ENVIRONMENTAL IMPACT ASSESSMENT REPORT

VOLUME 2: APPENDICES

PROPOSED LARGE SCALE RESIDENTIAL DEVELOPMENT
MONALEEN ROAD, LIMERICK

FEBRUARY 2026

PREPARED BY:

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APPENDIX 7.1 –STORM WATER CALCULATIONS

Design Settings

Rainfall Methodology	FSR
Return Period (years)	5
Additional Flow (%)	0
FSR Region	Scotland and Ireland
M5-60 (mm)	14.800
Ratio-R	0.270
CV	0.750
Time of Entry (mins)	4.00

Maximum Time of Concentration (mins)	30.00
Maximum Rainfall (mm/hr)	250.0
Minimum Velocity (m/s)	1.00
Connection Type	Level Soffits
Minimum Backdrop Height (m)	0.200
Preferred Cover Depth (m)	1.200
Include Intermediate Ground	✓
Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SMH65	0.074	4.00	51.253	1200	561909.094	657196.994	1.425
SMH97	0.134	4.00	50.949	1200	561935.587	657295.805	1.454
SMH66	0.039	4.00	50.670	1200	561892.811	657186.977	1.425
SMH71	0.097	4.00	50.628	1200	561930.102	657180.685	1.425
SMH67			50.518	1200	561889.445	657182.327	1.425
SMH98	0.110	4.00	50.522	1200	561914.488	657346.491	2.857
SMH68			50.356	1200	561890.353	657176.659	1.425
SMH63			50.454	1200	561897.178	657177.478	3.452
SMH62			50.272	1200	561891.823	657174.271	3.255
SMH99			50.155	1200	561909.088	657359.464	2.958
ST9			49.848	1200	561909.401	657161.608	2.924
SMH95	0.074	4.00	50.200	1200	561954.764	657270.328	2.711
SMH72	0.144	4.00	49.793	1200	561962.781	657198.226	1.425
SMH64	0.075	4.00	49.589	1200	561925.985	657159.469	1.425
SMH69			49.029	1200	561940.320	657166.375	3.630
SMH61	0.081	4.00	49.412	1200	561907.823	657148.263	2.300
SMH100			49.407	1200	561906.135	657374.137	2.709
SMH27	0.075	4.00	49.317	1200	561932.718	657148.530	1.425
SMH20	0.113	4.00	48.330	1200	561834.877	657068.672	1.500
SMH60	0.099	4.00	49.344	1200	561904.200	657145.908	1.425
SMH1	0.069	4.00	48.555	1200	561823.532	657087.112	1.425
SMH101	0.076	4.00	48.650	1200	561909.239	657388.802	2.527
SMH16	0.114	4.00	48.581	1200	561872.767	657126.595	3.349
SMH21	0.123	4.00	48.022	1200	561858.639	657030.046	1.500
SMH6			47.269	1200	561822.258	657142.053	1.805
SMH15			48.451	1200	561868.820	657124.033	3.191
SMH22			48.149	1200	561869.765	657011.606	1.715
SMH2			48.337	1200	561822.624	657092.780	1.425
SMH7	0.081	4.00	48.302	1200	561865.295	657121.855	1.425
SMH73			48.204	1200	561994.876	657216.511	1.425
SMH28	0.312	4.00	47.797	1200	561955.416	657111.671	3.074
SMH3			48.149	1200	561825.990	657097.482	1.425
SMH23			48.040	1200	561874.033	657008.410	1.628
SMH8	0.095	4.00	48.043	1200	561854.105	657124.891	1.500
ST1			48.007	1200	561849.788	657121.205	2.633
SMH78	0.130	4.00	47.913	1200	562132.185	657215.417	1.425
SMH18			48.474	1200	561914.707	657086.611	3.967
SMH24			47.898	1200	561880.435	657009.157	1.513
SMH4	0.076	4.00	47.900	1200	561839.290	657105.687	1.500
SMH19			48.177	1200	561919.790	657078.352	3.744
SMH17			47.794	1200	561902.083	657078.836	3.192

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SMH74			47.554	1200	562009.311	657215.479	1.425
SMH9			47.649	1200	561839.142	657149.075	1.500
SMH52			47.658	1200	562073.983	657091.325	1.685
SMH53	0.097	4.00	47.538	1200	562070.859	657106.908	1.500
SMH10	0.065	4.00	47.568	1200	561835.749	657151.877	1.500
SMH40			47.593	1200	562013.959	657207.840	5.215
ST10			47.947	1200	562007.504	657206.366	3.273
SMH59	0.038	4.00	47.477	1200	562070.430	657109.272	1.425
SMH51			47.548	1200	562079.093	657078.658	1.631
SMH25	0.052	4.00	47.472	1200	561903.215	657023.074	1.650
SMH14	0.105	4.00	47.530	1200	561799.146	657170.344	1.425
SMH11			47.485	1200	561831.329	657152.495	1.500
SMH50	0.103	4.00	47.451	1200	562079.435	657072.251	1.561
SMH26	0.095	4.00	47.022	1200	561927.232	657038.020	1.650
SMH36	0.118	4.00	47.157	1200	562066.679	657121.228	4.195
SMH37			46.999	1200	562064.465	657126.203	4.070
SMH118			40.721	1200	561978.718	657474.615	2.284
SMH38			47.119	1200	562058.291	657136.356	4.260
SMH12			47.295	1200	561821.525	657150.482	1.500
SMH35			46.897	1500	562043.794	657111.608	3.788
SMH55	0.065	4.00	47.297	1200	562076.242	657062.921	1.500
SMH103	0.106	4.00	47.321	1200	561925.603	657420.491	3.452
SMH5			47.237	1200	561818.309	657139.480	1.683
SMH39	0.122	4.00	47.358	1200	562036.140	657172.136	4.747
SMH43A			46.676	1200	562043.245	657229.049	4.538
SMH34	0.054	4.00	46.636	1200	562027.478	657102.152	3.464
SMH29		4.00	47.385	1200	561961.411	657101.926	1.425
SMH13			47.161	1200	561814.305	657145.936	1.575
SMH56			47.203	1200	562071.322	657058.464	2.603
SMH33			46.207	1200	562007.609	657087.468	2.946
SMH70	0.170	4.00	50.002	1200	561933.913	657162.548	3.160
SMH75	0.152	4.00	47.203	1200	562048.482	657163.923	1.500
SMH32	0.072	4.00	46.128	1200	561984.443	657073.190	2.776
SMH31			46.123	1200	561980.522	657070.795	2.623
ST2			46.454	1200	561967.313	657072.676	2.906
SMH82	0.153	4.00	46.431	1200	562077.341	657259.150	1.500
SMH117	0.103	4.00	47.062	1200	561925.210	657023.861	1.425
SMH91			46.648	1200	561987.454	657336.447	5.181
SMH44	0.114	4.00	46.492	1200	561936.695	656976.359	1.592
SMH76			46.379	1200	562099.504	657195.367	1.500
SMH45			46.164	1200	561949.601	656984.230	1.500
SMH92			46.529	1200	561983.879	657343.432	5.082
ST8			46.740	1200	562029.769	657085.318	3.192
SMH43	0.086	4.00	46.923	1200	561915.590	656995.525	1.823
SMH49	0.077	4.00	45.894	1200	561974.302	657015.855	1.425
SMH30	0.084	4.00	46.549	1200	561953.891	657054.421	2.361
SMH80			46.101	1200	562071.779	657229.190	2.901
SMH93			46.340	1200	561981.040	657355.433	4.924
SMH58	0.092	4.00	46.609	1200	562045.659	657059.417	2.009
SMH81			46.158	1200	562066.639	657237.181	2.997
SMH46			45.752	1200	561981.774	657003.858	1.511
SMH106	0.177	4.00	46.289	1200	561981.953	657358.703	1.425

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SMH83			46.247	1200	562059.802	657248.435	1.500
SMH84			46.259	1200	562056.049	657250.607	1.530
SMH85			46.244	1200	562051.859	657251.327	4.273
ST5			46.156	1200	561988.075	657062.357	2.608
SMH86			46.192	1200	562044.910	657251.133	4.250
SMH107			46.169	1200	561983.708	657366.296	1.425
SMH47			45.445	1200	562014.388	657023.743	1.796
SMH87	0.136	4.00	46.278	1200	562038.088	657250.942	4.364
ST11			46.196	1200	562074.928	657231.143	2.900
SMH41			46.481	1200	562056.948	657232.729	3.675
ST4			46.721	1200	561930.542	656986.469	1.759
SMH88	0.068	4.00	46.026	1200	562036.553	657258.747	4.145
SMH108			45.794	1200	561989.430	657379.574	1.425
SMH90	0.297	4.00	45.634	1200	562011.059	657301.978	4.064
SMH96	0.020	4.00	45.523	1200	562019.997	657275.002	1.523
SMH109			45.491	1200	561992.046	657390.554	1.425
SMH57			46.599	1200	562053.024	657047.306	2.422
ST6			46.242	1200	561957.436	657043.528	1.982
SMH104			44.988	1200	561975.182	657417.578	1.762
SMH89	0.130	4.00	45.248	1200	562026.911	657278.985	3.609
SMH48	0.066	4.00	45.664	1200	562007.012	657035.822	2.047
SMH105			44.891	1200	561998.272	657410.247	4.391
SMH110			44.525	1200	561993.097	657410.001	1.680
SMH111			44.462	1200	561987.557	657416.843	1.500
SMH112	0.139	4.00	44.172	1200	561993.683	657420.676	3.833
SMH42			47.666	1200	562021.371	657212.361	5.340
SMH113			43.818	1200	561993.332	657428.802	3.538
SMH114			43.629	1200	561991.573	657433.915	3.381
SMH115			41.373	1200	561974.013	657468.618	1.873
ST14			38.375	1800	561991.639	657493.016	2.584
ST3			46.313	2100	562050.563	657243.183	4.228
SMH77	0.078	4.00	46.272	1350	562093.298	657205.437	1.650
SMH79	0.163	4.00	46.248	1200	562089.263	657200.547	1.425
SMH94			46.165	1200	562002.853	657366.756	4.768
ST12			44.619	2100	561998.899	657418.140	4.245
SMH102			47.516	1200	561921.512	657417.219	2.425
SMH116			38.053	1200	561988.207	657496.979	2.293

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)	Design Flow (l/s)
P7	SMH7	SMH4	30.621	0.600	46.877	46.475	0.402	76.2	225	4.34	57.9	
P1	SMH1	SMH2	5.740	0.600	47.130	46.912	0.218	26.3	225	4.04	59.1	
P2	SMH2	SMH3	5.740	0.600	46.912	46.724	0.188	30.5	225	4.08	58.9	
P3	SMH3	SMH4	15.627	0.600	46.724	46.475	0.249	62.8	225	4.24	58.4	
P4	SMH4	SMH5	39.776	0.600	46.400	45.737	0.663	60.0	300	4.67	56.4	
P8	SMH8	SMH9	28.439	0.600	46.543	46.149	0.394	72.2	300	4.26	58.0	
P9	SMH9	SMH10	4.400	0.600	46.149	46.068	0.081	54.3	300	4.29	57.9	
P10	SMH10	SMH11	4.463	0.600	46.068	45.985	0.083	53.8	300	4.32	58.9	
P11	SMH11	SMH12	10.009	0.600	45.985	45.795	0.190	52.7	300	4.40	58.7	
P12	SMH12	SMH13	8.532	0.600	45.795	45.661	0.134	63.7	300	4.47	58.5	
P14	SMH14	SMH13	28.732	0.600	46.105	45.736	0.369	77.9	225	4.32	57.7	
P13	SMH13	SMH5	7.597	0.600	45.586	45.562	0.024	316.5	450	4.59	57.1	
P5	SMH5	SMH6	4.713	0.600	45.554	45.539	0.015	314.2	450	4.74	56.2	
SP1	SMH6	ST1	36.385	0.600	45.464	45.374	0.090	404.3	450	5.34	53.7	
P6	ST1	SMH15	19.241	0.600	45.374	45.260	0.114	168.8	225	5.66	55.2	2.0
P15	SMH15	SMH16	4.648	0.600	45.260	45.232	0.028	166.0	225	5.73	53.5	2.0
P16	SMH16	SMH17	55.981	0.600	45.232	44.902	0.330	169.6	225	6.67	50.3	26.8
P20	SMH20	SMH21	45.350	0.600	46.830	46.522	0.308	147.2	300	4.58	57.4	
P21	SMH21	SMH22	21.537	0.600	46.522	46.434	0.088	244.7	300	4.94	56.5	
P22	SMH22	SMH23	5.332	0.600	46.434	46.412	0.022	242.4	300	5.03	56.4	
P23	SMH23	SMH24	6.445	0.600	46.412	46.385	0.027	238.7	300	5.14	56.2	
P24	SMH24	SMH25	26.695	0.600	46.385	45.972	0.413	64.6	300	5.36	55.2	
P25	SMH25	SMH26	28.288	0.600	45.822	45.372	0.450	62.9	450	5.55	54.3	
P26	SMH26	SMH17	47.942	0.600	45.372	45.254	0.118	406.3	450	6.35	52.8	

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
P7	1.500	59.6	12.7	1.200	1.200	0.081	0.0	71	1.202
P1	2.560	101.8	11.1	1.200	1.200	0.069	0.0	50	1.688
P2	2.376	94.5	11.0	1.200	1.200	0.069	0.0	51	1.598
P3	1.653	65.7	10.9	1.200	1.200	0.069	0.0	62	1.234
P4	2.033	143.7	34.7	1.200	1.200	0.227	0.0	100	1.683
P8	1.853	130.9	15.0	1.200	1.200	0.095	0.0	68	1.246
P9	2.137	151.1	14.9	1.200	1.200	0.095	0.0	63	1.374
P10	2.148	151.9	25.5	1.200	1.200	0.160	0.0	83	1.611
P11	2.171	153.4	25.4	1.200	1.200	0.160	0.0	82	1.622
P12	1.973	139.5	25.3	1.200	1.200	0.160	0.0	86	1.513
P14	1.483	59.0	16.5	1.200	1.200	0.105	0.0	81	1.277
P13	1.137	180.8	41.0	1.125	1.225	0.265	0.0	145	0.928
P5	1.141	181.5	74.9	1.233	1.280	0.492	0.0	201	1.088
SP1	1.005	159.8	71.6	1.355	2.183	0.492	0.0	211	0.979
P6	1.003	39.9	2.0	2.408	2.966	0.492	0.0	34	0.523
P15	1.012	40.2	2.0	2.966	3.124	0.492	0.0	34	0.527
P16	1.001	39.8	26.8	3.124	2.667	0.705	0.0	136	1.073
P20	1.293	91.4	17.5	1.200	1.200	0.113	0.0	89	1.005
P21	1.000	70.7	36.1	1.200	1.415	0.235	0.0	152	1.006
P22	1.005	71.1	36.0	1.415	1.328	0.235	0.0	151	1.008
P23	1.013	71.6	35.9	1.328	1.213	0.235	0.0	150	1.014
P24	1.958	138.4	35.2	1.213	1.200	0.235	0.0	103	1.645
P25	2.567	408.3	42.3	1.200	1.200	0.288	0.0	97	1.686
P26	1.002	159.4	54.8	1.200	2.090	0.383	0.0	181	0.912

