Area of truck loading to drain to Contaminated Drain due to high contamination risk. Wider area to drain ultimately to clean drain via SuDS at the centre.

Clean drain systems converge prior to the outfall of the site to the dock.
Separator provided to mitigate risk of contaminants entering the dock (indicative location)

Clean water drain outfall to Port Talbot dock.
Water discharges at attenuated rate into tidal waterbody.
Invert level to be confirmed. System to drain under gravity.



Self-seeding vegetation creating gravel-based rain gardens to perimeter of the site. Promoting infiltration where possible, and associated high-level overflow to piped system

AOC basin and effluent treatment plant.

Contaminated drain discharge location for treatment of contaminated surface water and process water.

Treated water directed to either the utility tower or cooling tower to be reused in the process streams across the site. (Indicative connection not shown)

Space constraints to this area of the site result in highway flows draining to piped system

Clean water drain to comprise trapezoidal ditches (gravel based swales) to receive flows from the highway. Infiltration to ground promoted if possible, with high-level overflow into piped system if required.



Indicative high-level overflow



Gravel-based swale / trapezoidal ditch

NOTES

1. Preliminary Underground Network provided by Technip Energies, drawing ref 'Preliminary Underground Network—26-05' based from Site Layout provided by Inspire Architects 02 June 2023, drawing reference 2143.01-IA-ZZ-ST-DR-A-0215_Proposed PDZ Layout-P9
2. Do not scale from this drawing. All information and layouts detailed on this drawing are subject to site dimension checks
3. All SuDS features indicative only, with associated precedent images. Further information to be provided at detailed design stage
4. No proposed ground levels have been provided to inform the strategy, thus indicative outline network provided by Technip Energies
5. No detailed hydraulic modelling, geotechnical assessment or engineering assessment has been undertaken at this stage

KEY

- Clean water drain—low hazard areas
- Clean water drain—medium hazard areas
- Contaminated drain
- Road layout
- Vegetated SuDS locations
- Modular Biodiversity Walls (indicative)
- Clean Drain Separator

For Admin area refer to drawing: 'Project Dragon - Outline Drainage Strategy Admin - LANT30006 - Rev A - 09 June 2023'

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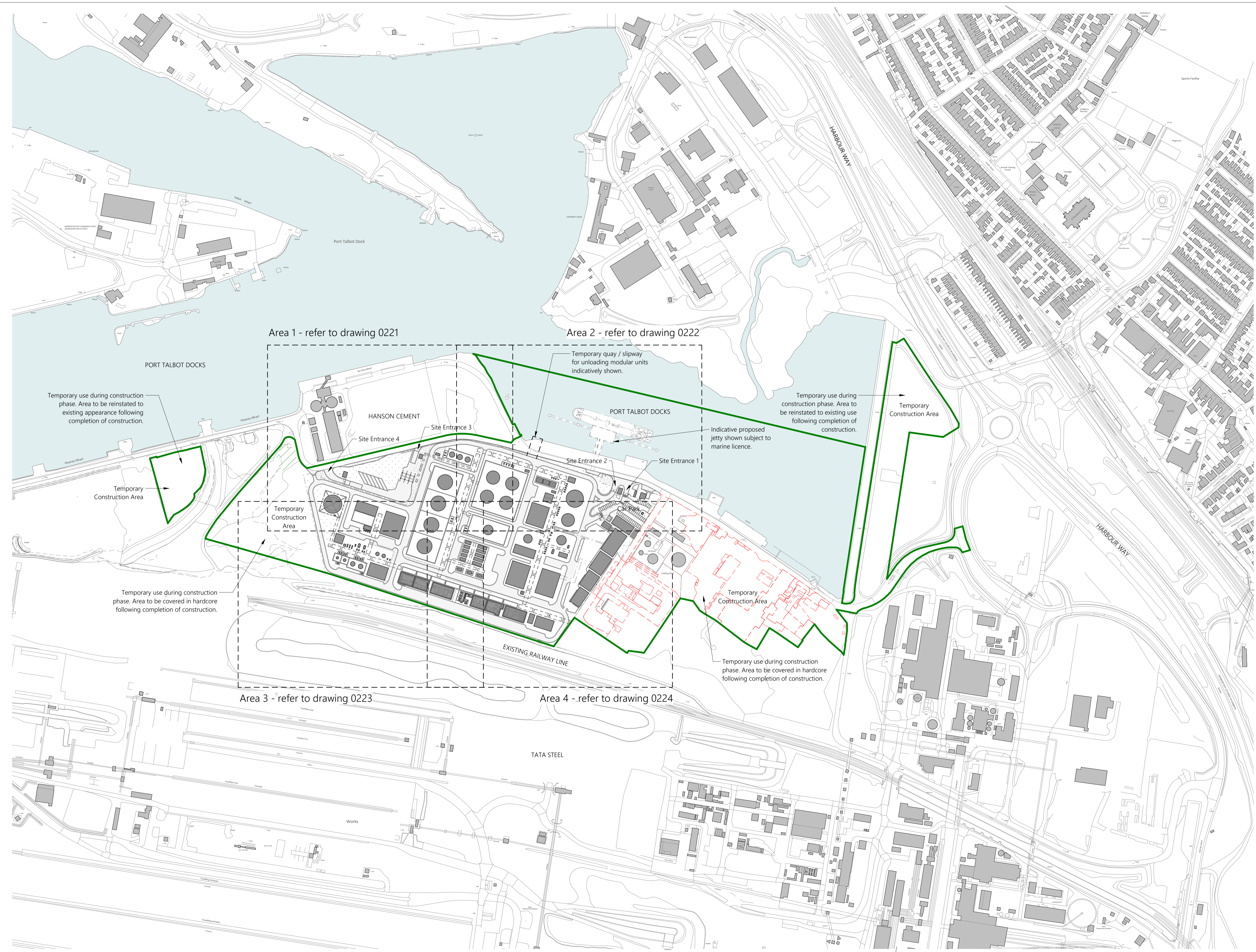
Project Dragon

Preliminary Underground Network—Process Area

Drawing Number:
Project Dragon - Preliminary Underground Network - Process Area - LANT30006 - Rev B - 10 August 2023

Drawn by: Faye Tomalin 10/08/2023

Reviewed by: Rene Dobson 10/08/2023



- GENERAL NOTES**
- All works proposed shall be conducted in accordance with the related H&S and CDM regulations. Where doubt arises over any aspect of safety, consult Inspire Architects.
 - Should any discrepancy be found on this drawing or related project information then the matter should be brought to the attention of Inspire Architects for resolution as soon as possible.
 - This drawing may be based on a measured survey or Ordnance Survey information. Do not scale from this drawing unless for planning purposes.
 - All dimensions are in millimetres unless otherwise stated. Do not scale from this drawing. All information and layouts detailed on this drawing are subject to site dimension checks.
 - Copyright - All Inspire Architects drawings are the property and copyright of Sophem Limited and are not to be used for any purpose without prior written agreement.

- NOTES**
- Survey information taken directly from drawings issued on December 2021 by AP Land Surveys.
 - Inspire Architects are not responsible for the design of the plant equipment identified on this drawing.

- LEGEND**
- EIA Study Area Boundary - approx 24.45 hectares
 - Existing Buildings
 - Proposed Buildings
 - Existing buildings to be demolished

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 Proprietary and
 Commercially Sensitive*

P8	CH	NC	09.08.2023
P7	CH	NC	25.07.2023
P6	CH	NC	17.07.2023
P5	CH	NC	13.07.2023
P4	IS	NC	06.07.23
P3	CH	NC	30.06.2023
P2	CH	NC	23.06.2023
P1	CH	NC	02.06.2023
Revision	Drawn	Checked	Date



PROJECT NAME
 Project Dragon - Sustainable Aviation Fuel (SAF) Production Facility

CLIENT
 LanzaTech UK Limited

SHEET NAME
 Proposed Site Key Plan - EIA Boundary Shown

SHEET SIZE A1 **SCALE** 1:2500 @ A1
STATUS CODE S2 **STATUS** PLANNING

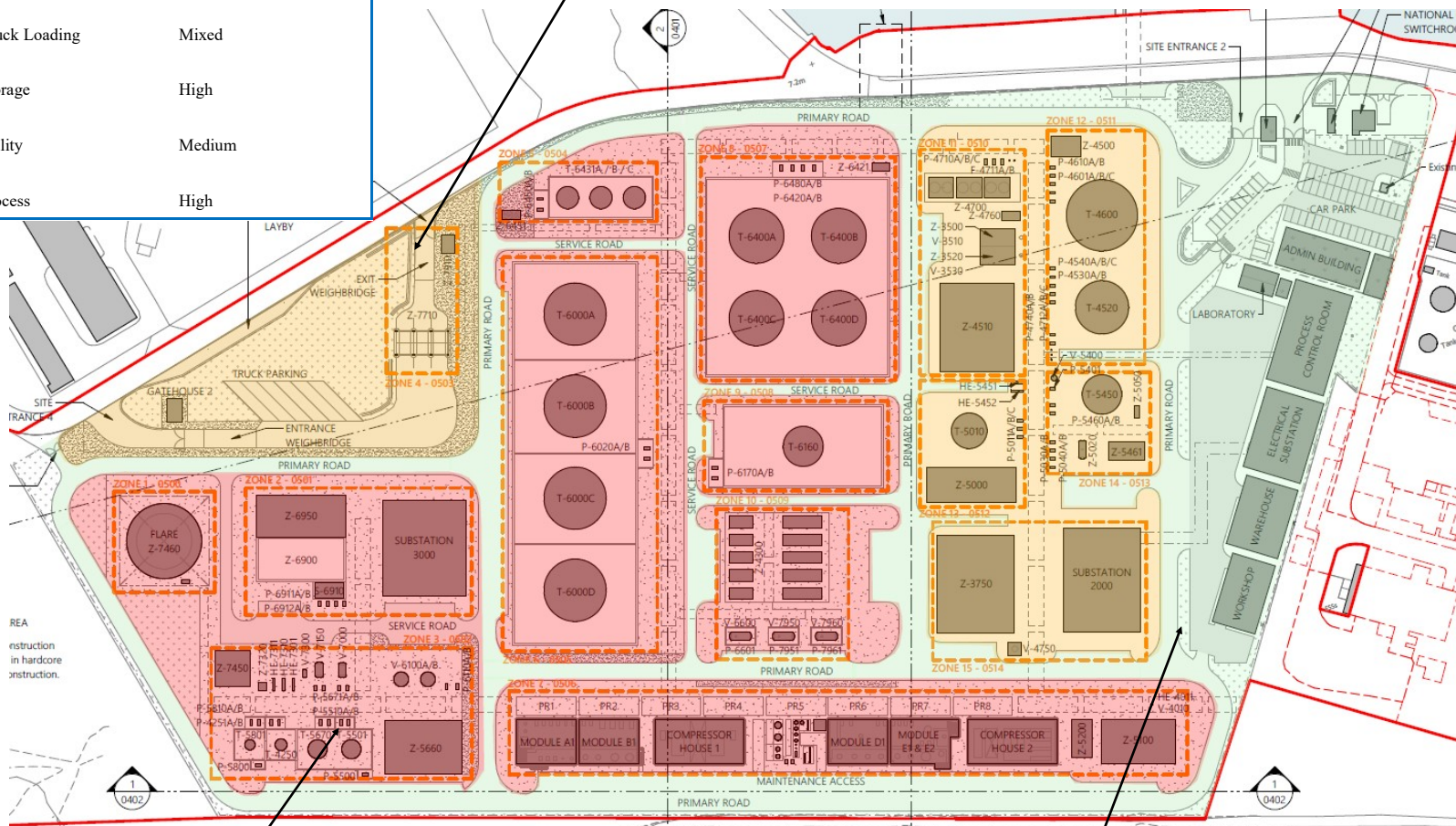
REVISION DATE 09.08.2023 **REVISION** P8