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)	Design Flow (l/s)
P17	SMH17	SMH18	14.826	0.600	44.602	44.553	0.049	302.6	525	6.86	52.6	85.8
P27	SMH27	SMH28	43.287	0.600	47.892	46.372	1.520	28.5	225	4.29	57.6	
P29	SMH29	SMH31	36.529	0.600	45.960	44.698	1.262	28.9	225	4.25	57.9	20.0
P28	SMH28	SMH18	47.804	0.600	44.723	44.605	0.118	405.1	525	5.01	55.8	
P18	SMH18	SMH19	9.698	0.600	44.507	44.433	0.074	131.1	525	6.94	52.5	140.6
SP2	SMH19	ST2	49.330	0.600	44.433	44.193	0.240	205.5	525	7.47	54.1	140.6
P19	ST2	SMH31	8.026	0.600	43.548	43.500	0.048	167.2	525	7.55	56.9	
P30	SMH30	SMH31	28.801	0.600	44.188	44.018	0.170	169.4	225	5.27	57.7	
P31	SMH31	SMH32	7.105	0.600	43.500	43.476	0.024	296.0	525	7.64	50.3	185.9
P50	SMH51	SMH50	6.416	0.600	45.917	45.890	0.027	237.6	300	4.60	58.7	
P51	SMH52	SMH51	13.659	0.600	45.973	45.917	0.056	243.9	300	4.49	57.7	
P52	SMH53	SMH52	15.885	0.600	46.038	45.973	0.065	244.4	300	4.26	56.5	
P54	SMH50	SMH55	10.687	0.600	45.890	45.797	0.093	114.9	300	4.72	53.9	
P55	SMH55	SMH56	6.639	0.600	45.797	45.703	0.094	70.6	300	4.78	53.5	
P56	SMH56	SMH57	21.432	0.600	44.600	44.177	0.423	50.7	300	4.94	53.1	
SP8	SMH58	ST8	35.090	0.600	44.600	44.393	0.207	169.5	225	4.58	56.6	
P58	ST8	SMH34	12.897	0.600	43.548	43.472	0.076	169.7	225	4.80	56.2	
P57	SMH57	SMH47	45.254	0.600	44.177	43.874	0.303	149.4	300	5.53	50.8	
P117	SMH117	SMH45	46.535	0.600	45.637	44.739	0.898	51.8	225	4.43	56.5	
SP4	SMH43	ST4	19.707	0.600	45.100	44.962	0.138	142.8	225	4.30	57.7	
P43	ST4	SMH44	10.405	0.600	44.962	44.900	0.062	167.8	225	4.47	56.9	1.0
P44	SMH44	SMH45	12.986	0.600	44.900	44.739	0.161	80.7	225	4.62	56.0	18.2
P45	SMH45	SMH46	37.688	0.600	44.664	44.252	0.412	91.5	300	5.00	53.2	31.5
SP6	SMH49	ST6	35.340	0.600	44.469	44.260	0.209	169.1	225	4.59	56.5	

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
P17	1.282	277.6	85.8	2.667	3.396	1.088	0.0	200	1.136
P27	2.461	97.8	11.8	1.200	1.200	0.075	0.0	52	1.671
P29	2.441	97.0	20.0	1.200	1.200	0.000	0.0	69	1.932
P28	1.106	239.5	58.5	2.549	3.344	0.387	0.0	176	0.921
P18	1.955	423.1	140.6	3.442	3.219	1.475	0.0	208	1.765
SP2	1.558	337.3	140.6	3.219	1.736	1.475	0.0	236	1.491
P19	1.729	374.3	227.4	2.381	2.098	1.475	0.0	296	1.809
P30	1.001	39.8	25.3	2.136	1.880	0.161	0.0	131	1.059
P31	1.296	280.6	185.9	2.098	2.127	1.636	0.0	313	1.382
P50	1.015	71.8	15.4	1.331	1.261	0.097	0.0	94	0.813
P51	1.002	70.8	15.2	1.385	1.331	0.097	0.0	94	0.803
P52	1.001	70.8	14.9	1.200	1.385	0.097	0.0	93	0.796
P54	1.466	103.6	29.2	1.261	1.200	0.200	0.0	109	1.265
P55	1.873	132.4	38.5	1.200	1.200	0.265	0.0	110	1.630
P56	2.214	156.5	38.2	2.303	2.122	0.265	0.0	100	1.838
SP8	1.001	39.8	14.2	1.784	2.122	0.092	0.0	93	0.919
P58	1.001	39.8	14.1	2.967	2.939	0.092	0.0	93	0.918
P57	1.284	90.8	36.5	2.122	1.271	0.265	0.0	132	1.216
P117	1.821	72.4	15.8	1.200	1.200	0.103	0.0	72	1.469
SP4	1.092	43.4	13.4	1.598	1.534	0.086	0.0	86	0.965
P43	1.006	40.0	1.0	1.534	1.367	0.086	0.0	24	0.423
P44	1.457	57.9	18.2	1.367	1.200	0.200	0.0	87	1.294
P45	1.644	116.2	31.5	1.200	1.200	0.303	0.0	106	1.404
SP6	1.002	39.9	11.8	1.200	1.757	0.077	0.0	84	0.876

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)	Design Flow (l/s)
P49	ST6	SMH30	12.104	0.600	44.260	44.188	0.072	168.1	225	4.79	55.7	
P46	SMH46	SMH47	38.198	0.600	44.241	43.945	0.296	129.0	300	5.46	51.2	31.5
P47	SMH47	SMH48	12.841	0.600	43.649	43.623	0.026	493.9	375	5.79	50.1	68.0
SP5	SMH48	ST5	33.912	0.600	43.617	43.548	0.069	491.5	450	6.41	48.4	68.0
P48	ST5	SMH32	11.027	0.600	43.548	43.502	0.046	239.7	375	6.57	47.9	
P32	SMH32	SMH33	27.213	0.600	43.352	43.261	0.091	299.0	525	7.99	46.0	254.9
P33	SMH33	SMH34	24.943	0.600	43.261	43.178	0.083	300.5	525	8.31	45.0	254.9
P34	SMH34	SMH35	18.858	0.600	43.172	43.109	0.063	299.3	525	8.56	44.2	267.4
P35	SMH35	SMH36	24.825	0.600	43.109	42.962	0.147	168.9	225	8.97	43.3	2.0
P59	SMH59	SMH36	12.531	0.600	46.052	45.732	0.320	39.2	225	4.10	58.9	
P36	SMH36	SMH37	5.445	0.600	42.962	42.929	0.033	165.0	225	9.06	43.1	19.0
P37	SMH37	SMH38	11.883	0.600	42.929	42.859	0.070	169.8	225	9.26	42.7	19.0
P38	SMH38	SMH39	42.082	0.600	42.859	42.611	0.248	169.7	225	9.96	41.3	19.0
P39	SMH39	SMH40	39.437	0.600	42.611	42.378	0.233	169.3	225	10.61	40.1	23.6
P60	SMH60	SMH16	36.892	0.600	47.919	47.155	0.764	48.3	225	4.33	56.7	
P64	SMH64	SMH61	21.341	0.600	48.164	47.987	0.177	120.6	225	4.30	58.0	
P61	SMH61	SMH62	30.535	0.600	47.112	47.017	0.095	321.4	375	4.81	55.8	
P65	SMH65	SMH66	19.117	0.600	49.828	49.245	0.583	32.8	225	4.14	58.5	
P66	SMH66	SMH67	5.740	0.600	49.245	49.093	0.152	37.8	225	4.18	58.3	
P67	SMH67	SMH68	5.740	0.600	49.093	48.931	0.162	35.4	225	4.23	58.1	
P68	SMH68	SMH62	2.804	0.600	48.931	48.847	0.084	33.4	225	4.25	58.0	
P62	SMH62	SMH63	4.856	0.600	47.017	47.002	0.015	323.7	375	4.89	54.3	
SP9	SMH63	ST9	25.226	0.600	47.002	46.924	0.078	323.4	525	5.23	52.7	
P63	ST9	SMH70	13.907	0.600	46.924	46.842	0.082	169.6	225	5.46	51.8	3.5

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
P49	1.005	40.0	11.7	1.757	2.136	0.077	0.0	83	0.874
P46	1.382	97.7	31.5	1.211	1.200	0.303	0.0	117	1.236
P47	0.808	89.3	68.0	1.421	1.666	0.569	0.0	246	0.887
SP5	0.910	144.7	68.0	1.597	2.158	0.635	0.0	217	0.896
P48	1.166	128.7	82.4	2.233	2.251	0.635	0.0	219	1.234
P32	1.290	279.2	254.9	2.251	2.421	2.343	0.0	397	1.453
P33	1.287	278.5	254.9	2.421	2.933	2.343	0.0	398	1.449
P34	1.289	279.1	267.4	2.939	3.263	2.490	0.0	415	1.457
P35	1.003	39.9	2.0	3.563	3.970	2.490	0.0	34	0.523
P59	2.096	83.4	6.1	1.200	1.200	0.038	0.0	41	1.232
P36	1.015	40.4	19.0	3.970	3.845	2.647	0.0	109	1.000
P37	1.000	39.8	19.0	3.845	4.035	2.647	0.0	109	0.989
P38	1.001	39.8	19.0	4.035	4.522	2.647	0.0	109	0.989
P39	1.002	39.8	23.6	4.522	4.990	2.768	0.0	124	1.042
P60	1.887	75.0	15.2	1.200	1.201	0.099	0.0	68	1.483
P64	1.189	47.3	11.7	1.200	1.200	0.075	0.0	76	0.989
P61	1.005	111.0	23.5	1.925	2.880	0.155	0.0	117	0.803
P65	2.292	91.1	11.8	1.200	1.200	0.074	0.0	54	1.586
P66	2.135	84.9	17.9	1.200	1.200	0.113	0.0	70	1.701
P67	2.205	87.7	17.8	1.200	1.200	0.113	0.0	68	1.733
P68	2.272	90.3	17.8	1.200	1.200	0.113	0.0	67	1.773
P62	1.001	110.6	39.5	2.880	3.077	0.269	0.0	155	0.921
SP9	1.240	268.4	38.4	2.927	2.399	0.269	0.0	133	0.890
P63	1.001	39.8	3.5	2.699	2.935	0.269	0.0	45	0.623

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)	Design Flow (l/s)
P69	SMH70	SMH69	7.463	0.600	46.842	46.593	0.249	30.0	225	5.51	58.7	
SP10	SMH69	ST10	78.185	0.600	45.399	44.674	0.725	107.8	375	6.26	54.6	30.5
P70	ST10	SMH40	7.910	0.600	44.674	44.627	0.047	168.3	225	6.39	48.8	1.0
P71	SMH71	SMH72	37.089	0.600	49.203	48.368	0.835	44.4	225	4.31	57.6	
P72	SMH72	SMH73	36.938	0.600	48.368	46.779	1.589	23.2	225	4.54	56.6	
P73	SMH73	SMH74	13.812	0.600	46.779	46.129	0.650	21.2	225	4.62	56.2	
P74	SMH74	SMH40	11.537	0.600	46.129	46.061	0.068	169.7	225	4.81	58.4	
P40	SMH40	SMH42	8.682	0.600	42.378	42.326	0.052	167.0	300	10.73	39.8	62.8
P43A	SMH42	SMH43A	27.513	0.600	42.326	42.213	0.113	243.5	300	11.19	39.0	62.8
SP3	SMH43A	ST3	16.999	0.600	42.138	42.085	0.053	320.7	375	11.47	38.1	62.8
P75	SMH75	SMH76	59.933	0.600	45.703	44.879	0.824	72.7	300	4.54	54.7	
P78	SMH78	SMH76	38.341	0.600	46.488	44.954	1.534	25.0	225	4.24	58.5	
P79	SMH79	SMH80	33.558	0.600	44.823	44.625	0.198	169.5	225	4.56	56.7	
SP11	SMH77	ST11	31.595	0.600	44.622	44.544	0.078	405.1	450	5.20	54.0	
P77	ST11	SMH80	3.501	0.600	43.296	43.275	0.021	166.7	225	5.26	51.6	3.0
P80	SMH80	SMH81	9.501	0.600	43.200	43.161	0.039	243.6	300	5.41	50.5	28.5
P81	SMH81	SMH41	50.161	0.600	43.161	42.956	0.205	244.7	300	6.25	48.0	28.5
P41	SMH41	ST3	12.250	0.600	42.806	42.775	0.031	395.2	450	6.45	37.7	28.5
P42	ST3	SMH85	6.531	0.600	42.085	42.046	0.039	167.5	225	11.58	37.9	15.0
P82	SMH82	SMH83	20.553	0.600	44.931	44.747	0.184	111.7	300	4.23	58.2	
P83	SMH83	SMH84	4.311	0.600	44.747	44.729	0.018	239.5	300	4.30	57.9	
P84	SMH84	SMH85	4.251	0.600	44.729	44.711	0.018	236.2	300	4.37	57.7	
P85	SMH85	SMH86	6.952	0.600	41.971	41.942	0.029	239.7	300	11.70	57.2	38.9
P86	SMH86	SMH87	6.825	0.600	41.942	41.914	0.028	243.8	300	11.81	38.0	38.9

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
P69	2.398	95.4	69.8	2.935	2.211	0.438	0.0	144	2.614
SP10	1.744	192.6	30.5	3.255	2.898	0.438	0.0	100	1.285
P70	1.005	39.9	1.0	3.048	2.741	0.438	0.0	24	0.423
P71	1.968	78.2	15.1	1.200	1.200	0.097	0.0	67	1.536
P72	2.725	108.3	37.0	1.200	1.200	0.241	0.0	90	2.469
P73	2.851	113.3	36.8	1.200	1.200	0.241	0.0	88	2.558
P74	1.001	39.8	38.2	1.200	1.307	0.241	0.0	178	1.135
P40	1.214	85.8	62.8	4.915	5.040	3.448	0.0	191	1.322
P43A	1.003	70.9	62.8	5.040	4.163	3.448	0.0	221	1.128
SP3	1.006	111.1	62.8	4.163	3.853	3.448	0.0	202	1.035
P75	1.845	130.4	22.6	1.200	1.200	0.152	0.0	84	1.394
P78	2.627	104.5	20.6	1.200	1.200	0.130	0.0	67	2.051
P79	1.001	39.8	25.0	1.200	1.251	0.163	0.0	130	1.057
SP11	1.004	159.6	52.7	1.200	1.202	0.360	0.0	178	0.905
P77	1.010	40.1	3.0	2.675	2.601	0.360	0.0	42	0.598
P80	1.003	70.9	28.5	2.601	2.697	0.523	0.0	132	0.949
P81	1.000	70.7	28.5	2.697	3.225	0.523	0.0	132	0.947
P41	1.016	161.6	28.5	3.225	3.088	0.523	0.0	127	0.772
P42	1.007	40.1	15.0	4.003	3.973	3.971	0.0	95	0.937
P82	1.487	105.1	24.1	1.200	1.200	0.153	0.0	98	1.215
P83	1.011	71.5	24.0	1.200	1.230	0.153	0.0	119	0.913
P84	1.019	72.0	23.9	1.230	1.233	0.153	0.0	119	0.917
P85	1.011	71.5	38.9	3.973	3.950	4.124	0.0	158	1.032
P86	1.002	70.9	38.9	3.950	4.064	4.124	0.0	158	1.025

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)	Design Flow (l/s)
P87	SMH87	SMH88	7.955	0.600	41.914	41.881	0.033	241.1	300	11.94	37.9	51.7
P88	SMH88	SMH89	22.418	0.600	41.881	41.789	0.092	243.7	300	12.31	37.7	56.3
P95	SMH95	SMH96	65.400	0.600	47.489	44.098	3.391	19.3	225	4.36	57.5	
P96	SMH96	SMH89	7.979	0.600	44.000	43.775	0.225	35.5	225	4.42	57.2	
P89	SMH89	SMH90	27.901	0.600	41.639	41.570	0.069	404.4	450	12.78	37.2	73.2
P90	SMH90	SMH91	41.776	0.600	41.570	41.467	0.103	405.6	450	13.47	36.5	93.9
P91	SMH91	SMH92	7.847	0.600	41.467	41.447	0.020	392.4	450	13.60	36.3	93.9
P92	SMH92	SMH93	12.332	0.600	41.447	41.416	0.031	397.8	450	13.80	35.6	93.9
P93	SMH93	SMH94	7.735	0.600	41.416	41.397	0.019	407.1	450	13.93	34.3	93.9
P106	SMH106	SMH107	7.793	0.600	44.864	44.744	0.120	64.9	225	4.08	58.9	
P107	SMH107	SMH108	14.458	0.600	44.744	44.369	0.375	38.6	225	4.19	58.2	
P108	SMH108	SMH109	11.287	0.600	44.369	44.066	0.303	37.3	225	4.28	57.8	
P109	SMH109	SMH110	17.850	0.600	44.066	43.188	0.878	20.3	225	4.38	57.8	
P110	SMH111	SMH110	10.125	0.600	42.962	42.920	0.042	241.1	300	5.71	57.3	
P111	SMH104	SMH111	12.397	0.600	43.226	42.962	0.264	47.0	300	5.54	34.0	
P97	SMH97	SMH98	54.902	0.600	49.495	47.665	1.830	30.0	225	4.38	57.4	
P98	SMH98	SMH99	14.052	0.600	47.665	47.197	0.468	30.0	225	4.48	57.0	
P99	SMH99	SMH100	14.967	0.600	47.197	46.698	0.499	30.0	225	4.58	56.6	
P100	SMH100	SMH101	14.990	0.600	46.698	46.198	0.500	30.0	225	4.69	56.1	
P101	SMH101	SMH102	30.954	0.600	46.123	45.091	1.032	30.0	300	4.87	55.4	
P103	SMH103	SMH104	52.175	0.600	43.869	43.226	0.643	81.1	300	5.45	54.1	
P104	SMH110	SMH105	5.181	0.600	42.845	42.828	0.017	304.8	375	5.79	33.9	
SP13	SMH105	ST12	10.094	0.600	40.500	40.374	0.126	80.1	375	5.87	33.1	
P112	SMH112	SMH113	8.134	0.600	40.339	40.291	0.048	169.5	225	15.02	59.1	39.1

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
P87	1.008	71.3	51.7	4.064	3.845	4.260	0.0	190	1.096
P88	1.003	70.9	56.3	3.845	3.159	4.328	0.0	202	1.108
P95	2.993	119.0	11.6	2.486	1.200	0.074	0.0	47	1.913
P96	2.204	87.6	14.6	1.298	1.248	0.094	0.0	62	1.646
P89	1.005	159.8	73.2	3.159	3.614	4.553	0.0	214	0.984
P90	1.003	159.5	93.9	3.614	4.731	4.850	0.0	248	1.042
P91	1.020	162.2	93.9	4.731	4.632	4.850	0.0	246	1.055
P92	1.013	161.1	93.9	4.632	4.474	4.850	0.0	247	1.051
P93	1.001	159.2	93.9	4.474	4.318	4.850	0.0	249	1.041
P106	1.625	64.6	28.2	1.200	1.200	0.177	0.0	104	1.573
P107	2.113	84.0	27.9	1.200	1.200	0.177	0.0	89	1.905
P108	2.150	85.5	27.7	1.200	1.200	0.177	0.0	87	1.920
P109	2.915	115.9	27.7	1.200	1.112	0.177	0.0	74	2.398
P110	1.008	71.3	66.2	1.200	1.305	0.426	0.0	230	1.139
P111	2.300	162.6	39.3	1.462	1.200	0.426	0.0	100	1.904
P97	2.397	95.3	20.9	1.229	2.632	0.134	0.0	72	1.935
P98	2.396	95.3	37.7	2.632	2.733	0.244	0.0	98	2.257
P99	2.397	95.3	37.4	2.733	2.484	0.244	0.0	98	2.258
P100	2.398	95.3	37.1	2.484	2.227	0.244	0.0	97	2.250
P101	2.881	203.6	48.0	2.227	2.125	0.320	0.0	99	2.371
P103	1.746	123.5	62.5	3.152	1.462	0.426	0.0	151	1.751
P104	1.032	114.0	55.4	1.305	1.688	0.603	0.0	184	1.025
SP13	2.025	223.7	54.1	4.016	3.870	0.603	0.0	125	1.678
P112	1.001	39.8	39.1	3.608	3.302	5.592	0.0	181	1.136

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)	Design Flow (l/s)
P113	SMH113	SMH114	5.372	0.600	40.280	40.248	0.032	167.9	225	15.11	58.9	39.1
P114	SMH114	SMH115	38.930	0.600	40.248	39.948	0.300	129.8	225	15.67	57.9	39.1
P118	SMH115	SMH118	7.622	0.600	39.500	39.296	0.204	37.4	225	15.73	32.9	39.1
SP14	SMH118	ST14	22.484	0.600	38.437	36.950	1.487	15.1	225	15.84	32.0	39.1
P76	SMH76	SMH77	11.829	0.600	44.879	44.772	0.107	110.5	300	4.67	56.2	
SP12	SMH94	ST12	51.536	0.600	41.397	41.270	0.127	405.8	450	14.79	34.0	93.9
P94	ST12	SMH112	5.800	0.600	40.374	40.339	0.035	165.7	225	14.88	33.9	15.0
P102	SMH102	SMH103	5.239	0.600	45.091	45.069	0.022	238.1	300	4.95	55.0	
P115	ST14	SMH116	5.243	0.600	35.791	35.760	0.031	169.1	225	15.93	32.7	15.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
P113	1.006	40.0	39.1	3.313	3.156	5.592	0.0	181	1.142
P114	1.146	45.6	39.1	3.156	1.200	5.592	0.0	161	1.284
P118	2.147	85.3	39.1	1.648	1.200	5.592	0.0	107	2.100
SP14	3.382	134.5	39.1	2.059	1.200	5.592	0.0	83	2.945
P76	1.494	105.6	42.9	1.200	1.200	0.282	0.0	133	1.418
SP12	1.003	159.5	93.9	4.318	2.899	4.850	0.0	248	1.041
P94	1.013	40.3	15.0	4.020	3.608	5.453	0.0	95	0.942
P102	1.014	71.7	47.7	2.125	1.952	0.320	0.0	179	1.083
P115	1.002	39.9	15.0	2.359	2.068	5.592	0.0	95	0.932

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
P7	30.621	76.2	225	PVC S	48.302	46.877	1.200	47.900	46.475	1.200
P1	5.740	26.3	225	PVC S	48.555	47.130	1.200	48.337	46.912	1.200
P2	5.740	30.5	225	PVC S	48.337	46.912	1.200	48.149	46.724	1.200
P3	15.627	62.8	225	PVC S	48.149	46.724	1.200	47.900	46.475	1.200
P4	39.776	60.0	300	PVC S	47.900	46.400	1.200	47.237	45.737	1.200
P8	28.439	72.2	300	PVC S	48.043	46.543	1.200	47.649	46.149	1.200
P9	4.400	54.3	300	PVC S	47.649	46.149	1.200	47.568	46.068	1.200
P10	4.463	53.8	300	PVC S	47.568	46.068	1.200	47.485	45.985	1.200
P11	10.009	52.7	300	PVC S	47.485	45.985	1.200	47.295	45.795	1.200
P12	8.532	63.7	300	PVC S	47.295	45.795	1.200	47.161	45.661	1.200
P14	28.732	77.9	225	PVC S	47.530	46.105	1.200	47.161	45.736	1.200

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
P7	SMH7	1200	Manhole	SMH	SMH4	1200	Manhole	SMH
P1	SMH1	1200	Manhole	SMH	SMH2	1200	Manhole	SMH
P2	SMH2	1200	Manhole	SMH	SMH3	1200	Manhole	SMH
P3	SMH3	1200	Manhole	SMH	SMH4	1200	Manhole	SMH
P4	SMH4	1200	Manhole	SMH	SMH5	1200	Manhole	SMH
P8	SMH8	1200	Manhole	SMH	SMH9	1200	Manhole	SMH
P9	SMH9	1200	Manhole	SMH	SMH10	1200	Manhole	SMH
P10	SMH10	1200	Manhole	SMH	SMH11	1200	Manhole	SMH
P11	SMH11	1200	Manhole	SMH	SMH12	1200	Manhole	SMH
P12	SMH12	1200	Manhole	SMH	SMH13	1200	Manhole	SMH
P14	SMH14	1200	Manhole	SMH	SMH13	1200	Manhole	SMH

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
P13	7.597	316.5	450	PVC S	47.161	45.586	1.125	47.237	45.562	1.225
P5	4.713	314.2	450	PVC S	47.237	45.554	1.233	47.269	45.539	1.280
SP1	36.385	404.3	450	PVC S	47.269	45.464	1.355	48.007	45.374	2.183
P6	19.241	168.8	225	PVC S	48.007	45.374	2.408	48.451	45.260	2.966
P15	4.648	166.0	225	PVC S	48.451	45.260	2.966	48.581	45.232	3.124
P16	55.981	169.6	225	PVC S	48.581	45.232	3.124	47.794	44.902	2.667
P20	45.350	147.2	300	PVC S	48.330	46.830	1.200	48.022	46.522	1.200
P21	21.537	244.7	300	PVC S	48.022	46.522	1.200	48.149	46.434	1.415
P22	5.332	242.4	300	PVC S	48.149	46.434	1.415	48.040	46.412	1.328
P23	6.445	238.7	300	PVC S	48.040	46.412	1.328	47.898	46.385	1.213
P24	26.695	64.6	300	PVC S	47.898	46.385	1.213	47.472	45.972	1.200
P25	28.288	62.9	450	PVC S	47.472	45.822	1.200	47.022	45.372	1.200
P26	47.942	406.3	450	PVC S	47.022	45.372	1.200	47.794	45.254	2.090
P17	14.826	302.6	525	PVC S	47.794	44.602	2.667	48.474	44.553	3.396
P27	43.287	28.5	225	PVC S	49.317	47.892	1.200	47.797	46.372	1.200
P29	36.529	28.9	225	PVC S	47.385	45.960	1.200	46.123	44.698	1.200
P28	47.804	405.1	525	PVC S	47.797	44.723	2.549	48.474	44.605	3.344
P18	9.698	131.1	525	PVC S	48.474	44.507	3.442	48.177	44.433	3.219
SP2	49.330	205.5	525	PVC S	48.177	44.433	3.219	46.454	44.193	1.736
P19	8.026	167.2	525	PVC S	46.454	43.548	2.381	46.123	43.500	2.098
P30	28.801	169.4	225	PVC S	46.549	44.188	2.136	46.123	44.018	1.880
P31	7.105	296.0	525	PVC S	46.123	43.500	2.098	46.128	43.476	2.127
P50	6.416	237.6	300	PVC S	47.548	45.917	1.331	47.451	45.890	1.261
P51	13.659	243.9	300	PVC S	47.658	45.973	1.385	47.548	45.917	1.331
P52	15.885	244.4	300	PVC S	47.538	46.038	1.200	47.658	45.973	1.385

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
P13	SMH13	1200	Manhole	SMH	SMH5	1200	Manhole	SMH
P5	SMH5	1200	Manhole	SMH	SMH6	1200	Manhole	SMH
SP1	SMH6	1200	Manhole	SMH	ST1	1200	Manhole	SMH
P6	ST1	1200	Manhole	SMH	SMH15	1200	Manhole	SMH
P15	SMH15	1200	Manhole	SMH	SMH16	1200	Manhole	SMH
P16	SMH16	1200	Manhole	SMH	SMH17	1200	Manhole	SMH
P20	SMH20	1200	Manhole	SMH	SMH21	1200	Manhole	SMH
P21	SMH21	1200	Manhole	SMH	SMH22	1200	Manhole	SMH
P22	SMH22	1200	Manhole	SMH	SMH23	1200	Manhole	SMH
P23	SMH23	1200	Manhole	SMH	SMH24	1200	Manhole	SMH
P24	SMH24	1200	Manhole	SMH	SMH25	1200	Manhole	SMH
P25	SMH25	1200	Manhole	SMH	SMH26	1200	Manhole	SMH
P26	SMH26	1200	Manhole	SMH	SMH17	1200	Manhole	SMH
P17	SMH17	1200	Manhole	SMH	SMH18	1200	Manhole	SMH
P27	SMH27	1200	Manhole	SMH	SMH28	1200	Manhole	SMH
P29	SMH29	1200	Manhole	SMH	SMH31	1200	Manhole	SMH
P28	SMH28	1200	Manhole	SMH	SMH18	1200	Manhole	SMH
P18	SMH18	1200	Manhole	SMH	SMH19	1200	Manhole	SMH
SP2	SMH19	1200	Manhole	SMH	ST2	1200	Manhole	SMH
P19	ST2	1200	Manhole	SMH	SMH31	1200	Manhole	SMH
P30	SMH30	1200	Manhole	SMH	SMH31	1200	Manhole	SMH
P31	SMH31	1200	Manhole	SMH	SMH32	1200	Manhole	SMH
P50	SMH51	1200	Manhole	SMH	SMH50	1200	Manhole	SMH
P51	SMH52	1200	Manhole	SMH	SMH51	1200	Manhole	SMH
P52	SMH53	1200	Manhole	SMH	SMH52	1200	Manhole	SMH

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
P54	10.687	114.9	300	PVC S	47.451	45.890	1.261	47.297	45.797	1.200
P55	6.639	70.6	300	PVC S	47.297	45.797	1.200	47.203	45.703	1.200
P56	21.432	50.7	300	PVC S	47.203	44.600	2.303	46.599	44.177	2.122
SP8	35.090	169.5	225	PVC S	46.609	44.600	1.784	46.740	44.393	2.122
P58	12.897	169.7	225	PVC S	46.740	43.548	2.967	46.636	43.472	2.939
P57	45.254	149.4	300	PVC S	46.599	44.177	2.122	45.445	43.874	1.271
P117	46.535	51.8	225	PVC S	47.062	45.637	1.200	46.164	44.739	1.200
SP4	19.707	142.8	225	PVC S	46.923	45.100	1.598	46.721	44.962	1.534
P43	10.405	167.8	225	PVC S	46.721	44.962	1.534	46.492	44.900	1.367
P44	12.986	80.7	225	PVC S	46.492	44.900	1.367	46.164	44.739	1.200
P45	37.688	91.5	300	PVC S	46.164	44.664	1.200	45.752	44.252	1.200
SP6	35.340	169.1	225	PVC S	45.894	44.469	1.200	46.242	44.260	1.757
P49	12.104	168.1	225	PVC S	46.242	44.260	1.757	46.549	44.188	2.136
P46	38.198	129.0	300	PVC S	45.752	44.241	1.211	45.445	43.945	1.200
P47	12.841	493.9	375	PVC S	45.445	43.649	1.421	45.664	43.623	1.666
SP5	33.912	491.5	450	PVC S	45.664	43.617	1.597	46.156	43.548	2.158
P48	11.027	239.7	375	PVC S	46.156	43.548	2.233	46.128	43.502	2.251
P32	27.213	299.0	525	PVC S	46.128	43.352	2.251	46.207	43.261	2.421
P33	24.943	300.5	525	PVC S	46.207	43.261	2.421	46.636	43.178	2.933
P34	18.858	299.3	525	PVC S	46.636	43.172	2.939	46.897	43.109	3.263
P35	24.825	168.9	225	PVC S	46.897	43.109	3.563	47.157	42.962	3.970
P59	12.531	39.2	225	PVC S	47.477	46.052	1.200	47.157	45.732	1.200
P36	5.445	165.0	225	PVC S	47.157	42.962	3.970	46.999	42.929	3.845
P37	11.883	169.8	225	PVC S	46.999	42.929	3.845	47.119	42.859	4.035
P38	42.082	169.7	225	PVC S	47.119	42.859	4.035	47.358	42.611	4.522