DRAWING NUMBER
 2143.01-IA-ZZ-ST-DR-A-0220

Land Use	Pollution Hazard Level
Roads	Low
Admin	Low
Flare	Low
Truck Loading	Mixed
Storage	High
Utility	Medium
Process	High

Medium Hazard Area:
 Medium hazard areas comprise the truck loading areas to the west of the site, and utilities area to the centre of the site. Areas of truck loading to the west shall drain directly to the contaminated drain as a result of the high risk of spillage/contamination. The remainder of the area shall drain via SuDS and an oil water separator prior to discharge to the dock.

Due to the industrial nature of the development site and the increased potential for spills as a result, the clean water stream shall pass through an oil water separator prior to discharge to the dock.



High Hazard Area:
 Process areas of the PDZ. Potential for contamination of the surface water system. Area to be bunded to mitigate risk spills to low and medium hazard risk areas. Surface water to enter the 'contaminated drain' and flow to the 'AOC basin' and effluent treatment plant. Flows shall be treated prior to being re-used in the site process streams.

Low Hazard Area:
 Low Hazard areas comprise of the site roads and admin area to the eastern boundary. The admin area contains warehouses, admin and welfare facilities and associated car parking. Within this area, the Simple Index Approach shall be used to demonstrate that the proposed system results in no detriment to downstream water quality.

NOTES

1. Site Layout provided by Inspire Architects 02 June 2023, drawing reference 2143.01-IA-ZZ-ST-DR-A-0215_Proposed PDZ Layout-P9
2. Do not scale from this drawing. All information and layouts detailed on this drawing are subject to site dimension checks

KEY

- High Hazard Areas
- Medium Hazard Areas
- Low Hazard Areas

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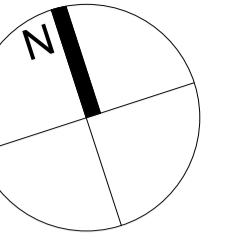
Project Dragon

Water Quality Management Plan

Drawing Number:
 Project Dragon - Water Quality Management Plan - LANT30006 - Rev D - 10 August 2023

Drawn by: Faye Tomalin 10/08/2023
 Reviewed by: Rene Dobson 10/08/2023

For information on the equipment located within each hazard area, refer to 2143.01-IA-ZZ-ST-DR-A-0216_Proposed PDZ Layout - External Surface Finishes-P6



GENERAL NOTES

- All works proposed shall be conducted in accordance with the related H&S and CDM regulations. Where doubt arises over any aspect of safety, consult Inspire Architects.
- Should any discrepancy be found on this drawing or related project information then the matter should be brought to the attention of Inspire Architects for resolution as soon as possible.
- This drawing may be based on a measured survey or Ordnance Survey information. Do not scale from this drawing unless for planning purposes.
- All dimensions are in millimetres unless otherwise stated. Do not scale from this drawing. All information and layouts detailed on this drawing are subject to site dimension checks.
- Copyright - All Inspire Architects drawings are the property and copyright of Sophem Limited and are not to be used for any purpose without prior written agreement.

NOTES

- Survey information taken directly from drawings issued on December 2021 by AP Land Surveys.
- Inspire Architects are not responsible for the design of the plant equipment identified on this drawing.

LEGEND

- Application Boundary
- Existing Buildings
- Proposed Plant / Buildings
- Existing buildings to be demolished
- Industrial Plant Zones - Refer to 0500 series drawings for detailed elevations

P9	CH	NC	09.08.2023
P8	CH	NC	25.07.2023
P7	CH	NC	17.07.2023
P6	CH	NC	13.07.2023
P5	CH	NC	30.06.2023
P4	CH	NC	23.06.2023
P3	CH	NC	02.06.2023
P2	CH	NC	31.05.2023
Revision	Drawn	Checked	Date



PROJECT NAME
Project Dragon - Sustainable Aviation Fuel (SAF) Production Facility

CLIENT
LanzaTech UK Limited

SHEET NAME
Proposed PDZ Layout

SHEET SIZE
A1
SCALE
1:1000 @ A1

STATUS CODE
S2
STATUS
PLANNING

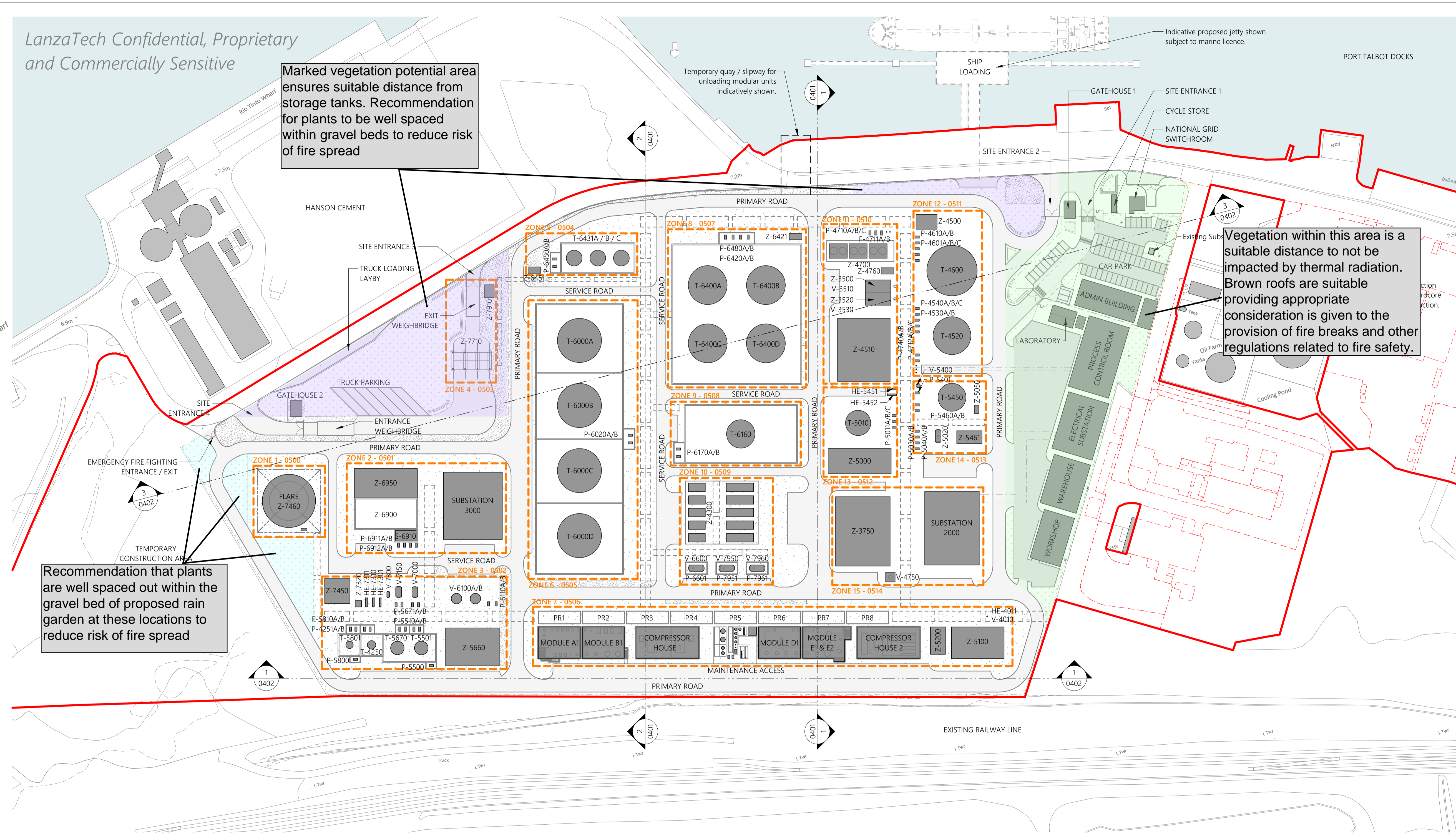
REVISION DATE
09.08.2023
REVISION
P9

DRAWING NUMBER
2143.01-IA-ZZ-ST-DR-A-0215

Marked vegetation potential area ensures suitable distance from storage tanks. Recommendation for plants to be well spaced within gravel beds to reduce risk of fire spread

Vegetation within this area is a suitable distance to not be impacted by thermal radiation. Brown roofs are suitable providing appropriate consideration is given to the provision of fire breaks and other regulations related to fire safety.