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
P54	SMH50	1200	Manhole	SMH	SMH55	1200	Manhole	SMH
P55	SMH55	1200	Manhole	SMH	SMH56	1200	Manhole	SMH
P56	SMH56	1200	Manhole	SMH	SMH57	1200	Manhole	SMH
SP8	SMH58	1200	Manhole	SMH	ST8	1200	Manhole	SMH
P58	ST8	1200	Manhole	SMH	SMH34	1200	Manhole	SMH
P57	SMH57	1200	Manhole	SMH	SMH47	1200	Manhole	SMH
P117	SMH117	1200	Manhole	SMH	SMH45	1200	Manhole	SMH
SP4	SMH43	1200	Manhole	SMH	ST4	1200	Manhole	SMH
P43	ST4	1200	Manhole	SMH	SMH44	1200	Manhole	SMH
P44	SMH44	1200	Manhole	SMH	SMH45	1200	Manhole	SMH
P45	SMH45	1200	Manhole	SMH	SMH46	1200	Manhole	SMH
SP6	SMH49	1200	Manhole	SMH	ST6	1200	Manhole	SMH
P49	ST6	1200	Manhole	SMH	SMH30	1200	Manhole	SMH
P46	SMH46	1200	Manhole	SMH	SMH47	1200	Manhole	SMH
P47	SMH47	1200	Manhole	SMH	SMH48	1200	Manhole	SMH
SP5	SMH48	1200	Manhole	SMH	ST5	1200	Manhole	SMH
P48	ST5	1200	Manhole	SMH	SMH32	1200	Manhole	SMH
P32	SMH32	1200	Manhole	SMH	SMH33	1200	Manhole	SMH
P33	SMH33	1200	Manhole	SMH	SMH34	1200	Manhole	SMH
P34	SMH34	1200	Manhole	SMH	SMH35	1500	Manhole	SMH
P35	SMH35	1500	Manhole	SMH	SMH36	1200	Manhole	SMH
P59	SMH59	1200	Manhole	SMH	SMH36	1200	Manhole	SMH
P36	SMH36	1200	Manhole	SMH	SMH37	1200	Manhole	SMH
P37	SMH37	1200	Manhole	SMH	SMH38	1200	Manhole	SMH
P38	SMH38	1200	Manhole	SMH	SMH39	1200	Manhole	SMH

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
P39	39.437	169.3	225	PVC S	47.358	42.611	4.522	47.593	42.378	4.990
P60	36.892	48.3	225	PVC S	49.344	47.919	1.200	48.581	47.155	1.201
P64	21.341	120.6	225	PVC S	49.589	48.164	1.200	49.412	47.987	1.200
P61	30.535	321.4	375	PVC S	49.412	47.112	1.925	50.272	47.017	2.880
P65	19.117	32.8	225	PVC S	51.253	49.828	1.200	50.670	49.245	1.200
P66	5.740	37.8	225	PVC S	50.670	49.245	1.200	50.518	49.093	1.200
P67	5.740	35.4	225	PVC S	50.518	49.093	1.200	50.356	48.931	1.200
P68	2.804	33.4	225	PVC S	50.356	48.931	1.200	50.272	48.847	1.200
P62	4.856	323.7	375	PVC S	50.272	47.017	2.880	50.454	47.002	3.077
SP9	25.226	323.4	525	PVC S	50.454	47.002	2.927	49.848	46.924	2.399
P63	13.907	169.6	225	PVC S	49.848	46.924	2.699	50.002	46.842	2.935
P69	7.463	30.0	225	PVC S	50.002	46.842	2.935	49.029	46.593	2.211
SP10	78.185	107.8	375	PVC S	49.029	45.399	3.255	47.947	44.674	2.898
P70	7.910	168.3	225	PVC S	47.947	44.674	3.048	47.593	44.627	2.741
P71	37.089	44.4	225	PVC S	50.628	49.203	1.200	49.793	48.368	1.200
P72	36.938	23.2	225	PVC S	49.793	48.368	1.200	48.204	46.779	1.200
P73	13.812	21.2	225	PVC S	48.204	46.779	1.200	47.554	46.129	1.200
P74	11.537	169.7	225	PVC S	47.554	46.129	1.200	47.593	46.061	1.307
P40	8.682	167.0	300	PVC S	47.593	42.378	4.915	47.666	42.326	5.040
P43A	27.513	243.5	300	PVC S	47.666	42.326	5.040	46.676	42.213	4.163
SP3	16.999	320.7	375	PVC S	46.676	42.138	4.163	46.313	42.085	3.853
P75	59.933	72.7	300	PVC S	47.203	45.703	1.200	46.379	44.879	1.200
P78	38.341	25.0	225	PVC S	47.913	46.488	1.200	46.379	44.954	1.200
P79	33.558	169.5	225	PVC S	46.248	44.823	1.200	46.101	44.625	1.251
SP11	31.595	405.1	450	PVC S	46.272	44.622	1.200	46.196	44.544	1.202

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
P39	SMH39	1200	Manhole	SMH	SMH40	1200	Manhole	SMH
P60	SMH60	1200	Manhole	SMH	SMH16	1200	Manhole	SMH
P64	SMH64	1200	Manhole	SMH	SMH61	1200	Manhole	SMH
P61	SMH61	1200	Manhole	SMH	SMH62	1200	Manhole	SMH
P65	SMH65	1200	Manhole	SMH	SMH66	1200	Manhole	SMH
P66	SMH66	1200	Manhole	SMH	SMH67	1200	Manhole	SMH
P67	SMH67	1200	Manhole	SMH	SMH68	1200	Manhole	SMH
P68	SMH68	1200	Manhole	SMH	SMH62	1200	Manhole	SMH
P62	SMH62	1200	Manhole	SMH	SMH63	1200	Manhole	SMH
SP9	SMH63	1200	Manhole	SMH	ST9	1200	Manhole	SMH
P63	ST9	1200	Manhole	SMH	SMH70	1200	Manhole	SMH
P69	SMH70	1200	Manhole	SMH	SMH69	1200	Manhole	SMH
SP10	SMH69	1200	Manhole	SMH	ST10	1200	Manhole	SMH
P70	ST10	1200	Manhole	SMH	SMH40	1200	Manhole	SMH
P71	SMH71	1200	Manhole	SMH	SMH72	1200	Manhole	SMH
P72	SMH72	1200	Manhole	SMH	SMH73	1200	Manhole	SMH
P73	SMH73	1200	Manhole	SMH	SMH74	1200	Manhole	SMH
P74	SMH74	1200	Manhole	SMH	SMH40	1200	Manhole	SMH
P40	SMH40	1200	Manhole	SMH	SMH42	1200	Manhole	SMH
P43A	SMH42	1200	Manhole	SMH	SMH43A	1200	Manhole	SMH
SP3	SMH43A	1200	Manhole	SMH	ST3	2100	Manhole	SMH
P75	SMH75	1200	Manhole	SMH	SMH76	1200	Manhole	SMH
P78	SMH78	1200	Manhole	SMH	SMH76	1200	Manhole	SMH
P79	SMH79	1200	Manhole	Adoptable	SMH80	1200	Manhole	SMH
SP11	SMH77	1350	Manhole	SMH	ST11	1200	Manhole	SMH

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
P77	3.501	166.7	225	PVC S	46.196	43.296	2.675	46.101	43.275	2.601
P80	9.501	243.6	300	PVC S	46.101	43.200	2.601	46.158	43.161	2.697
P81	50.161	244.7	300	PVC S	46.158	43.161	2.697	46.481	42.956	3.225
P41	12.250	395.2	450	PVC S	46.481	42.806	3.225	46.313	42.775	3.088
P42	6.531	167.5	225	PVC S	46.313	42.085	4.003	46.244	42.046	3.973
P82	20.553	111.7	300	PVC S	46.431	44.931	1.200	46.247	44.747	1.200
P83	4.311	239.5	300	PVC S	46.247	44.747	1.200	46.259	44.729	1.230
P84	4.251	236.2	300	PVC S	46.259	44.729	1.230	46.244	44.711	1.233
P85	6.952	239.7	300	PVC S	46.244	41.971	3.973	46.192	41.942	3.950
P86	6.825	243.8	300	PVC S	46.192	41.942	3.950	46.278	41.914	4.064
P87	7.955	241.1	300	PVC S	46.278	41.914	4.064	46.026	41.881	3.845
P88	22.418	243.7	300	PVC S	46.026	41.881	3.845	45.248	41.789	3.159
P95	65.400	19.3	225	PVC S	50.200	47.489	2.486	45.523	44.098	1.200
P96	7.979	35.5	225	PVC S	45.523	44.000	1.298	45.248	43.775	1.248
P89	27.901	404.4	450	PVC S	45.248	41.639	3.159	45.634	41.570	3.614
P90	41.776	405.6	450	PVC S	45.634	41.570	3.614	46.648	41.467	4.731
P91	7.847	392.4	450	PVC S	46.648	41.467	4.731	46.529	41.447	4.632
P92	12.332	397.8	450	PVC S	46.529	41.447	4.632	46.340	41.416	4.474
P93	7.735	407.1	450	PVC S	46.340	41.416	4.474	46.165	41.397	4.318
P106	7.793	64.9	225	PVC S	46.289	44.864	1.200	46.169	44.744	1.200
P107	14.458	38.6	225	PVC S	46.169	44.744	1.200	45.794	44.369	1.200
P108	11.287	37.3	225	PVC S	45.794	44.369	1.200	45.491	44.066	1.200
P109	17.850	20.3	225	PVC S	45.491	44.066	1.200	44.525	43.188	1.112
P110	10.125	241.1	300	PVC S	44.462	42.962	1.200	44.525	42.920	1.305
P111	12.397	47.0	300	PVC S	44.988	43.226	1.462	44.462	42.962	1.200

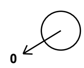
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
P77	ST11	1200	Manhole	SMH	SMH80	1200	Manhole	SMH
P80	SMH80	1200	Manhole	SMH	SMH81	1200	Manhole	SMH
P81	SMH81	1200	Manhole	SMH	SMH41	1200	Manhole	SMH
P41	SMH41	1200	Manhole	SMH	ST3	2100	Manhole	SMH
P42	ST3	2100	Manhole	SMH	SMH85	1200	Manhole	SMH
P82	SMH82	1200	Manhole	SMH	SMH83	1200	Manhole	SMH
P83	SMH83	1200	Manhole	SMH	SMH84	1200	Manhole	SMH
P84	SMH84	1200	Manhole	SMH	SMH85	1200	Manhole	SMH
P85	SMH85	1200	Manhole	SMH	SMH86	1200	Manhole	SMH
P86	SMH86	1200	Manhole	SMH	SMH87	1200	Manhole	SMH
P87	SMH87	1200	Manhole	SMH	SMH88	1200	Manhole	SMH
P88	SMH88	1200	Manhole	SMH	SMH89	1200	Manhole	SMH
P95	SMH95	1200	Manhole	SMH	SMH96	1200	Manhole	SMH
P96	SMH96	1200	Manhole	SMH	SMH89	1200	Manhole	SMH
P89	SMH89	1200	Manhole	SMH	SMH90	1200	Manhole	SMH
P90	SMH90	1200	Manhole	SMH	SMH91	1200	Manhole	SMH
P91	SMH91	1200	Manhole	SMH	SMH92	1200	Manhole	SMH
P92	SMH92	1200	Manhole	SMH	SMH93	1200	Manhole	SMH
P93	SMH93	1200	Manhole	SMH	SMH94	1200	Manhole	SMH
P106	SMH106	1200	Manhole	SMH	SMH107	1200	Manhole	SMH
P107	SMH107	1200	Manhole	SMH	SMH108	1200	Manhole	SMH
P108	SMH108	1200	Manhole	SMH	SMH109	1200	Manhole	SMH
P109	SMH109	1200	Manhole	SMH	SMH110	1200	Manhole	SMH
P110	SMH111	1200	Manhole	SMH	SMH110	1200	Manhole	SMH
P111	SMH104	1200	Manhole	SMH	SMH111	1200	Manhole	SMH

Pipeline Schedule

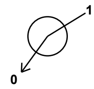
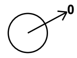
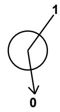
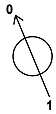
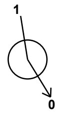
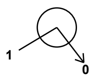
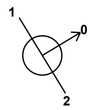
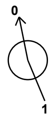
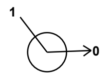
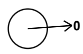
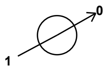
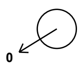
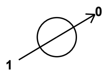
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
P97	54.902	30.0	225	PVC S	50.949	49.495	1.229	50.522	47.665	2.632
P98	14.052	30.0	225	PVC S	50.522	47.665	2.632	50.155	47.197	2.733
P99	14.967	30.0	225	PVC S	50.155	47.197	2.733	49.407	46.698	2.484
P100	14.990	30.0	225	PVC S	49.407	46.698	2.484	48.650	46.198	2.227
P101	30.954	30.0	300	PVC S	48.650	46.123	2.227	47.516	45.091	2.125
P103	52.175	81.1	300	PVC S	47.321	43.869	3.152	44.988	43.226	1.462
P104	5.181	304.8	375	PVC S	44.525	42.845	1.305	44.891	42.828	1.688
SP13	10.094	80.1	375	PVC S	44.891	40.500	4.016	44.619	40.374	3.870
P112	8.134	169.5	225	PVC S	44.172	40.339	3.608	43.818	40.291	3.302
P113	5.372	167.9	225	PVC S	43.818	40.280	3.313	43.629	40.248	3.156
P114	38.930	129.8	225	PVC S	43.629	40.248	3.156	41.373	39.948	1.200
P118	7.622	37.4	225	PVC S	41.373	39.500	1.648	40.721	39.296	1.200
SP14	22.484	15.1	225	PVC S	40.721	38.437	2.059	38.375	36.950	1.200
P76	11.829	110.5	300	PVC S	46.379	44.879	1.200	46.272	44.772	1.200
SP12	51.536	405.8	450	PVC S	46.165	41.397	4.318	44.619	41.270	2.899
P94	5.800	165.7	225	PVC S	44.619	40.374	4.020	44.172	40.339	3.608
P102	5.239	238.1	300	PVC S	47.516	45.091	2.125	47.321	45.069	1.952
P115	5.243	169.1	225	PVC S	38.375	35.791	2.359	38.053	35.760	2.068

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
P97	SMH97	1200	Manhole	SMH	SMH98	1200	Manhole	SMH
P98	SMH98	1200	Manhole	SMH	SMH99	1200	Manhole	SMH
P99	SMH99	1200	Manhole	SMH	SMH100	1200	Manhole	SMH
P100	SMH100	1200	Manhole	SMH	SMH101	1200	Manhole	SMH
P101	SMH101	1200	Manhole	SMH	SMH102	1200	Manhole	SMH
P103	SMH103	1200	Manhole	SMH	SMH104	1200	Manhole	SMH
P104	SMH110	1200	Manhole	SMH	SMH105	1200	Manhole	SMH
SP13	SMH105	1200	Manhole	SMH	ST12	2100	Manhole	SMH
P112	SMH112	1200	Manhole	SMH	SMH113	1200	Manhole	SMH
P113	SMH113	1200	Manhole	SMH	SMH114	1200	Manhole	SMH
P114	SMH114	1200	Manhole	SMH	SMH115	1200	Manhole	SMH
P118	SMH115	1200	Manhole	SMH	SMH118	1200	Manhole	SMH
SP14	SMH118	1200	Manhole	SMH	ST14	1800	Manhole	SMH
P76	SMH76	1200	Manhole	SMH	SMH77	1350	Manhole	SMH
SP12	SMH94	1200	Manhole	SMH	ST12	2100	Manhole	SMH
P94	ST12	2100	Manhole	SMH	SMH112	1200	Manhole	SMH
P102	SMH102	1200	Manhole	SMH	SMH103	1200	Manhole	SMH
P115	ST14	1800	Manhole	SMH	SMH116	1200	Manhole	SMH

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
SMH65	561909.094	657196.994	51.253	1.425	1200		0	P65	49.828	225
SMH97	561935.587	657295.805	50.949	1.454	1200		0	P97	49.495	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
SMH66	561892.811	657186.977	50.670	1.425	1200		1	P65	49.245	225
							0	P66	49.245	225
SMH71	561930.102	657180.685	50.628	1.425	1200		0	P71	49.203	225
SMH67	561889.445	657182.327	50.518	1.425	1200		1	P66	49.093	225
							0	P67	49.093	225
SMH98	561914.488	657346.491	50.522	2.857	1200		1	P97	47.665	225
							0	P98	47.665	225
SMH68	561890.353	657176.659	50.356	1.425	1200		1	P67	48.931	225
							0	P68	48.931	225
SMH63	561897.178	657177.478	50.454	3.452	1200		1	P62	47.002	375
							0	SP9	47.002	525
SMH62	561891.823	657174.271	50.272	3.255	1200		1	P68	48.847	225
							2	P61	47.017	375
							0	P62	47.017	375
SMH99	561909.088	657359.464	50.155	2.958	1200		1	P98	47.197	225
							0	P99	47.197	225
ST9	561909.401	657161.608	49.848	2.924	1200		1	SP9	46.924	525
							0	P63	46.924	225
SMH95	561954.764	657270.328	50.200	2.711	1200		0	P95	47.489	225
SMH72	561962.781	657198.226	49.793	1.425	1200		1	P71	48.368	225
							0	P72	48.368	225
SMH64	561925.985	657159.469	49.589	1.425	1200		0	P64	48.164	225
SMH69	561940.320	657166.375	49.029	3.630	1200		1	P69	46.593	225
							0	SP10	45.399	375

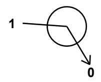
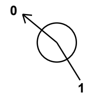
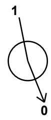
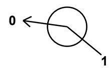
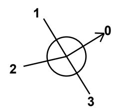
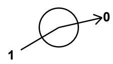
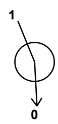
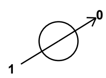
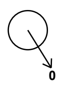
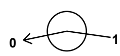
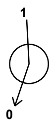
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SMH61	561907.823	657148.263	49.412	2.300	1200	1	P64	47.987	225
						0	P61	47.112	375
SMH100	561906.135	657374.137	49.407	2.709	1200	1	P99	46.698	225
						0	P100	46.698	225
SMH27	561932.718	657148.530	49.317	1.425	1200	0	P27	47.892	225
SMH20	561834.877	657068.672	48.330	1.500	1200	0	P20	46.830	300
SMH60	561904.200	657145.908	49.344	1.425	1200	0	P60	47.919	225
SMH1	561823.532	657087.112	48.555	1.425	1200	0	P1	47.130	225
SMH101	561909.239	657388.802	48.650	2.527	1200	1	P100	46.198	225
						0	P101	46.123	300
SMH16	561872.767	657126.595	48.581	3.349	1200	1	P60	47.155	225
						2	P15	45.232	225
						0	P16	45.232	225
SMH21	561858.639	657030.046	48.022	1.500	1200	1	P20	46.522	300
						0	P21	46.522	300
SMH6	561822.258	657142.053	47.269	1.805	1200	1	P5	45.539	450
						0	SP1	45.464	450
SMH15	561868.820	657124.033	48.451	3.191	1200	1	P6	45.260	225
						0	P15	45.260	225
SMH22	561869.765	657011.606	48.149	1.715	1200	1	P21	46.434	300
						0	P22	46.434	300
SMH2	561822.624	657092.780	48.337	1.425	1200	1	P1	46.912	225
						0	P2	46.912	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SMH7	561865.295	657121.855	48.302	1.425	1200	0	P7	46.877	225
SMH73	561994.876	657216.511	48.204	1.425	1200	1	P72	46.779	225
						0	P73	46.779	225
SMH28	561955.416	657111.671	47.797	3.074	1200	1	P27	46.372	225
						0	P28	44.723	525
SMH3	561825.990	657097.482	48.149	1.425	1200	1	P2	46.724	225
						0	P3	46.724	225
SMH23	561874.033	657008.410	48.040	1.628	1200	1	P22	46.412	300
						0	P23	46.412	300
SMH8	561854.105	657124.891	48.043	1.500	1200	0	P8	46.543	300
ST1	561849.788	657121.205	48.007	2.633	1200	1	SP1	45.374	450
						0	P6	45.374	225
SMH78	562132.185	657215.417	47.913	1.425	1200	0	P78	46.488	225
SMH18	561914.707	657086.611	48.474	3.967	1200	1	P28	44.605	525
						2	P17	44.553	525
						0	P18	44.507	525
SMH24	561880.435	657009.157	47.898	1.513	1200	1	P23	46.385	300
						0	P24	46.385	300
SMH4	561839.290	657105.687	47.900	1.500	1200	1	P3	46.475	225
						2	P7	46.475	225
						0	P4	46.400	300
SMH19	561919.790	657078.352	48.177	3.744	1200	1	P18	44.433	525
						0	SP2	44.433	525
SMH17	561902.083	657078.836	47.794	3.192	1200	1	P26	45.254	450
						2	P16	44.902	225
						0	P17	44.602	525

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
SMH74	562009.311	657215.479	47.554	1.425	1200		1	P73	46.129	225
							0	P74	46.129	225
SMH9	561839.142	657149.075	47.649	1.500	1200		1	P8	46.149	300
							0	P9	46.149	300
SMH52	562073.983	657091.325	47.658	1.685	1200		1	P52	45.973	300
							0	P51	45.973	300
SMH53	562070.859	657106.908	47.538	1.500	1200		0	P52	46.038	300
SMH10	561835.749	657151.877	47.568	1.500	1200		1	P9	46.068	300
							0	P10	46.068	300
SMH40	562013.959	657207.840	47.593	5.215	1200		1	P74	46.061	225
							2	P70	44.627	225
							3	P39	42.378	225
							0	P40	42.378	300
ST10	562007.504	657206.366	47.947	3.273	1200		1	SP10	44.674	375
							0	P70	44.674	225
SMH59	562070.430	657109.272	47.477	1.425	1200		0	P59	46.052	225
SMH51	562079.093	657078.658	47.548	1.631	1200		1	P51	45.917	300
							0	P50	45.917	300
SMH25	561903.215	657023.074	47.472	1.650	1200		1	P24	45.972	300
							0	P25	45.822	450
SMH14	561799.146	657170.344	47.530	1.425	1200		0	P14	46.105	225
SMH11	561831.329	657152.495	47.485	1.500	1200		1	P10	45.985	300
							0	P11	45.985	300
SMH50	562079.435	657072.251	47.451	1.561	1200		1	P50	45.890	300
							0	P54	45.890	300

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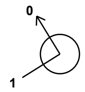
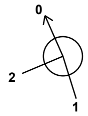
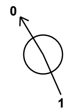
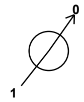
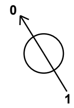
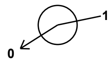
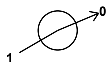
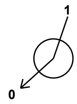
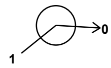
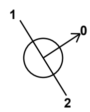
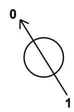
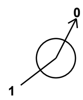
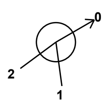
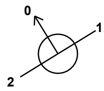
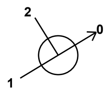
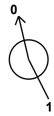
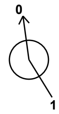
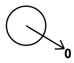
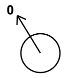
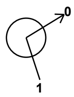
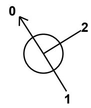
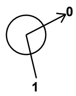
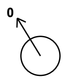
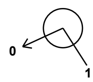
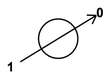
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
SMH26	561927.232	657038.020	47.022	1.650	1200		1	P25	45.372	450
							0	P26	45.372	450
SMH36	562066.679	657121.228	47.157	4.195	1200		1	P59	45.732	225
							2	P35	42.962	225
							0	P36	42.962	225
SMH37	562064.465	657126.203	46.999	4.070	1200		1	P36	42.929	225
							0	P37	42.929	225
SMH118	561978.718	657474.615	40.721	2.284	1200		1	P118	39.296	225
							0	SP14	38.437	225
SMH38	562058.291	657136.356	47.119	4.260	1200		1	P37	42.859	225
							0	P38	42.859	225
SMH12	561821.525	657150.482	47.295	1.500	1200		1	P11	45.795	300
							0	P12	45.795	300
SMH35	562043.794	657111.608	46.897	3.788	1500		1	P34	43.109	525
							0	P35	43.109	225
SMH55	562076.242	657062.921	47.297	1.500	1200		1	P54	45.797	300
							0	P55	45.797	300
SMH103	561925.603	657420.491	47.321	3.452	1200		1	P102	45.069	300
							0	P103	43.869	300
SMH5	561818.309	657139.480	47.237	1.683	1200		1	P13	45.562	450
							2	P4	45.737	300
							0	P5	45.554	450
SMH39	562036.140	657172.136	47.358	4.747	1200		1	P38	42.611	225
							0	P39	42.611	225
SMH43A	562043.245	657229.049	46.676	4.538	1200		1	P43A	42.213	300
							0	SP3	42.138	375
SMH34	562027.478	657102.152	46.636	3.464	1200		1	P58	43.472	225
							2	P33	43.178	525
							0	P34	43.172	525

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SMH29	561961.411	657101.926	47.385	1.425	1200	0	P29	45.960	225
SMH13	561814.305	657145.936	47.161	1.575	1200	1	P14	45.736	225
						2	P12	45.661	300
						0	P13	45.586	450
SMH56	562071.322	657058.464	47.203	2.603	1200	1	P55	45.703	300
						0	P56	44.600	300
SMH33	562007.609	657087.468	46.207	2.946	1200	1	P32	43.261	525
						0	P33	43.261	525
SMH70	561933.913	657162.548	50.002	3.160	1200	1	P63	46.842	225
						0	P69	46.842	225
SMH75	562048.482	657163.923	47.203	1.500	1200	0	P75	45.703	300
SMH32	561984.443	657073.190	46.128	2.776	1200	1	P48	43.502	375
						2	P31	43.476	525
						0	P32	43.352	525
SMH31	561980.522	657070.795	46.123	2.623	1200	1	P29	44.698	225
						2	P30	44.018	225
						3	P19	43.500	525
						0	P31	43.500	525
ST2	561967.313	657072.676	46.454	2.906	1200	1	SP2	44.193	525
						0	P19	43.548	525
SMH82	562077.341	657259.150	46.431	1.500	1200	0	P82	44.931	300
SMH117	561925.210	657023.861	47.062	1.425	1200	0	P117	45.637	225
SMH91	561987.454	657336.447	46.648	5.181	1200	1	P90	41.467	450
						0	P91	41.467	450
SMH44	561936.695	656976.359	46.492	1.592	1200	1	P43	44.900	225
						0	P44	44.900	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
SMH76	562099.504	657195.367	46.379	1.500	1200		1	P78	44.954	225
							2	P75	44.879	300
							0	P76	44.879	300
SMH45	561949.601	656984.230	46.164	1.500	1200		1	P44	44.739	225
							2	P117	44.739	225
							0	P45	44.664	300
SMH92	561983.879	657343.432	46.529	5.082	1200		1	P91	41.447	450
							0	P92	41.447	450
ST8	562029.769	657085.318	46.740	3.192	1200		1	SP8	44.393	225
							0	P58	43.548	225
SMH43	561915.590	656995.525	46.923	1.823	1200		0	SP4	45.100	225
SMH49	561974.302	657015.855	45.894	1.425	1200		0	SP6	44.469	225
SMH30	561953.891	657054.421	46.549	2.361	1200		1	P49	44.188	225
							0	P30	44.188	225
SMH80	562071.779	657229.190	46.101	2.901	1200		1	P79	44.625	225
							2	P77	43.275	225
							0	P80	43.200	300
SMH93	561981.040	657355.433	46.340	4.924	1200		1	P92	41.416	450
							0	P93	41.416	450
SMH58	562045.659	657059.417	46.609	2.009	1200		0	SP8	44.600	225
SMH81	562066.639	657237.181	46.158	2.997	1200		1	P80	43.161	300
							0	P81	43.161	300
SMH46	561981.774	657003.858	45.752	1.511	1200		1	P45	44.252	300
							0	P46	44.241	300
SMH106	561981.953	657358.703	46.289	1.425	1200		0	P106	44.864	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SMH83	562059.802	657248.435	46.247	1.500	1200	1	P82	44.747	300
						0	P83	44.747	300
SMH84	562056.049	657250.607	46.259	1.530	1200	1	P83	44.729	300
						0	P84	44.729	300
SMH85	562051.859	657251.327	46.244	4.273	1200	1	P84	44.711	300
						2	P42	42.046	225
						0	P85	41.971	300
ST5	561988.075	657062.357	46.156	2.608	1200	1	SP5	43.548	450
						0	P48	43.548	375
SMH86	562044.910	657251.133	46.192	4.250	1200	1	P85	41.942	300
						0	P86	41.942	300
SMH107	561983.708	657366.296	46.169	1.425	1200	1	P106	44.744	225
						0	P107	44.744	225
SMH47	562014.388	657023.743	45.445	1.796	1200	1	P57	43.874	300
						2	P46	43.945	300
						0	P47	43.649	375
SMH87	562038.088	657250.942	46.278	4.364	1200	1	P86	41.914	300
						0	P87	41.914	300
ST11	562074.928	657231.143	46.196	2.900	1200	1	SP11	44.544	450
						0	P77	43.296	225
SMH41	562056.948	657232.729	46.481	3.675	1200	1	P81	42.956	300
						0	P41	42.806	450
ST4	561930.542	656986.469	46.721	1.759	1200	1	SP4	44.962	225
						0	P43	44.962	225
SMH88	562036.553	657258.747	46.026	4.145	1200	1	P87	41.881	300
						0	P88	41.881	300
SMH108	561989.430	657379.574	45.794	1.425	1200	1	P107	44.369	225
						0	P108	44.369	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SMH90	562011.059	657301.978	45.634	4.064	1200	1	P89	41.570	450
						0	P90	41.570	450
SMH96	562019.997	657275.002	45.523	1.523	1200	1	P95	44.098	225
						0	P96	44.000	225
SMH109	561992.046	657390.554	45.491	1.425	1200	1	P108	44.066	225
						0	P109	44.066	225
SMH57	562053.024	657047.306	46.599	2.422	1200	1	P56	44.177	300
						0	P57	44.177	300
ST6	561957.436	657043.528	46.242	1.982	1200	1	SP6	44.260	225
						0	P49	44.260	225
SMH104	561975.182	657417.578	44.988	1.762	1200	1	P103	43.226	300
						0	P111	43.226	300
SMH89	562026.911	657278.985	45.248	3.609	1200	1	P96	43.775	225
						2	P88	41.789	300
						0	P89	41.639	450
SMH48	562007.012	657035.822	45.664	2.047	1200	1	P47	43.623	375
						0	SP5	43.617	450
SMH105	561998.272	657410.247	44.891	4.391	1200	1	P104	42.828	375
						0	SP13	40.500	375
SMH110	561993.097	657410.001	44.525	1.680	1200	1	P109	43.188	225
						2	P110	42.920	300
						0	P104	42.845	375
SMH111	561987.557	657416.843	44.462	1.500	1200	1	P111	42.962	300
						0	P110	42.962	300
SMH112	561993.683	657420.676	44.172	3.833	1200	1	P94	40.339	225
						0	P112	40.339	225
SMH42	562021.371	657212.361	47.666	5.340	1200	1	P40	42.326	300
						0	P43A	42.326	300