Recommendation that plants are well spaced out within the gravel bed of proposed rain garden at these locations to reduce risk of fire spread





PROJECT DRAGON

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PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	1 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

Pages modified under this revision:

Rev	Date DD/MM/YY	STATUS	WRITTEN BY (name & sign)	CHECKED BY (name & sign)	APPROVED BY (name & sign)
2	03/08/2023	IFFC Issued For Feed (Consolidated)	A. Elsalakawy	B. Lynskey	M. Allan
1	06/06/2023	IFFC Issued For Feed (Consolidated)	C. Laquel	D. Paris	M. Allan
0	12/04/2023	IFRC Issued For Review (Consolidated)	S. DJEROUROU	N. DJERAMBETE	C. LAQUEL
DOCUMENT REVISIONS					

Sections changed in last revision are identified by a vertical line in the margin

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	2 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

CONTENTS

1. INTRODUCTION.....4

2. SCOPE OF DOCUMENT4

3. DEFINITIONS AND ABBREVIATIONS.....4

 3.1 Definitions.....4

 3.2 Abbreviations.....5

4. REFERENCE DOCUMENTS6

 4.1 CONTRACTOR Specific Reference Documents (Hold):.....7

5. FRAMEWORK ENVIRONMENTAL MANAGEMENT PLANS8

6. FINAL CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN10

7. POLICY AND PLANNING11

 7.1 Environmental Policy Statement11

 7.2 Sustainability Policy Statement11

 7.3 CEMP Implementation11

8. ENVIRONMENTAL MANAGEMENT RESPONSABILITIES.....14

9. DETAILED CONTRACTOR RESPONSIBILITIES PRIOR TO CONSTRUCTION19

10. DETAILED CONTRACTOR RESPONSIBILITIES DURING CONSTRUCTION20

11. CONSTRUCTION PLANNING21

12. CONSTRUCTION LAYDOWN AND WELFARE FACILITIES.....23

13. TRAFFIC MANAGEMENT AND OFF SITE DELIVERY ROUTES23

14. SPOIL MANAGEMENT24

15. ENVIRONMENTAL CONTROL PLANS27

APPENDIX A: CONTRACTOR HSES POLICY28

APPENDIX B: ESG ROADMAP 2022-202330

APPENDIX C: PROJECT SUSTAINABILITY POLICY [HOLD].....32



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	3 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Table of Holds

Reference	Page No	Description



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	4 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

1. INTRODUCTION

LanzaTech UK Ltd is exploring the installation of a 30M gal/year (ca. 115million litres/year) Alcohol-to-Jet (ATJ) plant in Port Talbot, Wales. The ATJ plant is to consist of two technologies, an Ethanol to Ethylene (ETE) and a Ethylene to Jet Fuel (ETJ) technology. A project feasibility study was completed in 2018.

This Framework CEMP provides the initial plan based on the FEED project definition. A final CEMP, taking account of the detailed engineering design and outcomes of the Environmental Statement will be developed in due course. T.EN will support the planning and permitting process which is seen as a key success factor for the project. T.EN shall provide inputs to this process to support the third-party subcontractors which have been employed by LanzaTech for the project.

2. SCOPE OF DOCUMENT

The scope of this document is to describe the Environmental Management Plan requirements for Construction activities.

The procedures contained and referenced within this Framework CEMP do not prejudice any statutory requirements and guidelines that might be in force anytime within the Project life. Relevant impacts from new legislation or change of standards will be communicated to staff through project bulletins and training as required. These will also be included within a revision of CEMP where they impact the works.

This Framework CEMP will be reviewed on a minimum annual basis or in response to any significant changes, e.g. changes to site activities, legal and client requirements or immediately following a significant environmental incident.

3. DEFINITIONS AND ABBREVIATIONS

3.1 Definitions

COMPANY: LanzaTech

CONTRACTOR: Technip Energies

Construction Subcontractor: TBC



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	5 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

3.2 Abbreviations

Abbreviation	Definition
AiP	Approval in Principle
BMS	Business Management System
BOD	Basis Of Design
BS	British Standards
CEMP	Construction Environmental Management Plan
CWA	Construction Work Area
EDMS	Electronic Document Management System
EMP	Environmental Management Plan
EMS	Environmental Management System
ENVID	Environmental Aspect/Impact Identification
ES	Environmental Statement
FEED	Front End Engineering Design
HEMP	Handover Environmental Management Plan
HGV	Heavy Goods Vehicle
KPI	Key Performance Indicator
MMS	Material Management System
NRW	Natural Resources Wales
RAMS	Risk Assessment and Method Statement
REAC	Register of Environmental Actions and Commitments
SOW	Scope Of Work
SPA	Supplementary Project Agreement

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	6 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

TBC	To Be Confirmed
WFD	Water Framework Directive

4. REFERENCE DOCUMENTS

Document Number		Document Title
COMPANY	CONTRACTOR	
	202947C-000-PP-00104	Project Execution Plan (for FEED)
	202947C-050-PP-00903	FEED Construction and Commissioning Work Plan, organisation and Staffing
	In 202947C-000-PP-00104	Project Controls Plan
	202947C-050-PLG-00301	Consolidated Feed Project Master Schedule
	202947C-000-RT-00803	Constructability Study Report
	202947C-050-PP-00801	Project Construction Plan
	202947C-050-PP-0814	Framework Construction Environmental Management Plan (this document)
	202947C-050-PP-00811	HSE Site Security Plan
	202947C-000-PP-00501	Project Quality Plan
	202947C-050-PP-00802	Temporary Site Facilities Plan

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PROJECT DRAGON

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PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	7 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

4.1 CONTRACTOR Specific Reference Documents (Hold):

Document Number	Owner	Document Title
	Be issued during Execution preparation	Environmental Policy
	Be issued during Execution preparation	Sustainability Policy
	Be issued during Execution preparation	Project Management Plan
	Be issued during Execution preparation	Environmental Risks and Opportunities Assessment
	Be issued during Execution preparation	Environmental Incidents
	Be issued during Execution preparation	Major Pollution Incident Plan
	Be issued during Execution preparation	Emergency Spillage Response Plan
	Be issued during Execution preparation	Seven steps for Environmental incident planning
	Be issued during Execution preparation	Example operational Environmental Incident Action
	Be issued during Execution preparation	Environmental Incident Severity Classification Table
	Be issued during Execution preparation	Environment Incident Regulator Reporting Thresholds
	Be issued during Execution preparation	Environmental Incident Reporting Guidance for operators
	Be issued during Execution preparation	Incident Reporting and Investigation
	Be issued during Execution preparation	Risk Assessment & Method Statement
	Be issued during Execution preparation	Site Induction Records
	Be issued during Execution preparation	Environmental Training Records

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PROJECT DRAGON

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PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	8 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

	Be issued during Execution preparation	Plant Maintenance and Defect Reports
	Be issued during Execution preparation	Waste Carrier Licences, Waste Transfer Notes, Consignment Notes, Environmental Permits,
	Be issued during Execution preparation	Environmental Complaints regarding site activities
	Be issued during Execution preparation	Environmental Inspections and Audits
	Be issued during Execution preparation	Environmental Briefings / Toolbox Talks
	Be issued during Execution preparation	Emergency Response Plan
	Be issued during Execution preparation	Project Organisation and Emergency Arrangements Chart
	Be issued during Execution preparation	Personnel Emergency Evacuation Plan
	Be issued during Execution preparation	Monitoring / Sampling Results required for Consent / Permit /Licence compliance

5. FRAMEWORK ENVIRONMENTAL MANAGEMENT PLANS

A framework Construction Environmental Management Plan (CEMP) has been produced at the FEED phase. The "Framework CEMP" is a document containing a series of outline environmental management plans and related documents for the Proposed Development, which is produced by the Project/COMPANY during the design stage of the Proposed Development.

The framework CEMP demonstrates how the commitments in the ES could be implemented. It also sets out the monitoring and auditing activities designed to demonstrate that such mitigation measures are carried out and that they are effective and how mitigation measures to reduce environmental impacts during the construction phase will be delivered and how compliance with environmental legislation will be reached.

The framework CEMP sets out a series of proposed measures that would be applied by the contractor to provide effective planning, management and control during



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	9 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

construction to control potential impacts upon people, businesses and the environment.

The framework CEMP sets out the approach that will be used by CONTRACTOR to update the document to the Final CEMP once the design and construction plans have been finalised at the Detailed Design stage. Procedures and mitigation measures summarised in this iteration of the CEMP (the final CEMP) will be mandatory.

This approach, where CONTRACTOR is responsible for preparing the CEMP, aims to ensure that all potential environmental impacts identified in the ES and at the Detailed Design stage are fully addressed and suitable mitigation measures implemented. Design development is assessed against the requirements assessed in these documents.

The final CEMP will be managed alongside the CONTRACTOR'S generic and site-specific environmental management plan and systems, meeting ISO14001 requirements. The final CEMP will be a live document and must be maintained and updated throughout the life of the project by CONTRACTOR. Environmental mitigation measures identified must be followed by all parties.

Prior to the commencement of construction, the final CEMP will take account of detailed design and construction planning and the outcome of the planning process. It will be maintained and revised during the construction period to take account of any changes in design or external factors such as regulations and standards, any unforeseen circumstances as they arise, such as new protected species or new archaeological finds, and any failings in environmental performance identified from routine inspections and audits.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	10 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

6. FINAL CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

The final Construction Environmental Management Plan will be written at the detailed design stage and covers the main construction works.

The overall objectives of the final CEMP are to:

- to provide a mechanism for ensuring that measures to mitigate potentially adverse environmental impacts identified in the Environment Statement’s (ES) are implemented,
- to ensure that good construction practices are adopted throughout the construction of the works,
- to provide a framework for mitigating impacts that may be unforeseen or that are not identified until construction is underway,
- to provide assurance to third parties that their requirements with respect to environmental performance will be met,
- to provide a mechanism for ensuring compliance with environmental legislation,
- to provide a framework for compliance auditing and inspection, to enable CPY and CTR to be assured that their aims with respect to environmental performance are being met,
- to provide trained and experienced environmental personnel to satisfy the requirements of the CPY Environmental Statement.