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SMH113	561993.332	657428.802	43.818	3.538	1200	1	P112	40.291	225
						0	P113	40.280	225
SMH114	561991.573	657433.915	43.629	3.381	1200	1	P113	40.248	225
						0	P114	40.248	225
SMH115	561974.013	657468.618	41.373	1.873	1200	1	P114	39.948	225
						0	P118	39.500	225
ST14	561991.639	657493.016	38.375	2.584	1800	1	SP14	36.950	225
						0	P115	35.791	225
ST3	562050.563	657243.183	46.313	4.228	2100	1	P41	42.775	450
						2	SP3	42.085	375
						0	P42	42.085	225
SMH77	562093.298	657205.437	46.272	1.650	1350	1	P76	44.772	300
						0	SP11	44.622	450
SMH79	562089.263	657200.547	46.248	1.425	1200	0	P79	44.823	225
SMH94	562002.853	657366.756	46.165	4.768	1200	1	P93	41.397	450
						0	SP12	41.397	450
ST12	561998.899	657418.140	44.619	4.245	2100	1	SP13	40.374	375
						2	SP12	41.270	450
						0	P94	40.374	225
SMH102	561921.512	657417.219	47.516	2.425	1200	1	P101	45.091	300
						0	P102	45.091	300
SMH116	561988.207	657496.979	38.053	2.293	1200	1	P115	35.760	225

Simulation Settings

Rainfall Methodology	FSR	Winter CV	1.000
Rainfall Events	Singular	Analysis Speed	Normal
FSR Region	Scotland and Ireland	Skip Steady State	x
M5-60 (mm)	14.800	Drain Down Time (mins)	360
Ratio-R	0.270	Additional Storage (m³/ha)	0.0
Summer CV	0.930	Starting Level (m)	

Simulation Settings

Check Discharge Rate(s) x | Check Discharge Volume x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	30	10	0

Node ST1 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	45.374	Product Number	CTL-SHE-0059-2000-1750-2000
Design Depth (m)	1.750	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node ST3 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	42.085	Product Number	CTL-SHE-0136-1300-3000-1300
Design Depth (m)	3.000	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	13.0	Min Node Diameter (mm)	1500

Node ST4 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	44.962	Product Number	CTL-SHE-0048-1000-0860-1000
Design Depth (m)	0.860	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.0	Min Node Diameter (mm)	1200

Node ST11 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	43.296	Product Number	CTL-SHE-0070-3000-2000-3000
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	3.0	Min Node Diameter (mm)	1200

Node ST9 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	46.924	Product Number	CTL-SHE-0076-3500-2000-3500
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	3.5	Min Node Diameter (mm)	1200

Node ST10 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	44.674	Product Number	CTL-SHE-0057-2000-2000-2000
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node ST14 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	35.791	Product Number	CTL-SHE-0163-1550-2000-1550
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	15.5	Min Node Diameter (mm)	1800

Node ST12 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	40.374	Product Number	CTL-SHE-0151-1600-3000-1600
Design Depth (m)	3.000	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	16.0	Min Node Diameter (mm)	1800

Node SMH35 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	43.109	Product Number	CTL-SHE-0096-5500-2000-5500
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.5	Min Node Diameter (mm)	1200

Node ST1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	45.374
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.90	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	260.0	260.0	2.000	260.0	374.3	2.001	0.0	374.3

Node ST2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	43.548
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.90	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	1000.0	0.0	2.000	1000.0	224.2	2.001	0.0	224.2

Node ST3 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	42.085
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.90	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	145.0	145.0	3.000	145.0	273.1	3.001	0.0	273.1

Node ST4 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	44.962
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.90	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	55.0	0.0	1.000	55.0	26.3	1.001	0.0	26.3

Node ST5 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	43.548
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.90	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	250.0	250.0	2.000	250.0	362.1	2.001	0.0	362.1

Node ST6 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	44.260
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.90	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	100.0	100.0	1.500	100.0	153.2	1.501	0.0	153.2

Node ST8 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	43.548
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.90	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	100.0	100.0	2.000	100.0	170.9	2.001	0.0	170.9

Node ST9 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	46.924
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.90	Time to half empty (mins)	480

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	80.0	80.0	2.000	80.0	143.4	2.001	0.0	143.4

Node ST10 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	44.674
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.90	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	260.0	260.0	2.000	260.0	374.3	2.001	0.0	374.3

Node ST11 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	43.296
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.90	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	160.0	160.0	2.000	160.0	249.7	2.001	0.0	249.7

Node ST12 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	40.374
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.90	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	590.0	590.0	3.000	590.0	848.3	3.001	0.0	848.3

Node ST14 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	35.791
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.90	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	85.0	85.0	2.000	85.0	150.4	2.001	0.0	150.4

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +30% CC +10% A 15 minute summer	292.450	82.753
100 year +30% CC +10% A 15 minute winter	205.228	82.753
100 year +30% CC +10% A 30 minute summer	203.995	57.723
100 year +30% CC +10% A 30 minute winter	143.154	57.723
100 year +30% CC +10% A 60 minute summer	144.029	38.063
100 year +30% CC +10% A 60 minute winter	95.689	38.063
100 year +30% CC +10% A 120 minute summer	91.542	24.192
100 year +30% CC +10% A 120 minute winter	60.818	24.192
100 year +30% CC +10% A 180 minute summer	71.525	18.406
100 year +30% CC +10% A 180 minute winter	46.493	18.406
100 year +30% CC +10% A 240 minute summer	57.181	15.111
100 year +30% CC +10% A 240 minute winter	37.990	15.111
100 year +30% CC +10% A 360 minute summer	44.399	11.425
100 year +30% CC +10% A 360 minute winter	28.860	11.425
100 year +30% CC +10% A 480 minute summer	35.390	9.352
100 year +30% CC +10% A 480 minute winter	23.512	9.352
100 year +30% CC +10% A 600 minute summer	29.255	8.002
100 year +30% CC +10% A 600 minute winter	19.989	8.002
100 year +30% CC +10% A 720 minute summer	26.275	7.042
100 year +30% CC +10% A 720 minute winter	17.659	7.042
100 year +30% CC +10% A 960 minute summer	21.848	5.753

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +30% CC +10% A 960 minute winter	14.473	5.753
100 year +30% CC +10% A 1440 minute summer	16.135	4.324
100 year +30% CC +10% A 1440 minute winter	10.843	4.324
100 year +30% CC +10% A 2160 minute summer	11.759	3.250
100 year +30% CC +10% A 2160 minute winter	8.102	3.250
100 year +30% CC +10% A 2880 minute summer	9.895	2.652
100 year +30% CC +10% A 2880 minute winter	6.650	2.652
100 year +30% CC +10% A 4320 minute summer	7.605	1.988
100 year +30% CC +10% A 4320 minute winter	5.008	1.988
100 year +30% CC +10% A 5760 minute summer	6.326	1.619
100 year +30% CC +10% A 5760 minute winter	4.095	1.619
100 year +30% CC +10% A 7200 minute summer	5.412	1.381
100 year +30% CC +10% A 7200 minute winter	3.493	1.381
100 year +30% CC +10% A 8640 minute summer	4.749	1.211
100 year +30% CC +10% A 8640 minute winter	3.065	1.211
100 year +30% CC +10% A 10080 minute summer	4.252	1.085
100 year +30% CC +10% A 10080 minute winter	2.744	1.085

Results for 100 year +30% CC +10% A Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SMH65	10	49.932	0.104	40.5	0.1181	0.0000	OK
15 minute summer	SMH97	11	49.878	0.383	72.9	0.4333	0.0000	SURCHARGED
15 minute summer	SMH66	10	49.431	0.186	61.5	0.2108	0.0000	OK
15 minute summer	SMH71	11	50.050	0.847	52.7	0.9581	0.0000	SURCHARGED
15 minute summer	SMH67	10	49.276	0.183	61.5	0.2069	0.0000	OK
15 minute summer	SMH98	11	49.051	1.386	128.2	1.5673	0.0000	SURCHARGED
15 minute summer	SMH68	10	49.118	0.187	61.5	0.2118	0.0000	OK
600 minute winter	SMH63	480	48.771	1.769	16.0	2.0005	0.0000	SURCHARGED
600 minute winter	SMH62	480	48.771	1.754	16.2	1.9836	0.0000	SURCHARGED
15 minute summer	SMH99	11	48.232	1.035	110.1	1.1702	0.0000	SURCHARGED
600 minute winter	ST9	480	48.771	1.847	15.8	135.0597	0.0000	SURCHARGED
15 minute summer	SMH95	10	47.580	0.091	40.3	0.1034	0.0000	OK
15 minute summer	SMH72	11	49.733	1.365	125.9	1.5440	0.0000	FLOOD RISK
600 minute winter	SMH64	480	48.771	0.607	4.6	0.6865	0.0000	SURCHARGED
4320 minute winter	SMH69	3780	46.295	0.896	5.3	1.0131	0.0000	SURCHARGED
600 minute winter	SMH61	480	48.771	1.659	9.5	1.8762	0.0000	SURCHARGED
15 minute summer	SMH100	11	47.419	0.721	104.7	0.8154	0.0000	SURCHARGED
15 minute summer	SMH27	10	47.996	0.104	41.0	0.1179	0.0000	OK
15 minute summer	SMH20	10	47.471	0.641	61.2	0.7253	0.0000	SURCHARGED
15 minute summer	SMH60	10	48.066	0.147	53.6	0.1666	0.0000	OK
15 minute summer	SMH1	10	47.241	0.111	37.6	0.1251	0.0000	OK
15 minute summer	SMH101	11	46.653	0.530	142.1	0.5998	0.0000	SURCHARGED
15 minute summer	SMH16	11	47.263	2.031	115.8	2.2966	0.0000	SURCHARGED
15 minute summer	SMH21	10	47.314	0.792	126.1	0.8953	0.0000	SURCHARGED
2160 minute winter	SMH6	2040	47.135	1.671	11.6	1.8902	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SMH65	P65	SMH66	40.5	1.517	0.444	0.5086	
15 minute summer	SMH97	P97	SMH98	68.6	1.845	0.720	2.1835	
15 minute summer	SMH66	P66	SMH67	61.5	1.765	0.724	0.2002	
15 minute summer	SMH71	P71	SMH72	47.7	1.507	0.609	1.4751	
15 minute summer	SMH67	P67	SMH68	61.5	1.759	0.701	0.2007	
15 minute summer	SMH98	P98	SMH99	110.1	2.768	1.155	0.5589	
15 minute summer	SMH68	P68	SMH62	61.5	2.019	0.680	0.0844	
600 minute winter	SMH63	SP9	ST9	15.8	0.582	0.059	5.4496	
600 minute winter	SMH62	P62	SMH63	16.0	0.453	0.145	0.5356	
15 minute summer	SMH99	P99	SMH100	104.7	2.633	1.098	0.5953	
600 minute winter	ST9	P63	SMH70	3.3	0.748	0.084	0.0914	
15 minute summer	SMH95	P95	SMH96	40.2	2.693	0.338	1.6788	
15 minute summer	SMH72	P72	SMH73	110.2	2.770	1.017	1.4691	
600 minute winter	SMH64	P64	SMH61	4.6	0.752	0.097	0.8488	
4320 minute winter	SMH69	SP10	ST10	5.3	0.493	0.027	8.6236	
600 minute winter	SMH61	P61	SMH62	9.3	0.297	0.084	3.3679	
15 minute summer	SMH100	P100	SMH101	107.2	2.697	1.125	0.5962	
15 minute summer	SMH27	P27	SMH28	41.0	2.326	0.419	0.7629	
15 minute summer	SMH20	P20	SMH21	59.4	0.844	0.650	3.1935	
15 minute summer	SMH60	P60	SMH16	53.6	2.008	0.715	0.9848	
15 minute summer	SMH1	P1	SMH2	37.6	1.871	0.369	0.1154	
15 minute summer	SMH101	P101	SMH102	135.5	1.995	0.666	2.1798	
15 minute summer	SMH16	P16	SMH17	88.8	2.234	2.233	2.2264	
15 minute summer	SMH21	P21	SMH22	124.0	1.761	1.754	1.5166	
2160 minute winter	SMH6	SP1	ST1	12.2	0.466	0.077	5.7650	