This Final CEMP takes due consideration of the assessments undertaken and reported within the published ES presented as part of planning application. The final CEMP identifies mitigation and environmental issues associated with the following phases of construction:

- Prior to construction (e.g. advanced works, site preparation, vegetation clearance);
- During construction (e.g. works);
- Post construction, or pre-occupation, including demobilisation.

This final CEMP will be produced to ensure that all necessary measures identified during planning are incorporated into the project during the phases listed above. This



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	11 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

final CEMP should also be read alongside the following key documents which are contained in the Appendices of this document (once developed these documents will be included in the final CEMP at execution Phase).

7. POLICY AND PLANNING

7.1 Environmental Policy Statement

The project has an Environmental Policy that meets the requirements of ISO 14001:2015. The policy statement will be displayed on the site notice boards, publicised to all site staff and operatives, and made available to interested parties upon request.

A copy of the CONTRACTOR Environmental policy is included in Appendix A.

7.2 Sustainability Policy Statement

The project has a ESG Road Map that supports its Sustainability objectives. The policy statement will be displayed on the site notice boards, publicised to all site staff and operatives, and made available to interested parties upon request.

A copy of the 2022/2023 CONTRACTOR ESG Roadmap is included in Appendix B

A copy of the Project Sustainability Policy is included in Appendix C (Hold).

7.3 CEMP Implementation

CONTRACTOR, along with all subcontractors and suppliers will comply with the requirements of the CEMP.

The CEMP is based on the 'Plan, Do, Check, Act' model and has been developed to incorporate and take account of the environmental requirements of International Standard ISO14001:2015 and the CONTRACTOR'S Management System.

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

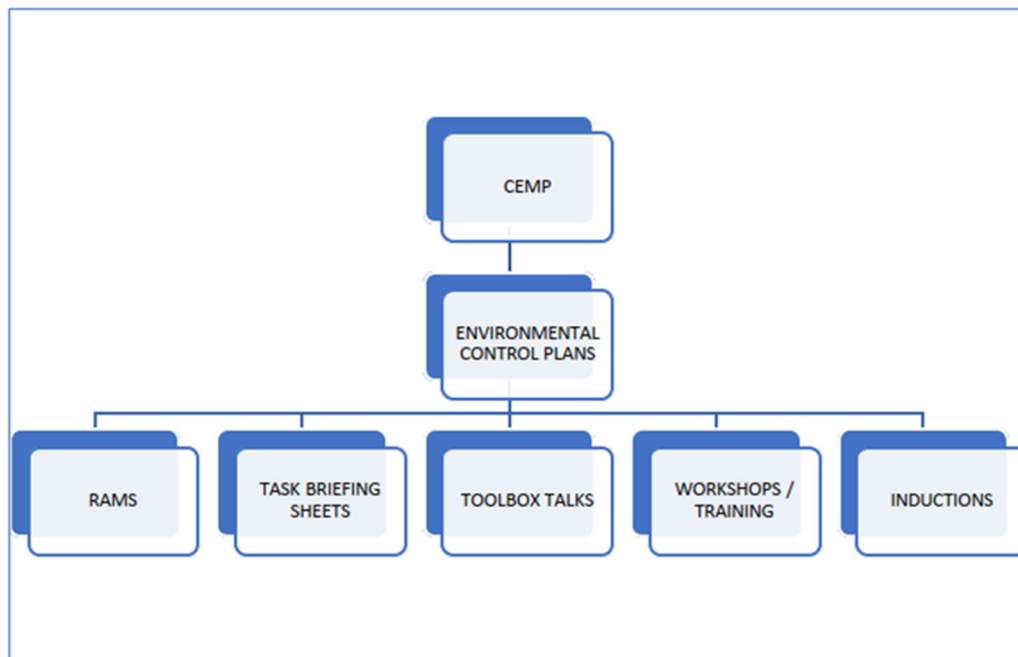
ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	12 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	



The CEMP provides a framework to manage all contract environmental requirements and applicable legislation. The CEMP is supported by Environmental Control Plans that define the arrangement to manage the project’s environmental risks and support on site environmental performance. Task specific requirements are detailed within Risk Assessment and Method Statements (RAMS). Awareness of environmental controls will be communicated to those working for, or on behalf of the project via site induction, workshops/training, pre start briefings and tool box talks. This arrangement is shown below.

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	13 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	



All contractors providing a product or service will be required to provide evidence to show how they will control their environmental risks if their activities are deemed to potentially create an environmental impact. This will be reviewed against this Final CEMP, relevant specification, Scope of Works (SOW) and legislative requirements, etc. by the project environmental team at the supplier approval stage.

Inspections and audits of site activities, management, training and documentation will be conducted in order to monitor compliance with the CEMP. All documentation will be saved in CONTRACTOR’S EDMS (GAIA). All supplier requirements are defined on the SDRL (Supplier document requirements list).



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	14 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

8. ENVIRONMENTAL MANAGEMENT RESPONSABILITIES

Everyone working for, or on behalf of, the project has a responsibility for environmental performance. Site inductions will be delivered to the entire workforce, regardless of role, to raise awareness of measures/procedures/practices implemented through this plan.

COMPANY and delegated consultants acting on their behalf, CONTRACTOR and their subcontractors are all responsible for complying with the project’s environmental policies, relevant environmental legislation and regulations. It is a requirement that all persons on site will be made aware of their duty of care to the environment and will be provided with sufficient training, supervision, or instruction through Site Inductions, Toolbox Talks and specific method statements as necessary.

Responsibilities for the site environmental management will be delegated to key personnel by CONTRACTOR who will manage all reporting and monitoring of environmental mitigation during the project. Where required, environmental specialists will be consulted to provide advice on specific issues or site activities, in consultation with CONTRACTOR.

The main environmental roles and responsibilities are shown in the table below.

Further details of responsibilities will be documented in individual job descriptions/appointment letters and for subcontractors, in their contract documentation.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	15 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Role	Main responsibilities
CONTRACTOR Project Director	<p>Leadership and commitment to communicate and support the delivery of the works in line with the project’s environmental and sustainability visions.</p> <p>Providing leadership and commitment with respect to the environmental management system.</p> <p>The environmental performance of the project and for encouraging others to improve the effectiveness of the EMS and performance.</p> <p>Promoting sustainable design and construction objectives.</p> <p>Setting the project’s behavioural culture for sustainability, ensuring that all aspects of the final CEMP and Sustainability Action Plan are embraced by the delivery team, including the supply chain partners.</p> <p>Responsible for assigning appropriate roles and responsibilities within the Project Management Team that they adequately reflect the significant environmental risk and opportunities that have been identified to ensure that legal compliance obligations can be met and delivered.</p> <p>Providing direction to other supporting roles in the project to ensure overall targets are met.</p> <p>Ensuring that critical objectives, aspects, performance metrics and results are continually communicated effectively to all stakeholders.</p> <p>Ensuring continual improvement can be achieved.</p>
CONTRACTOR HSES Manager	<p>Providing leadership and commitment with respect to the environmental management system (EMS).</p> <p>Overall responsibility for management of environmental matters</p> <p>Allocation of sufficient resources within the Health, Safety, Environment & Sustainability (HSES) Project Team.</p> <p>Resolution of findings from audits and inspections</p> <p>Chair monthly site HSES meeting.</p> <p>Supporting Environment & Sustainability Manager (E&SM) in meeting project E&S objectives.</p>



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	16 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

<p>CONTRACTOR Environmental and Sustainability Manager</p>	<p>Oversee the environmental components of the project. Act as main contact for all environmental issues on site. Co-ordination of all environmental specialists to ensure compliance with the environmental requirements of the project</p>
<p>CONTRACTOR Environmental and Sustainability Advisor</p>	<p>Co-ordinating site environmental management compliance. Ensure Scheme remains compliant with the CEMP, including compliance with environmental legislation, best practice, consents, commitments and objectives set. Updating and reviewing the CEMP throughout the works. Ensuring the project team have sufficient environmental training and co-ordinate delivery of additional training/inductions/Toolbox Talks where required. Liaison with regulatory bodies. Reporting environmental near misses, incidents or supply chain partner innovations. Carry out an environmental review of suppliers and sub-contractors. To assess environment management system arrangements and key policies. Assessing and checking survey results and updating databases, Environmental Control Plans (ECPs) etc. with any new information. To co-ordinate with the design and construction teams to ensure that works are planned and delivered in accordance with legal and contractual requirements. To undertake assurance activities such as periodic audits and weekly inspections of work sites. To review documentation (incl. RAMS) for work activities. To facilitate the investigation of complaints, incidents or exceedances. To provide support and direction to Stakeholder Manager to ensure compliance with the commitments register is achieved. To review monitoring data as provided by Specialists. To monitor and report environmental performance of the supply chain. To lead a positive environmental culture on the project to transform behaviours where required. To prepare environmental requirements for supply chain contracts. To undertake and co-ordinate specific environmental training to the construction team and workforce as required. To attend site meetings. To advise on environmental best practice.</p>



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	17 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Role	Main responsibilities
CONTRACTOR Site HSE Advisor	<p>Providing support to the Environmental Manager.</p> <p>Provide site induction on environmental practices, toolbox talks, organise specialist surveys, and oversee monitoring and testing of materials as required.</p> <p>Monitor CONTRACTOR site environmental compliance, supervising works and construction activities on site, auditing/reviewing works and procedures including method statements as required.</p> <p>Ensure hours of working meet accepted noise and vibration limits set in consultation with Environmental Health Officer (EHO).</p> <p>Develop with Principal Contractor Site Health & Safety Officer, an Emergency Spillage Response Plan and associated protocols for incidents.</p> <p>Ensure Environment Agency and other stakeholder requirements are implemented for consents and permits.</p> <p>Recording and reporting the progress of environmental works.</p> <p>Report any product or service environment non-conformances.</p>
CONTRACTOR Environmental Engineer (Ecologist, Landscape Architect, Archaeologist, Noise/Air Quality Specialist, Material/Waste Management Specialist, Contaminated Land Specialist, Occupational Health Specialist, etc.)	<p>Individual Environmental Specialists will be responsible for the inputs into the environmental assessment and final detailed designs.</p> <p>Will provide support to the construction project team in the form of pre-construction surveys, applications for licenses/consents, watching briefs and other specific issues such as protected species and landscape planting supervision.</p> <p>Oversee mitigation throughout the project.</p> <p>Provide specialist advice and instruction to the supply chain.</p>
CONTRACTOR Community Liaison Officer (CLO)	<p>Key liaison with all the above and COMPANY'S Communications Lead, Stakeholder Lead and Customer lead.</p> <p>Single contact point on site for the community and general public.</p> <p>Maintain and develop Community Relations Strategy.</p> <p>Maintain comment and enquiries log and disseminate identified comment for response and implementation of action.</p>

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	18 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Role	Main responsibilities
Delivery Team (including Procurement Team)	<ul style="list-style-type: none"> To attend the project induction prior to commencing work. To provide their own environmental management plan and risk assessments in RAMS as required. To promote a right first time approach. To ensure environmental sustainability reporting data is submitted accurately and on time. To ensure environmental measures are implemented in line with the method statements and risk assessments. To work considerately with a good working ethic to minimise adverse environmental impacts and follow all site rules communicated during the briefings and project training sessions. To adhere to instructions provided by an Ecological Clerk of Works, Archaeologist, etc. To report near misses, positive interventions and all incidents no matter how minor. To comply with any environmental consents required to complete the planned works.