Results for 100 year +30% CC +10% A Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SMH15	11	47.263	2.003	28.1	2.2659	0.0000	SURCHARGED
15 minute summer	SMH22	10	46.950	0.516	124.0	0.5837	0.0000	SURCHARGED
2160 minute winter	SMH2	2040	47.135	0.223	1.7	0.2526	0.0000	OK
2160 minute winter	SMH7	2040	47.135	0.258	2.0	0.2922	0.0000	SURCHARGED
15 minute summer	SMH73	11	47.803	1.024	110.2	1.1587	0.0000	SURCHARGED
15 minute summer	SMH28	11	45.457	0.734	210.2	0.8297	0.0000	SURCHARGED
2160 minute winter	SMH3	2040	47.135	0.411	1.7	0.4652	0.0000	SURCHARGED
15 minute summer	SMH23	10	46.804	0.392	122.7	0.4428	0.0000	SURCHARGED
2160 minute winter	SMH8	2040	47.135	0.592	2.4	0.6699	0.0000	SURCHARGED
2160 minute winter	ST1	2040	47.135	1.761	12.2	414.1258	0.0000	SURCHARGED
15 minute summer	SMH78	10	46.622	0.134	70.5	0.1521	0.0000	OK
4320 minute winter	SMH18	4260	45.394	0.887	16.8	1.0032	0.0000	SURCHARGED
15 minute summer	SMH24	10	46.625	0.240	121.7	0.2716	0.0000	OK
2160 minute winter	SMH4	2040	47.135	0.735	5.6	0.8316	0.0000	SURCHARGED
4320 minute winter	SMH19	4260	45.394	0.961	16.8	1.0869	0.0000	SURCHARGED
15 minute summer	SMH17	11	45.476	0.874	278.8	0.9885	0.0000	SURCHARGED
15 minute summer	SMH74	11	46.974	0.845	109.0	0.9560	0.0000	SURCHARGED
2160 minute winter	SMH9	2040	47.135	0.986	2.4	1.1155	0.0000	SURCHARGED
15 minute summer	SMH52	10	46.391	0.418	50.5	0.4731	0.0000	SURCHARGED
15 minute summer	SMH53	10	46.435	0.397	52.7	0.4485	0.0000	SURCHARGED
2160 minute winter	SMH10	2040	47.135	1.067	3.8	1.2071	0.0000	SURCHARGED
4320 minute winter	SMH40	3180	45.064	2.686	13.6	3.0374	0.0000	SURCHARGED
4320 minute winter	ST10	3780	46.295	1.621	5.3	381.0711	0.0000	SURCHARGED
15 minute summer	SMH59	10	46.134	0.082	20.8	0.0925	0.0000	OK
15 minute summer	SMH51	10	46.354	0.437	48.5	0.4937	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SMH15	P15	SMH16	-28.1	-0.706	-0.698	0.1849	
15 minute summer	SMH22	P22	SMH23	122.7	1.743	1.727	0.3755	
2160 minute winter	SMH2	P2	SMH3	1.7	0.795	0.018	0.2281	
2160 minute winter	SMH7	P7	SMH4	2.0	0.696	0.034	1.2178	
15 minute summer	SMH73	P73	SMH74	109.0	2.742	0.962	0.5493	
15 minute summer	SMH28	P28	SMH18	196.8	1.153	0.822	10.3272	
2160 minute winter	SMH3	P3	SMH4	1.7	0.706	0.026	0.6215	
15 minute summer	SMH23	P23	SMH24	121.7	1.760	1.699	0.4217	
2160 minute winter	SMH8	P8	SMH9	2.4	0.731	0.018	2.0027	
2160 minute winter	ST1	P6	SMH15	2.0	0.514	0.050	0.0761	
15 minute summer	SMH78	P78	SMH76	70.5	2.141	0.675	1.2368	
4320 minute winter	SMH18	P18	SMH19	16.8	0.856	0.040	2.0951	
15 minute summer	SMH24	P24	SMH25	121.4	2.120	0.877	1.5262	
2160 minute winter	SMH4	P4	SMH5	5.6	0.830	0.039	2.8010	
4320 minute winter	SMH19	SP2	ST2	16.8	0.797	0.050	10.6569	
15 minute summer	SMH17	P17	SMH18	281.1	1.301	1.013	3.2029	
15 minute summer	SMH74	P74	SMH40	108.2	2.722	2.720	0.4542	
2160 minute winter	SMH9	P9	SMH10	2.2	0.587	0.015	0.3098	
15 minute summer	SMH52	P51	SMH51	48.5	0.720	0.685	0.9619	
15 minute summer	SMH53	P52	SMH52	50.5	0.900	0.714	1.1186	
2160 minute winter	SMH10	P10	SMH11	9.5	0.855	0.063	0.3143	
4320 minute winter	SMH40	P40	SMH42	13.6	0.689	0.158	0.6114	
4320 minute winter	ST10	P70	SMH40	1.7	0.495	0.043	0.3146	
15 minute summer	SMH59	P59	SMH36	20.8	1.675	0.250	0.2800	
15 minute summer	SMH51	P50	SMH50	50.6	0.790	0.705	0.4518	

Results for 100 year +30% CC +10% A Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SMH25	11	46.005	0.183	146.5	0.2067	0.0000	OK
2160 minute winter	SMH14	2040	47.135	1.030	2.6	1.1653	0.0000	SURCHARGED
2160 minute winter	SMH11	2040	47.135	1.150	9.5	1.3010	0.0000	SURCHARGED
15 minute summer	SMH50	10	46.330	0.440	101.6	0.4978	0.0000	SURCHARGED
15 minute summer	SMH26	11	45.800	0.428	196.1	0.4843	0.0000	OK
30 minute summer	SMH36	20	46.056	3.094	79.0	3.4989	0.0000	SURCHARGED
30 minute summer	SMH37	20	45.991	3.062	51.4	3.4634	0.0000	SURCHARGED
15 minute summer	SMH118	11	38.544	0.107	56.3	0.1215	0.0000	OK
30 minute summer	SMH38	20	45.877	3.018	42.8	3.4132	0.0000	SURCHARGED
2160 minute winter	SMH12	2040	47.135	1.340	5.5	1.5159	0.0000	SURCHARGED
4320 minute winter	SMH35	4260	45.394	2.285	5.4	4.0374	0.0000	SURCHARGED
15 minute summer	SMH55	10	46.184	0.387	135.3	0.4381	0.0000	SURCHARGED
15 minute summer	SMH103	11	45.926	2.057	179.6	2.3263	0.0000	SURCHARGED
2160 minute winter	SMH5	2040	47.135	1.581	11.8	1.7884	0.0000	SURCHARGED
30 minute summer	SMH39	19	45.530	2.919	90.4	3.3018	0.0000	SURCHARGED
4320 minute winter	SMH43A	3180	45.061	2.923	13.5	3.3060	0.0000	SURCHARGED
4320 minute winter	SMH34	4260	45.394	2.222	7.4	2.5130	0.0000	SURCHARGED
15 minute summer	SMH29	1	45.960	0.000	0.0	0.0000	0.0000	OK
2160 minute winter	SMH13	2040	47.135	1.549	8.4	1.7522	0.0000	FLOOD RISK
15 minute summer	SMH56	11	45.575	0.975	135.3	1.1028	0.0000	SURCHARGED
4320 minute winter	SMH33	4260	45.394	2.133	6.5	2.4123	0.0000	SURCHARGED
15 minute summer	SMH70	10	47.172	0.330	92.5	0.3733	0.0000	SURCHARGED
15 minute summer	SMH75	10	45.874	0.171	82.7	0.1937	0.0000	OK
4320 minute winter	SMH32	4260	45.394	2.042	5.6	2.3094	0.0000	SURCHARGED
4320 minute winter	SMH31	4260	45.394	1.894	4.1	2.1421	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SMH25	P25	SMH26	146.0	1.334	0.358	3.0559	
2160 minute winter	SMH14	P14	SMH13	2.6	0.620	0.043	1.1427	
2160 minute winter	SMH11	P11	SMH12	4.4	0.783	0.029	0.7048	
15 minute summer	SMH50	P54	SMH55	99.8	1.418	0.964	0.7526	
15 minute summer	SMH26	P26	SMH17	191.7	1.380	1.203	6.5104	
30 minute summer	SMH36	P36	SMH37	51.4	1.291	1.273	0.2166	
30 minute summer	SMH37	P37	SMH38	42.8	1.082	1.077	0.4726	
15 minute summer	SMH118	SP14	ST14	56.3	3.135	0.419	0.4042	
30 minute summer	SMH38	P38	SMH39	48.7	1.226	1.225	1.6736	
2160 minute winter	SMH12	P12	SMH13	6.5	0.668	0.047	0.6008	
4320 minute winter	SMH35	P35	SMH36	4.7	0.622	0.117	0.9873	
15 minute summer	SMH55	P55	SMH56	135.3	1.922	1.022	0.4580	
15 minute summer	SMH103	P103	SMH104	178.3	2.532	1.444	3.6741	
2160 minute winter	SMH5	P5	SMH6	11.6	0.464	0.064	0.7467	
30 minute summer	SMH39	P39	SMH40	83.4	2.097	2.093	1.5685	
4320 minute winter	SMH43A	SP3	ST3	13.5	0.417	0.121	1.8749	
4320 minute winter	SMH34	P34	SMH35	5.4	0.121	0.019	4.0739	
15 minute summer	SMH29	P29	SMH31	0.0	0.000	0.000	0.0000	
2160 minute winter	SMH13	P13	SMH5	7.4	0.344	0.041	1.2037	
15 minute summer	SMH56	P56	SMH57	131.2	1.864	0.839	1.5092	
4320 minute winter	SMH33	P33	SMH34	6.7	0.370	0.024	5.3885	
15 minute summer	SMH70	P69	SMH69	92.2	2.376	0.967	0.2728	
15 minute summer	SMH75	P75	SMH76	82.7	1.315	0.634	3.3558	
4320 minute winter	SMH32	P32	SMH33	6.5	0.458	0.023	5.8789	
4320 minute winter	SMH31	P31	SMH32	3.9	0.471	0.014	1.5349	

Results for 100 year +30% CC +10% A Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
4320 minute winter	ST2	4260	45.394	1.846	18.5	1663.4640	0.0000	SURCHARGED
15 minute summer	SMH82	10	45.200	0.269	82.9	0.3043	0.0000	OK
15 minute summer	SMH117	9	45.786	0.149	56.1	0.1680	0.0000	OK
15 minute summer	SMH91	11	43.302	1.835	375.8	2.0759	0.0000	SURCHARGED
4320 minute winter	SMH44	4260	45.394	0.494	2.6	0.5587	0.0000	SURCHARGED
15 minute summer	SMH76	10	45.400	0.521	153.2	0.5890	0.0000	SURCHARGED
4320 minute winter	SMH45	4260	45.394	0.730	4.2	0.8256	0.0000	SURCHARGED
4320 minute winter	SMH92	3300	43.262	1.815	23.7	2.0530	0.0000	SURCHARGED
4320 minute winter	ST8	4260	45.394	1.846	1.9	168.2180	0.0000	SURCHARGED
600 minute winter	SMH43	495	45.895	0.795	5.2	0.8992	0.0000	SURCHARGED
4320 minute winter	SMH49	4260	45.394	0.925	1.2	1.0461	0.0000	SURCHARGED
4320 minute winter	SMH30	4260	45.394	1.206	2.3	1.3640	0.0000	SURCHARGED
4320 minute winter	SMH80	3180	45.061	1.861	4.5	2.1048	0.0000	SURCHARGED
4320 minute winter	SMH93	3300	43.262	1.846	23.6	2.0876	0.0000	SURCHARGED
4320 minute winter	SMH58	4260	45.394	0.794	1.4	0.8979	0.0000	SURCHARGED
4320 minute winter	SMH81	3180	45.061	1.900	4.4	2.1488	0.0000	SURCHARGED
4320 minute winter	SMH46	4260	45.394	1.153	4.2	1.3040	0.0000	SURCHARGED
15 minute summer	SMH106	10	45.735	0.871	96.0	0.9850	0.0000	SURCHARGED
15 minute summer	SMH83	10	45.073	0.326	81.9	0.3685	0.0000	SURCHARGED
15 minute summer	SMH84	11	45.020	0.291	81.8	0.3290	0.0000	OK
15 minute summer	SMH85	11	44.975	3.004	81.7	3.3977	0.0000	SURCHARGED
4320 minute winter	ST5	4260	45.394	1.846	9.0	417.4279	0.0000	SURCHARGED
15 minute summer	SMH86	11	44.942	3.000	65.9	3.3932	0.0000	SURCHARGED
15 minute summer	SMH107	10	45.333	0.589	93.0	0.6661	0.0000	SURCHARGED
4320 minute winter	SMH47	4260	45.394	1.745	8.1	1.9735	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
4320 minute winter	ST2	P19	SMH31	3.7	0.443	0.010	1.7339	
15 minute summer	SMH82	P82	SMH83	81.9	1.178	0.779	1.4083	
15 minute summer	SMH117	P117	SMH45	56.0	1.794	0.773	1.5673	
15 minute summer	SMH91	P91	SMH92	375.1	2.368	2.312	1.2433	
4320 minute winter	SMH44	P44	SMH45	2.6	0.730	0.045	0.5165	
15 minute summer	SMH76	P76	SMH77	151.2	2.148	1.431	0.8223	
4320 minute winter	SMH45	P45	SMH46	4.2	0.778	0.036	2.6540	
4320 minute winter	SMH92	P92	SMH93	23.6	0.631	0.147	1.9539	
4320 minute winter	ST8	P58	SMH34	-0.6	0.270	-0.016	0.5129	
600 minute winter	SMH43	SP4	ST4	5.1	0.603	0.118	0.7838	
4320 minute winter	SMH49	SP6	ST6	1.2	0.444	0.030	1.4055	
4320 minute winter	SMH30	P30	SMH31	2.3	0.515	0.057	1.1454	
4320 minute winter	SMH80	P80	SMH81	4.4	0.542	0.063	0.6691	
4320 minute winter	SMH93	P93	SMH94	23.6	0.673	0.148	1.2256	
4320 minute winter	SMH58	SP8	ST8	1.4	0.473	0.035	1.3956	
4320 minute winter	SMH81	P81	SMH41	4.4	0.554	0.062	3.5323	
4320 minute winter	SMH46	P46	SMH47	4.1	0.633	0.042	2.6899	
15 minute summer	SMH106	P106	SMH107	93.0	2.339	1.440	0.3099	
15 minute summer	SMH83	P83	SMH84	81.8	1.162	1.145	0.3023	
15 minute summer	SMH84	P84	SMH85	81.7	1.288	1.135	0.2880	
15 minute summer	SMH85	P85	SMH86	65.9	0.936	0.923	0.4896	
4320 minute winter	ST5	P48	SMH32	4.5	0.431	0.035	1.2162	
15 minute summer	SMH86	P86	SMH87	81.2	1.154	1.146	0.4806	
15 minute summer	SMH107	P107	SMH108	90.5	2.275	1.077	0.5750	
4320 minute winter	SMH47	P47	SMH48	8.0	0.379	0.090	1.4163	