Contact information for personnel with environmental responsibilities is as follows (Hold):

Name	Position	Organisation	Contact Details
	Project Director	COMPANY	Email: Phone Number:
	Project Director	CONTRACTOR	Email: Phone Number:
	Site Manager	CONTRACTOR	Email: Phone Number:
	HSES Manager	CONTRACTOR	Email: Phone Number:
	Construction Manager	CONTRACTOR	Email: Phone Number:
	Community Liaison Officer	CONTRACTOR	Email: Phone Number:

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	19 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

9. DETAILED CONTRACTOR RESPONSIBILITIES PRIOR TO CONSTRUCTION

CONTRACTOR is responsible for approving the appointment of the Environment and Sustainability Manager/Director and any environmental specialists prior to any work starting on site.

CONTRACTOR is responsible for the following prior to construction commencement;

- Developing final CEMP (using this framework CEMP as a basis).
- Defining roles and responsibilities for their own and their key sub-contractors' personnel relating to environmental issues (see Section 8);
- Developing an environmental training plan covering all personnel;
- Developing a programme of internal and sub-contractor inspections/monitoring;
- Developing project-specific emergency procedures for environmental incidents;
- Finalising and implementing a programme for works to allow all preconstruction surveys to be arranged and completed within the required timeframe;
- Agreeing a non-compliance reporting procedure with The COMPANY to manage any environmental incidents or non-compliance events for the project; and
- Developing the required Environmental Control Plans (ECPs), see Section 7 for list. These will be updated as required up to construction commencement to reflect any new, relevant information provided by COMPANY or other statutory consultees (e.g. further consent conditions, landowner agreements) or through design development, construction planning, preconstruction surveys etc.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	20 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

10. DETAILED CONTRACTOR RESPONSIBILITIES DURING CONSTRUCTION

CONTRACTOR is responsible on site for delivering the construction phase commitments in the ES and Register of Environmental Actions and Commitments (REAC), as described within the project design construction models, drawings and specifications, and controlled by this Framework CEMP.

CONTRACTOR will implement the procedures set out in this Framework CEMP with technical advice from competent environmental specialists.

CONTRACTOR is responsible for all their subcontractors on site and for ensuring these sub-contractors comply with the requirements of this Framework CEMP.

CONTRACTOR is responsible for ensuring that there are no breaches in legislation and that good practice is followed throughout the duration of the construction.

CONTRACTOR must ensure that all on-site works are adequately monitored.

Environmental Objectives & Targets will be developed in conjunction with CPY and will be reviewed on a monthly basis at the project progress meetings. A copy of the Project's Objectives and Targets, and associated progress reports, will be held in the Project Environmental Files and included in project monthly reports.

Risk Assessments & Method Statements (RAMS) and Environmental Control Plans (ECPs) and other associated documents (such as Section 61 of Control of Pollution Act 1974, Discharge consent by NRW, etc.) will be used to ensure all environmental commitments are delivered on site. The implementation of the requirements of the RAMS, ECPs and delivery of mitigation measures relating to the project will be the responsibility of CONTRACTOR.

Any improvements or deviations relating to environmental matters required to the RAMS and/or ECPs shall be approved by the Environment and Sustainability Manager (and may be subject to other consents where required). CONTRACTOR will provide regular feedback and information to COMPANY Project Manager and Environmental

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	21 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Manager on the progress and success in delivering all mitigation and commitments on site.

The REAC will be updated to demonstrate progress and will be kept by the project for environmental auditing purposes, with updates periodically sent to COMPANY.

All site personnel have the responsibility and authority to halt works in any activity where environmental commitments are not being successfully delivered or where legal requirements are being breached.

All site personnel will be encouraged to draw attention to any environmental risk or potential environmental risk arising on site (for example, refuelling being carried out too close to a watercourse or working outside the agreed limits of deviation for any aspect of the works). This approach will be promoted in all site inductions and training.

11. CONSTRUCTION PLANNING

The current expectation is that the construction works will be split into phases with the following table providing an indicative construction programme.

Construction working hours will generally be:

- Monday to Friday 07:00 to 19:00 and
- Saturday 07:00 to 13:00,

however, it is likely that some construction activities will be required to be 24 hours at certain times. This is principally construction activities that cannot be stopped, such as concrete pouring. Where on-site works are to be conducted outside the core hours, they will comply with the restrictions stated in this Final CEMP and any other restrictions agreed with the planning authorities.

Activities that could generate a construction noise or light nuisance impact will be assessed for their potential impact prior to being undertaken at night, including but not limited to sheet piling, piling, use of impact wrenches, concrete scabbling, use of reversing sirens, and concrete jack hammering. Construction noise limits will need to be in compliance with the construction noise scheme agreed with relevant planning authority.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	22 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Indicative Construction Planning

The table below to be completed as part of Final CEMP during the detailed engineering phase.

	M-5	M-4	M-3	M-2	M-1	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24
Enabling Works																													
Site Establishment																													
Construction																													
Utilities																													
Commissioning																													

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PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	23 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

12. CONSTRUCTION LAYDOWN AND WELFARE FACILITIES

Proposed construction laydown areas, including storage, site offices, welfare facilities and car parking, will be located at various places within the site boundary.

13. TRAFFIC MANAGEMENT AND OFF SITE DELIVERY ROUTES

During construction, CONTRACTOR will ensure that the impacts from construction traffic on the local community (including local residents and businesses and users of the surrounding transport network) are minimised, where reasonably practicable. This will be ensured by implementing the measures set out in the Framework Construction Workers' Travel Plan (CWTP) and the Framework Construction Traffic Management Plan (CTMP) respectively; These plans will be developed from the Framework status to be included with this CEMP prior to the start of construction.

The Framework CTMP provides details of the designated routes for Heavy Vehicle movements and this will be set out in accordance with the Transport Assessment and Environmental Statement produced by others.

The use of port facilities are not considered to be part of the project logistic.

Final details of the designated routes for HGV movements and worker car movements will be detailed in the CWTP and CTMP prior site mobilization.

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	24 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

14. SPOIL MANAGEMENT

Spoil will arise from the construction activities of the project. The CONTRACTOR will take all reasonable measures to apply the waste hierarchy which is, in priority order, as follows:



During enabling works and construction, spoil arising will be temporarily stockpiled within the Site boundary before either beneficial re-use on site for use in development platform construction or being taken off-site by HGV for treatment and/or disposal at a local permitted facility (in the local area) or for reuse in other development sites in the area.

Spoil will be stockpiled in areas at low risk of flooding within the Site boundary on the site. The size of the stockpile(s) will be minimised where possible by excavation works being constructed in parallel with development platform construction which will utilise spoil arisings where these are geotechnically or chemically suitable.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	25 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

In addition, there will be progressive off-site removal of geotechnically unsuitable or contaminated materials for re-use, treatment and/or disposal. Stockpile heights will therefore be low and there is sufficient area within the Site boundary to accommodate the volume of spoil expected to be generated.

Suitable measures will be put in place to prevent sediment being washed into watercourses, and the stockpiles will be visually monitored for wash away during and after periods of prolonged rainfall.

The nearest facility for excavated material surplus area is Briton Ferry Recycling Center at Port Talbot.

Spoil will be sampled and any contaminated spoil identified will be managed in accordance with the Site Waste Management Plan (SWMP), Material Management Plan (MMP), Site Preparation Plan and the Site Remediation Plan which will be prepared and appended to this Framework CEMP in the Execute phase.

A Framework Site Waste Management Plan (SWMP) has been developed as part of the Framework CEMP which allows for waste streams to be estimated and monitored and goals set with regards to the waste produced. The MMP will specify that any potentially contaminated soils will be managed in accordance with:

Defra Construction Code of Practice for the Sustainable Use of Soil on Development Sites (Defra, 2009); and

Definition of Waste: Development Industry Code of Practice (CL:AIRE, 2011).

Any suspected contaminated spoil will be placed on an impermeable membrane to prevent the leaching of any contaminants into the subsurface or watercourses. Site specific Screening Verification Criteria for the classification of soils for re-use or disposal will be derived by the Applicants in accordance with the MMP.

All spoil will be processed and managed in accordance with The Waste (England and Wales) Regulations 2011 (as amended).



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	26 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Recycling and Disposing of Waste

In order to control the waste generated on Site during site preparation and construction, CONTRACTOR will separate the main waste streams on Site, prior to them being taken to a waste facility for recycling or disposal. As outlined above spoil will be beneficially used onsite where possible to minimise the amount of spoil that requires treatment or disposing of offsite.

The Site Waste Management Plan (SWMP) appended to this Framework CEMP specifies the waste streams to be estimated and monitored and goals set with regards to the waste produced. Under the DCO requirements, the SWMP must be submitted to and approved by the relevant planning authority before construction works commence.

The SWMP requires the CONTRACTOR segregates waste streams on-site, prior to them being taken to a licensed waste facility for recycling or disposal. All waste to be removed from the Site will be undertaken by fully licensed waste carriers and taken to licensed waste facilities.



FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	27 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

15. ENVIRONMENTAL CONTROL PLANS

A project dedicated control plan will be developed for construction phase. This will take account of construction specific measures in the Environmental Management Plan (EMP) in accordance with the ES by others:

- Built Heritage and Archaeology
- Ground Conditions and Contamination
- Flood Risk and Hydrology
- Transport
- Lighting
- Terrestrial ecology
- Marine ecology
- Landscape and visual
- Socio-economics and human health
- Climate change
- Air quality
- Noise and vibration

Plan will detail the likely sources of emissions that may have an impact on these above Environmental Aspects and the steps that the construction team will put in place to manage and mitigate these.



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	28 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

APPENDIX A: CONTRACTOR HSES POLICY



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	29 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	



Global HSE and Security Policy

POL-COR-011-HSE-Rev.2 - Feb 2021

This policy defines Technip Energies absolute commitment to the Health, Safety, Environment and Security (HSES) of all those who can either directly or indirectly be affected by our business activities.

HSES is a key element of our foundational beliefs (combined under the Safety belief) and managed as an integral part of our business, therefore we must never compromise on health, safety, environment or security to achieve our objectives.

We are committed to fostering an incident-free environment worldwide, through:

- Our fundamental conviction that all incidents are preventable
- Setting health, safety, environmental and security objectives specific to Technip Energies for the scope of our activities and extending them in a life cycle perspective to achieve continual improvement of the HSES management system and to continually enhance our HSES performance
- Fostering a leadership culture driven by engagement and accountability to ensure physical and mental health, safety, environment and security and a culture where we look after each other
- Committing and allocating adequate resources and expertise to continually and proactively eliminate hazards, reduce risks and prevent injury, ill health and environmental impact related to our activities, through engineering, process improvements, technologies and on-site execution
- Operating in a manner that protects the environment by providing sustainable solutions to minimize our carbon and environmental footprint while improving our energy and resource efficiency
- Securing our people, assets, technology, sensitive information and reputation
- Fulfilling, and when we deem necessary, exceeding legal, compliance and other obligations to meet our foundational beliefs
- Implementing and encouraging consultation and participation of workers.

Our success and continual improvement will be measured through the reduction of incidents, risks, and environmental footprint with clear and meaningful performance indicators.

HSES is everyone's responsibility. Every person is encouraged and expected to stop any work if they consider conditions are unsafe, in any way.

To comply with this policy is mandatory and the responsibility of all employees and all of those engaged and working to execute our activities. Visible commitment of management is the enabler of this compliance.

Arnaud Pieton
Chief Executive Officer
February 2021



PROJECT DRAGON
LANZATECH
PORT TALBOT, WALES



FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

<i>ENGINEER REFERENCE</i>					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	30 of 33
202947C	050	PP		00814		
<i>CLIENT REFERENCE</i>						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

APPENDIX B: ESG ROADMAP 2022-2023



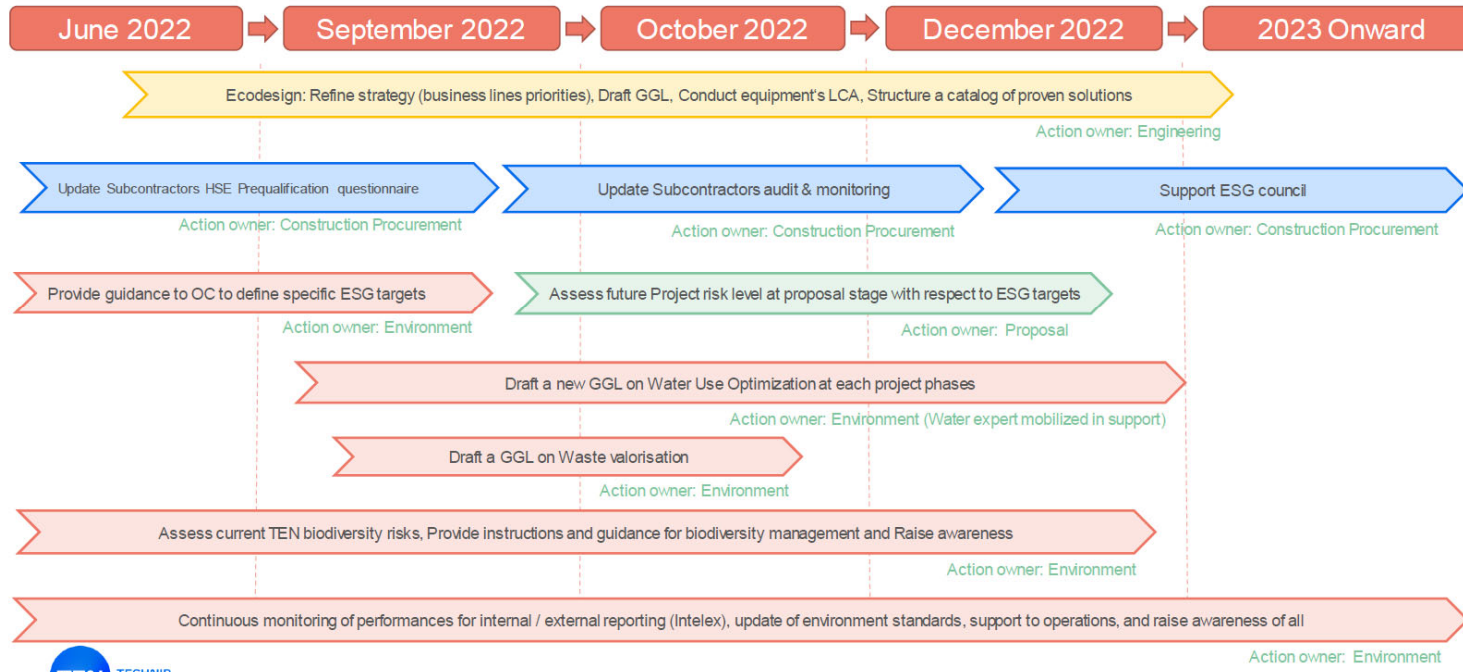
PROJECT DRAGON
LANZATECH
PORT TALBOT, WALES



FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	31 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

Environmental Action Plan 2022 - 2023



Action owner: Environment



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	32 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

APPENDIX C: PROJECT SUSTAINABILITY POLICY [HOLD]



PROJECT DRAGON

LANZATECH



PORT TALBOT, WALES

FRAMEWORK CEMP – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

ENGINEER REFERENCE					Rev.	Page
Project	Unit No	Doc. Type	Code	Serial No	2	33 of 33
202947C	050	PP		00814		
CLIENT REFERENCE						
Project Code	Area/Facility Code	Originator	Discipline	Doc Type	Sequential No	

End of document

UNEXPLODED BOMB RISK MAP



SITE LOCATION

Map Centre: 276544,188579



LEGEND

- High:** Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.
- Moderate:** Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.
- Low:** Areas indicated as having 15 bombs per 1000acre or less.

- military
- industry
- UXO find
- transport
- dock
- Luftwaffe targets
- utilities
- Bombing decoy
- other

How to use your Unexploded Bomb (UXB) risk map?

The map indicates the potential for Unexploded Bombs (UXB) to be present as a result of World War Two (WWII) bombing.

You can incorporate the map into your preliminary risk assessment* for potential Unexploded Ordnance (UXO) for a site. Using this map, you can make an informed decision as to whether more in-depth detailed risk assessment* is necessary.

What do I do if my site is in a moderate or high risk area?

Generally, we recommend that a detailed UXO desk study and risk assessment is undertaken for sites in a moderate or high UXB risk area.

Similarly, if your site is near to a designated Luftwaffe target or bombing decoy then additional detailed research is recommended.

More often than not, this further detailed research will conclude that the potential for a significant UXO hazard to be present on your site is actually low.

Never plan site work or undertake a risk assessment using these maps alone. More detail is required, particularly where there may be a source of UXO from other military operations which are not reflected on these maps.

If my site is in a low risk area, do I need to do anything?

If both the map and other research confirms that there is a low potential for UXO to be present on your site then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

A low risk really means that there is no greater probability of encountering UXO than anywhere else in the UK.

If you are unsure whether other sources of UXO may be present, you can ask for one of our **pre-desk study assessments (PDSA)**

If I have any questions, who do I contact?

tel: **+44 (0) 1993 886682**

email: **uxo@zetica.com**

web: **www.zeticauxo.com**

The information in this UXB risk map is derived from a number of sources and should be used in conjunction with the accompanying notes on our website: (<https://zeticauxo.com/downloads-and-resources/risk-maps/>)

Zetica cannot guarantee the accuracy or completeness of the information or data used and cannot accept any liability for any use of the maps. These maps can be used as part of a technical report or similar publication, subject to acknowledgment. The copyright remains with Zetica Ltd.

It is important to note that this map is not a UXO risk assessment and should not be reported as such when reproduced.

*Preliminary and detailed UXO risk assessments are advocated as good practice by industry guidance such as CIRIA C681 'Unexploded Ordnance (UXO), a guide for the construction industry'.

Design Risk Assessment

Document control		2022s0514 Outline Surface Water Drainage Strategy			
Contributing designers	Revision	Purpose of issue	Checked	Reviewed	Date
Faye Tomalin	P01	Planning / SAB pre-application consultation	René Dobson	René Dobson	02/06/2023

Health and Safety Considerations

Stage 1 Identify				Stage 2 Eliminate / Reduce	Stage 3 Inform		Stage 4 Control	
Ref. no.	Project element, material or activity	Key health and safety <u>hazards</u> and their possible effects	<u>People/ environment</u> at risk from the hazard	<u>Design</u> measures taken to eliminate the hazard or reduce the risk	Significant <u>residual</u> hazards and risks	<u>Communication</u> method	Risk owner(s)	<u>Proposed control</u> measures
Guidance	Consider all aspects involved in each stage of interface with the site, environment and structure(s).	Record the key hazards and their potential consequences.	Identify the categories of people at risk.	Include obtaining adequate data for design certainty and any further studies carried out during the risk evaluation process. Proposed measures to be taken by constructors and operators are to be included in Stage 4.	Provide details of residual hazards and risks that will need to be communicated and managed.	Record how information is provided, whether on drawings, pre-construction information, buildability statement, specification, reports or H&S File	Record the name of designers, contractors, the client or other stakeholders who are to ensure the significant residual risk is minimised and controlled.	Recommend measures to be taken by the risk owner(s) to minimise and control the significant residual risk.
Design								
Des1	Design of drainage	Hazards: Underground services crossing the site – Currently unknown Risks: striking services, death, injury, damage to infrastructure	Site personnel. Existing infrastructure. Public.	Hazard cannot be eliminated by design. Available information has been reviewed and mapped.	Potential unknown services.	DRA	Designer at detailed stage (identifying known risks) Contractor (construction of the scheme)	Detailed survey of services prior to construction. Liaison with utility providers.
Des2	Design of drainage	Hazard: Ground and groundwater conditions: Known high groundwater level. Possible risk of contaminated ground at depth Risk: Inundation or instability, injury, death, contamination.	Site personnel. Onsite machinery. Natural Environment (watercourses).	Hazard cannot be eliminated by design. Preliminary drainage design assumes largely shallow SuDS features. Pipework may be at depth and cannot be eliminated by design	Ground and groundwater conditions	DRA	Designer (identifying known risks) Contractor (construction of the scheme)	Follow recommendations from the ground investigation report: Some groundwater management may be required to ensure the protection of the earthworks and materials.
Des3	Design of drainage	Hazard: Unexploded ordnance Risk: Striking ordnance, death, injury, damage to infrastructure	Site personnel. Public. Machinery. Infrastructure.	An unexploded ordnance map has been consulted at zeticauxo.com This has highlighted that there is a low risk of finding UXO across the proposed development site.	Low risk from UXO	DRA	Designer (identifying known risks) Contractor (construction of the scheme).	Risk assessments and method statements to be prepared encase UXO is encountered on site.

Design Risk Assessment

Health and Safety Considerations

Stage 1 Identify			Stage 2 Eliminate / Reduce	Stage 3 Inform		Stage 4 Control		
Ref. no.	Project element, material or activity	Key health and safety <u>hazards</u> and their possible effects	<u>People/ environment</u> at risk from the hazard	<u>Design</u> measures taken to eliminate the hazard or reduce the risk	Significant <u>residual</u> hazards and risks	<u>Communication</u> method	Risk owner(s)	<u>Proposed control</u> measures
Des4	Design of above ground SuDS features	<p>Hazard: Excavated SuDS features. Water</p> <p>Risk: Injury and drowning</p>	Site personnel. Public.	<p>Hazard cannot be eliminated. Preliminary design undertaken in accordance with CIRIA C753. Depth of SuDS features have been designed to facilitate hydraulic performance without increased depth of SuDS features more than required.</p>	SuDS features and water.	DRA	Owner/operator/ scheme designer	<p>Detailed design should consider the location of SuDS features next to vehicular access routes to reduce the risk of vehicles entering SuDS assets. Passive surveillance on all above ground SuDS features is good due to the presence of roads and well-used footpaths and good visibility. Features mainly comprise of gravel substrate at road level</p> <p>Maintenance schedule to be prepared.</p>

Design Risk Assessment

Health and Safety Considerations

Stage 1 Identify			Stage 2 Eliminate / Reduce	Stage 3 Inform	Stage 4 Control			
Ref. no.	Project element, material or activity	Key health and safety <u>hazards</u> and their possible effects	<u>People/ environment</u> at risk from the hazard	<u>Design</u> measures taken to eliminate the hazard or reduce the risk	Significant <u>residual</u> hazards and risks	<u>Communication</u> method	Risk owner(s)	Proposed <u>control</u> measures
Construction								
Con1	Excavations	<p>Hazard: Working at height Excavated drainage Features Water Underground services crossing the site Ground and Groundwater conditions</p> <p>Risk: Death, injury, drowning, inundation, striking of services.</p>	Site personnel. Public. Existing Infrastructure.	Hazard cannot be eliminated by design Available information has been reviewed and mapped. Depth of SuDS features have been designed to facilitate hydraulic performance without increased depth of SuDS features more than required.	Potential unknown services.	DRA	Contractor	<p>Early involvement of temporary works designer recommended.</p> <p>Risk assessments and method statements and adequate briefing of site personnel.</p> <p>Follow recommendations arising from ground investigation report.</p> <p>Detailed survey of services prior to construction.</p> <p>Liaison with utility providers.</p> <p>Edge protection/barriers and where possible harnesses.</p> <p>Use inspection chambers instead of manholes to prevent confined space risks.</p>
Con2	Plant/ material deliveries	<p>Hazard: The site can be accessed from the eastern boundary by the Unnamed Port Road Supporting Infrastructure Unauthorised access by members of public.</p> <p>Risk: Public are struck by machinery. Death, injury.</p>	Site personnel. Public.	Hazard cannot be eliminated by design. Inform the public of construction working hours and activities.	Site access	DRA	Contractor	<p>Consider access to site, road width and expected levels of traffic.</p> <p>Risk assessments and method statements and adequate briefing of site personnel.</p> <p>Informing the public of construction activities.</p> <p>Construction compound should be fenced off to prevent public access.</p>

Design Risk Assessment

Health and Safety Considerations

Stage 1 Identify				Stage 2 Eliminate / Reduce	Stage 3 Inform	Stage 4 Control		
Ref. no.	Project element, material or activity	Key health and safety <u>hazards</u> and their possible effects	<u>People/ environment</u> at risk from the hazard	<u>Design</u> measures taken to eliminate the hazard or reduce the risk	Significant <u>residual</u> hazards and risks	<u>Communication</u> method	Risk owner(s)	<u>Proposed control</u> measures
Con 3	Connection of drainage outfall into dock	Hazard: Working near water. Risk: Drowning and inundation.	Site personnel.	Hazard cannot be eliminated by design.	Water	DRA	Contractor	The work is to be undertaken during low tide when outfall depth is available in dry conditions
Con 4	Japanese Knotweed	Hazard: Japanese Knotweed Risk: Pollution and contamination	Natural Environmental Site personnel	Japanese Knotweed should be managed in line with the site and contractors biosecurity policy	Japanese Knotweed	DRA	Contractor	Japanese Knotweed should be managed in line with the site and contractors biosecurity policy
Operation & Maintenance								
O&M1	Drainage system in operation	Hazard: Potential flooding Risk: Site inundation	Maintenance personnel. Residents. Infrastructure.	Hazard cannot be eliminated by design. Design drainage to an appropriate design life and design storm event. Provide safe overland routing for exceedance flows based on site levels.	Flooding during exceedance events.	Operation and maintenance manual (to be prepared) DRA	Asset owner/operator	Regular maintenance in accordance with O&M manual, normal site safety controls, designated overland flow routes
O&M2	Maintenance and inspections of drainage system	Hazard: Water Working at height Risk: Waterborne diseases Injury and death	Maintenance personnel	Hazard cannot be eliminated by design.	Water and working at height.	Operation and maintenance manual (to be prepared)	Asset owner/operator	Edge barriers and harnesses to be used. Inspection and maintenance activities to be undertaken during dry weather periods.
Demolition								
Dem1	Removal of drainage features requiring excavation	Hazards and risks: largely as per the construction stage, except that the removal of the drainage system will increase a risk of flooding to the site.	Site personnel. Public.	Reinstatement of site to greenfield conditions or replacement SuDS based drainage system.	Ground conditions, disturbance of services. Increase of flood risk.	DRA	Demolition contractor	Full as-built records, specifications and maintenance procedures included in O&M manual to aid in planning of demolition. Materials brought to site to be from specified providers.

Design Risk Assessment

Environmental Considerations

Stage 1 Identify				Stage 2 Eliminate / Reduce	Stage 3 Inform	Stage 4 Control		
Ref. no.	Project element, material or activity	Key environmental <u>hazards</u> and their possible effects	<u>Who or what</u> is at risk from the hazard	<u>Design</u> measures taken to eliminate the hazard or reduce the risk	Significant <u>residual</u> hazards and risks	<u>Communication</u> method	Risk owner(s)	Proposed <u>control</u> measures
Guidance	Consider all aspects involved in each stage of interface with the site, environment and structure(s).	Record the key hazards and their potential consequences.	Identify the categories of people, animals or environments at risk.	Include obtaining adequate data for design certainty and any further studies carried out during the risk evaluation process. Proposed measures to be taken by constructors and operators are to be included in Stage 4.	Provide details of residual hazards and risks that will need to be communicated and managed.	Record how information is provided, whether on drawings, pre-construction information, buildability statement, specification, reports or H&S File	Record the name of designers, contractors, the client or other stakeholders who are to ensure the significant residual risk is minimised and controlled.	Recommend measures to be taken by the risk owner(s) to minimise and control the significant residual risk.
Design								
Construction								
Con1	Construction of drainage system	Hazard: Sediment and Oil Risk: Pollution of watercourses/drainage systems during construction, with sediments and oils	Water bodies	Hazard cannot be eliminated by design.	Pollution	Construction Management Plan (to be prepared)	Contractor	Risk assessment and method statement undertaken to avoid pollution during the works. Water from excavations not to be connected to the drainage system. Use of silt curtains, bunded storage tanks, spill kits envisaged. Construction Environmental Management Plan to be prepared and followed.
Con 2	General site clearance	Hazard: Japanese Knotweed Risk: Spread of Invasive Non-native Species	Environment	Hazard cannot be eliminated by design.	Japanese Knotweed	DRA	Contractor	Relevant biosecurity policy and Japanese Knotweed management plan
Operation & Maintenance								
O&M1	Inspection and clearance of drainage elements	Hazard: Removed vegetation and sediment Risk: Pollution	Environment Maintenance personnel	Hazard cannot be eliminated by design.	Pollution	Operation and maintenance manual (to be prepared)	Asset owner/operator	Regular maintenance in accordance with O&M manual, normal site safety controls. Materials/sediments removed to be treated as contaminated and disposed of to a licenced waste management facility

Design Risk Assessment

Environmental Considerations

Stage 1 Identify				Stage 2 Eliminate / Reduce	Stage 3 Inform	Stage 4 Control		
Ref. no.	Project element, material or activity	Key environmental <u>hazards</u> and their possible effects	<u>Who or what</u> is at risk from the hazard	<u>Design</u> measures taken to eliminate the hazard or reduce the risk	Significant <u>residual</u> hazards and risks	<u>Communication</u> method	Risk owner(s)	Proposed <u>control</u> measures
Demolition								
Dem1	Removal of the drainage system/ general demolition activities	Hazards and risks: largely as per the construction stage.	Water bodies, groundwater	SuDS based drainage system to be provided, or site returned to greenfield conditions.	Pollution	Operation and Maintenance manual	Demolition contractor	<p>Full as-built records, specifications and maintenance procedures included in O&M manual to aid in planning of demolition</p> <p>Risk assessment and method statement undertaken to avoid pollution during the works.</p> <p>Water from excavations not to be connected to the drainage system.</p> <p>Use of silt curtains, bunded storage tanks, spill kits envisaged.</p> <p>Any materials brought to site are to be from a licensed supplier.</p>



Dŵr Cymru
Welsh Water

Developer Services
PO Box 3146
Cardiff
CF30 0EH

Tel: +44 (0)800 917 2652
Fax: +44 (0)2920 740472
E.mail: developer.services@dwrcymru.com

Gwasanaethau Datblygu
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Ffacs: +44 (0)2920 740472
E.bost: developer.services@dwrcymru.com

Ms Faye Tomalin
JBA Consulting
8 Kings Chambers
High Street
Newport
Gwent
NP20 1FQ

Date: 19/04/2023
Our Ref: PPA0007739

Dear Ms Tomalin

Grid Ref: 276424 188655
Site Address: Phoenix Wharf, Neath
Development: Industrial Unit

I refer to your pre-planning enquiry received relating to the above site, seeking our views on the capacity of our network of assets and infrastructure to accommodate your proposed development. Having reviewed the details submitted I can provide the following comments which should be taken into account within any future planning application for the development.

APPRAISAL

Firstly, we note that the proposal relates to a manufacturing development on land at Phoenix Wharf and acknowledge that the site comprises of a potential windfall development with no allocated status in the Local Development Plan (LDP). Accordingly, whilst it does not appear an assessment has been previously undertaken of the public sewerage and watermains systems, we offer the following comments as part of our appraisal of this development.

Public Sewerage Network

The proposed development site is located in the immediate vicinity of a combined public sewerage system which drains to Afan New Works Wastewater Treatment Works (WwTW).

You are also advised that some public sewers and lateral drains may not be recorded on our maps of public sewers because they were originally privately owned and were transferred into public ownership by nature of the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011. The presence of such assets may affect the proposal. In order to assist you may contact Dwr Cymru Welsh



Welsh Water is owned by Glas Cymru – a 'not-for-profit' company.
Mae Dŵr Cymru yn eiddo i Glas Cymru – cwmni 'nid-er-elw'.

We welcome correspondence in
Welsh and English

Dŵr Cymru Cyf, a limited company registered in
Wales no 2366777. Registered office: Pentwyn Road,
Nelson, Treharris, Mid Glamorgan CF46 6LY

Rydym yn croesawu gohebiaeth yn y
Gymraeg neu yn Saesneg

Dŵr Cymru Cyf, cwmni cyfyngedig wedi'i gofrestru yng
Nghymru rhif 2366777. Swyddfa gofrestredig: Heol Pentwyn
Nelson, Treharris, Morgannwg Ganol CF46 6LY.

Water on 0800 085 3968 to establish the location and status of the apparatus in and around your site. Please be mindful that under the Water Industry Act 1991 Dwr Cymru Welsh Water has rights of access to its apparatus at all times.

Surface Water Drainage

As of 7th January 2019, this proposed development is subject to Schedule 3 of the Flood and Water Management Act 2010. The development therefore requires approval of Sustainable Drainage Systems (SuDS) features, in accordance with the 'Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems'. As highlighted in these standards, the developer is required to explore and fully exhaust all surface water drainage options in accordance with a hierarchy which states that discharge to a combined sewer shall only be made as a last resort. Disposal should be made through the hierarchical approach, preferring infiltration and, where infiltration is not possible, disposal to a surface water drainage body in liaison with the Land Drainage Authority and/or Natural Resources Wales.

It is therefore recommended that the developer consult with Neath Port Talbot County Borough Council, as the determining SuDS Approval Body (SAB), in relation to their proposals for SuDS features. Please note, DCWW is a statutory consultee to the SAB application process and will provide comments to any SuDS proposals by response to SAB consultation. Please refer to further detailed advice relating to surface water management included in our attached Advice & Guidance note. In addition, please note that no highway or land drainage run-off will be permitted to discharge directly or indirectly into the public sewerage system.

Foul Water Drainage – Sewerage Network

We have considered the impact of domestic foul flows generated by the proposed aviation fuel plant and concluded that flows can be accommodated within the public sewerage system. However, the nearest public sewer comprises a strategic asset in the form of a 1200mm combined sewer located to the south-east and therefore, unless formed into an existing chamber such as SS77881201, any connection would need to be undertaken by Dwr Cymru Welsh Water and borne at the developer's expense.

Accordingly, should a planning application be submitted for this development we will seek to control these points of communication via appropriate planning conditions and therefore recommend that any drainage layout or strategy submitted as part of your application takes this into account. However, should you wish for an alternative connection point to be considered please provide further information to us in the form of a drainage strategy, preferably in advance of a planning application being submitted. In contrast, we acknowledge that the welfare requirements will be subject to temporary private drainage.



You may need to apply to Dwr Cymru Welsh Water for any connection to the public sewer under Section 106 of the Water industry Act 1991. However, if the connection to the public sewer network is either via a lateral drain (i.e. a drain which extends beyond the connecting property boundary) or via a new sewer (i.e. serves more than one property), it is now a mandatory requirement to first enter into a Section 104 Adoption Agreement (Water Industry Act 1991). The design of the sewers and lateral drains must also conform to the Welsh Ministers Standards for Foul Sewers and Lateral Drains, and conform with the publication "Sewers for Adoption"- 7th Edition. Further information can be obtained via the Developer Services pages of www.dwrcymru.com.

SEWAGE TREATMENT

No problems are envisaged with the Waste Water Treatment Works for the treatment of domestic discharges from this site.

WATER SUPPLY

The water supply system in the immediate vicinity has insufficient capacity to serve the development and will also cause detriment to existing customers' water supply. A hydraulic modelling assessment is required to establish the scope of any reinforcement works to be completed in advance of making the connection. As part of the formal planning consultation process, we will seek to ensure that the assessment (and any associated reinforcement works) is completed in advance of the determination of the application or controlled by way of planning condition.

I trust the above information is helpful and will assist you in forming water and drainage strategies that should accompany any future planning application. I also attach copies of our water and sewer extract plans for the area, and a copy of our Planning Guidance Note which provides further information on our approach to the planning process, making connections to our systems and ensuring any existing public assets or infrastructure located within new development sites are protected.



Please note that our response is based on the information provided in your enquiry and should the information change we reserve the right to make a new representation. Should you have any queries or wish to discuss any aspect of our response please do not hesitate to contact our dedicated team of planning officers, either on 0800 917 2652 or via email at developer.services@dwrwymru.com

Please quote our reference number in all communications and correspondence.

Yours faithfully,



Owain George
Planning Liaison Manager
Developer Services

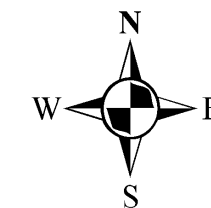
ENC. SEWER PLAN
WATER PLAN
PRE PLANNING NOTES

Please Note that demands upon the water and sewerage systems change continually; consequently the information given above should be regarded as reliable for a maximum period of 12 months from the date of this letter.



Dŵr Cymru
Welsh Water

PPA0007739



LEGEND(Representative of most common features)

Waste network:	
	Foul chamber
	Surface water chamber
	Combined chamber
	Combined sewer overflow
	Special purpose chamber
	Treatment works
	Pumping station
	Outfall
	Lamphole
	Storm Overflow
	Rising main
	Gravity sewer
	Private sewer
	Private sewer subject to Sect. 104 adoption agreement
	Private Sewer Transfer
	Lateral Drain
	Inspection Chamber

NB: Sewer symbol colour indicates the type.
 RED - Combined
 GREEN - Surface Water
 BROWN - Foul
 Purple - Former S24 sewers (for indicative purposes only)

Notes:

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be asbestos cement (AC) or Pitch Fibre (PF). It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation.

Dŵr Cymru Cyfyngedig ('the Company') gives this information as to the position of its underground apparatus by way of general guidance only and on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon in the event of excavations or other works made in the vicinity of the company's apparatus. The onus of locating apparatus before carrying out any excavations rests entirely on you. The information which is supplied by the Company, is done so in accordance with statutory requirements of sections 198 and 199 of the Water Industry Act 1991 which is based upon the best information available and, in particular, but without prejudice to the generality of the foregoing, it should be noted that the records that are available to the Company may not disclose the existence of a water main, service pipe, sewer, lateral drain or disposal main and any associated apparatus laid before 1 September 1989, or, if they do, the particulars thereof including their position underground may not be accurate. It must be understood that the furnishing of this information is entirely without prejudice to the provision of the New Roads and Street Works Act 1991 and the Company's right to be compensated for any damage to its apparatus.

Service pipes are not generally shown but their presence should be anticipated.

**EXACT LOCATIONS OF ALL APPARATUS
TO BE DETERMINED ON SITE.**

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Map Ref: 276814,188612
Map scale: 1:4250
Printed by: Gillian Williams
Printed on: 19 Apr 2023