Results for 100 year +30% CC +10% A Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SMH87	11	44.908	2.994	115.9	3.3865	0.0000	SURCHARGED
2880 minute winter	ST11	2220	45.148	1.852	10.4	268.8092	0.0000	SURCHARGED
4320 minute winter	SMH41	3180	45.061	2.255	4.4	2.5501	0.0000	SURCHARGED
600 minute winter	ST4	495	45.895	0.933	5.1	47.2360	0.0000	SURCHARGED
15 minute summer	SMH88	11	44.750	2.869	145.7	3.2444	0.0000	SURCHARGED
15 minute summer	SMH108	11	44.745	0.376	90.5	0.4247	0.0000	SURCHARGED
15 minute summer	SMH90	11	44.014	2.444	385.6	2.7639	0.0000	SURCHARGED
15 minute summer	SMH96	11	44.304	0.304	51.2	0.3440	0.0000	SURCHARGED
15 minute summer	SMH109	11	44.224	0.158	89.8	0.1781	0.0000	OK
4320 minute winter	SMH57	4260	45.394	1.217	4.1	1.3764	0.0000	SURCHARGED
4320 minute winter	ST6	4260	45.394	1.134	1.9	103.3400	0.0000	SURCHARGED
15 minute summer	SMH104	11	44.358	1.132	178.3	1.2801	0.0000	SURCHARGED
15 minute summer	SMH89	11	44.235	2.596	246.0	2.9362	0.0000	SURCHARGED
4320 minute winter	SMH48	4260	45.394	1.777	9.0	2.0097	0.0000	SURCHARGED
4320 minute winter	SMH105	3300	43.260	2.760	9.3	3.1220	0.0000	SURCHARGED
15 minute summer	SMH110	11	43.435	0.590	267.2	0.6675	0.0000	SURCHARGED
15 minute summer	SMH111	11	43.865	0.903	177.4	1.0214	0.0000	SURCHARGED
15 minute summer	SMH112	10	40.875	0.536	75.5	0.6062	0.0000	SURCHARGED
4320 minute winter	SMH42	3180	45.063	2.737	13.6	3.0953	0.0000	SURCHARGED
15 minute summer	SMH113	11	40.723	0.443	59.1	0.5008	0.0000	SURCHARGED
15 minute summer	SMH114	11	40.613	0.365	57.4	0.4123	0.0000	SURCHARGED
15 minute summer	SMH115	11	39.660	0.160	56.2	0.1806	0.0000	OK
4320 minute winter	ST14	4380	37.734	1.943	16.2	153.6158	0.0000	SURCHARGED
4320 minute winter	ST3	3180	45.061	2.976	17.3	398.6334	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SMH87	P87	SMH88	122.6	1.741	1.720	0.5602	
2880 minute winter	ST11	P77	SMH80	2.2	0.521	0.055	0.1392	
4320 minute winter	SMH41	P41	ST3	4.3	0.460	0.027	1.9409	
600 minute winter	ST4	P43	SMH44	1.0	0.472	0.026	0.0525	
15 minute summer	SMH88	P88	SMH89	152.1	2.160	2.146	1.5787	
15 minute summer	SMH108	P108	SMH109	89.8	2.381	1.050	0.3920	
15 minute summer	SMH90	P90	SMH91	375.8	2.372	2.356	6.6191	
15 minute summer	SMH96	P96	SMH89	62.2	2.039	0.710	0.3173	
15 minute summer	SMH109	P109	SMH110	90.3	2.803	0.779	0.6199	
4320 minute winter	SMH57	P57	SMH47	4.0	0.578	0.045	3.1868	
4320 minute winter	ST6	P49	SMH30	1.1	0.330	0.027	0.4814	
15 minute summer	SMH104	P111	SMH111	177.4	2.519	1.091	0.8730	
15 minute summer	SMH89	P89	SMH90	258.0	1.628	1.615	4.4207	
4320 minute winter	SMH48	SP5	ST5	9.0	0.419	0.062	5.3731	
4320 minute winter	SMH105	SP13	ST12	9.7	0.697	0.043	1.1133	
15 minute summer	SMH110	P104	SMH105	267.1	2.422	2.343	0.5644	
15 minute summer	SMH111	P110	SMH110	177.3	2.517	2.488	0.7130	
15 minute summer	SMH112	P112	SMH113	59.1	1.487	1.485	0.3235	
4320 minute winter	SMH42	P43A	SMH43A	13.5	0.616	0.191	1.9374	
15 minute summer	SMH113	P113	SMH114	57.4	1.443	1.435	0.2137	
15 minute summer	SMH114	P114	SMH115	56.2	1.418	1.233	1.4868	
15 minute summer	SMH115	P118	SMH118	56.3	2.065	0.660	0.2074	
4320 minute winter	ST14	P115	SMH116	15.5	0.888	0.388	0.0914	3550.4
4320 minute winter	ST3	P42	SMH85	10.8	0.816	0.270	0.2597	

Results for 100 year +30% CC +10% A Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
2880 minute winter	SMH77	2220	45.148	0.526	7.3	0.7530	0.0000	SURCHARGED
15 minute summer	SMH79	10	45.922	1.099	88.5	1.2428	0.0000	SURCHARGED
4320 minute winter	SMH94	3300	43.261	1.864	23.6	2.1087	0.0000	SURCHARGED
4320 minute winter	ST12	3300	43.260	2.886	32.6	1542.6800	0.0000	SURCHARGED
15 minute summer	SMH102	11	46.093	1.002	135.5	1.1334	0.0000	SURCHARGED
120 minute summer	SMH116	78	35.856	0.096	15.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
2880 minute winter	SMH77	SP11	ST11	10.4	0.555	0.065	5.0060	
15 minute summer	SMH79	P79	SMH80	88.0	2.212	2.209	1.3211	
4320 minute winter	SMH94	SP12	ST12	23.6	0.744	0.148	8.1655	
4320 minute winter	ST12	P94	SMH112	15.4	0.819	0.383	0.1109	
15 minute summer	SMH102	P102	SMH103	140.4	1.994	1.958	0.3689	

APPENDIX 7.2 - IRISH WATER CONFIRMATION OF FEESIBILITY

CONFIRMATION OF FEASIBILITY

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na Cathrach Theas
Cathair Chorcaí

Uisce Éireann
PO Box 448
South City
Delivery Office
Cork City

www.water.ie

Ciaran Cadogan
Garland
Riverfront
Howleys Quay
Limerick
V95 HC03

12 February 2026

Our Ref: CDS25006333 Pre-Connection Enquiry Suttons Land, Monaleen Road, Castletroy, Limerick

Dear Applicant/Agent,

We have completed the review of the Pre-Connection Enquiry.

Uisce Éireann has reviewed the pre-connection enquiry in relation to a Water & Wastewater connection for a Multi/Mixed Use Development of 535 unit(s) at Suttons land, Monaleen road, Castletroy, Limerick, (the **Development)**.

Based upon the details provided we can advise the following regarding connecting to the networks;

- **Water Connection** - Feasible without infrastructure upgrade by Uisce Éireann

- As per Uisce Éireann GIS records (please see Section B of this letter), Uisce Éireann assets are present on the site. The Developer must demonstrate that proposed structures and works will not inhibit access for maintenance or endanger structural or functional integrity of the assets during and after the works. For design submissions and queries related to diversion/build near or over, please contact UÉ Diversion Team via email address diversions@water.ie.
- All necessary wayleaves must also be secured and in place.
- Final designs must be submitted to and approved by the Diversion Teams in accordance with their requirements.

- **Wastewater Connection** - Feasible Subject to upgrades

- To accommodate the proposed connection for the development, upgrades to the existing wastewater network are required. These works are not included on Uisce Éireann investment plan; therefore, the applicant will be responsible for funding the necessary local network upgrades. The upgrades will involve increasing the sewer diameter to a minimum of 300 mm over an approximate length of 262 metres, from Monaleen Road to Dublin Road (as seen below). At the connection application stage, the applicant must submit a manhole survey covering Dublin Road and Monaleen Road, as indicated below. This survey must be undertaken by an accredited contractor or surveyor. The network upgrade requirements will be reviewed at connection application stage, and a quotation for the works will be issued at that time.

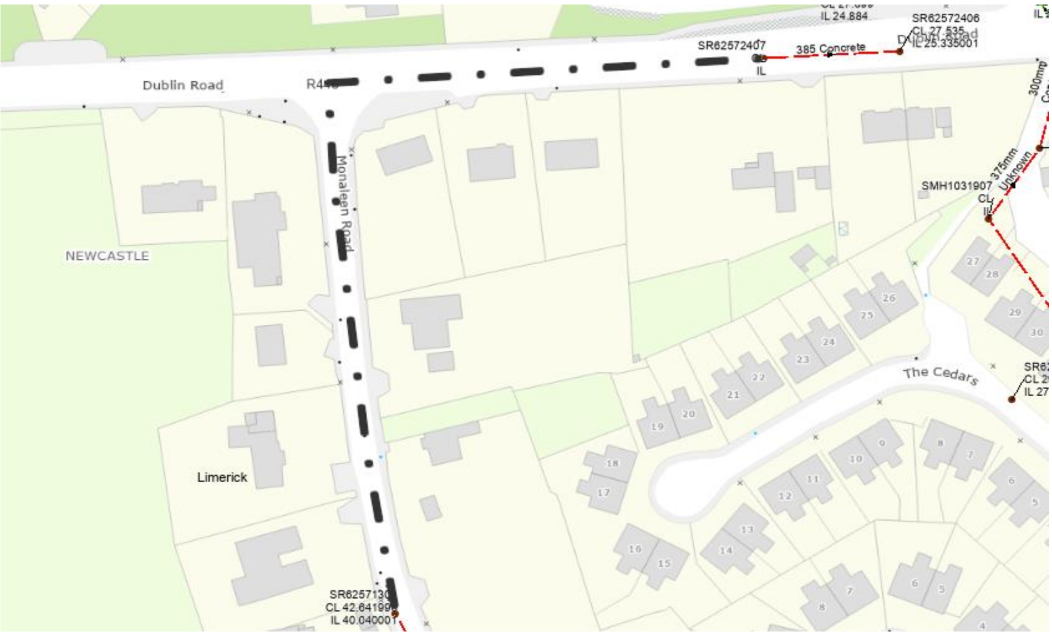


Figure 1- Proposed network upgrades and survey required (Dash Line)

- The applicant is responsible for the design and construction of the proposed Pumping Station, which must comply with Uisce Éireann Code of Practice and Standard Details.
- Gravity connection is feasible via Monaleen Road, turning east onto Dublin Road.

This letter does not constitute an offer, in whole or in part, to provide a connection to any Uisce Éireann infrastructure. Before the Development can be connected to our network(s) you must submit a connection application and be granted and sign a connection agreement with Uisce Éireann.

As the network capacity changes constantly, this review is only valid at the time of its completion. As soon as planning permission has been granted for the Development, a completed connection application should be submitted. The connection application is available at www.water.ie/connections/get-connected/

Where can you find more information?

- **Section A -** What is important to know?
- **Section B -** Details of Uisce Éireann's Network(s)

This letter is issued to provide information about the current feasibility of the proposed connection(s) to Uisce Éireann's network(s). This is not a connection offer and capacity in Uisce Éireann's network(s) may only be secured by entering into a connection agreement with Uisce Éireann.

For any further information, visit **www.water.ie/connections**, **email newconnections@water.ie** or contact 1800 278 278**.**

Yours sincerely,

Dermot Phelan

Dermot Phelan
Connections and Developer Services

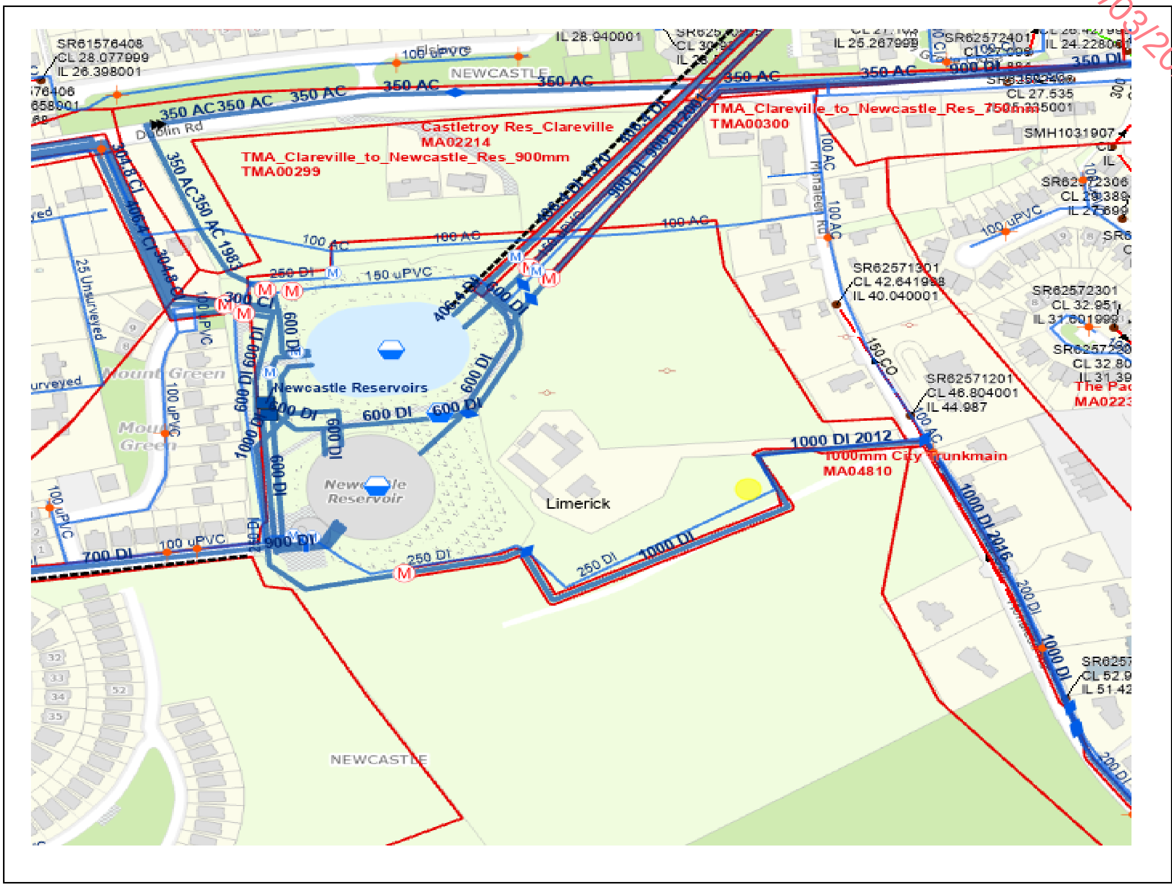
Section A - What is important to know?

What is important to know?	Why is this important?
Do you need a contract to connect?	• Yes, a contract is required to connect. This letter does not constitute a contract or an offer in whole or in part to provide a connection to Uisce Éireann's network(s). • Before the Development can connect to Uisce Éireann's network(s), you must submit a connection application <u>and be granted and sign</u> a connection agreement with Uisce Éireann.
When should I submit a Connection Application?	• A connection application should only be submitted after planning permission has been granted.
Where can I find information on connection charges?	• Uisce Éireann connection charges can be found at: https://www.water.ie/connections/information/charges/
Who will carry out the connection work?	• All works to Uisce Éireann's network(s), including works in the public space, must be carried out by Uisce Éireann*. *Where a Developer has been granted specific permission and has been issued a connection offer for Self-Lay in the Public Road/Area, they may complete the relevant connection works
Fire flow Requirements	• The Confirmation of Feasibility does not extend to fire flow requirements for the Development. Fire flow requirements are a matter for the Developer to determine. • **What to do?** - Contact the relevant Local Fire Authority
Plan for disposal of storm water	• The Confirmation of Feasibility does not extend to the management or disposal of storm water or ground waters. • **What to do?** - Contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges.
Where do I find details of Uisce Éireann's network(s)?	• Requests for maps showing Uisce Éireann's network(s) can be submitted to: datarequests@water.ie

What are the design requirements for the connection(s)?	• The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this Development shall comply with ***the Uisce Éireann Connections and Developer Services Standard Details and Codes of Practice,*** available at www.water.ie/connections
Trade Effluent Licensing	• Any person discharging trade effluent** to a sewer, must have a Trade Effluent Licence issued pursuant to section 16 of the Local Government (Water Pollution) Act, 1977 (as amended). • More information and an application form for a Trade Effluent License can be found at the following link: https://www.water.ie/business/trade-effluent/about/ **trade effluent is defined in the Local Government (Water Pollution) Act, 1977 (as amended)

Section B – Details of Uisce Éireann's Network(s)

The map included below outlines the current Uisce Éireann infrastructure adjacent the Development: To access Uisce Éireann Maps email datarequests@water.ie



Note: The information provided on the included maps as to the position of Uisce Éireann's underground network(s) is provided as a general guide only. The information is based on the best available information provided by each Local Authority in Ireland to Uisce Éireann.

Whilst every care has been taken in respect of the information on Uisce Éireann's network(s), Uisce Éireann assumes no responsibility for and gives no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided, nor does it accept any liability whatsoever arising from or out of any errors or omissions. This information should not be solely relied upon in the event of excavations or any other works being carried out in the vicinity of Uisce Éireann's underground network(s). The onus is on the parties carrying out excavations or any other works to ensure the exact location of Uisce Éireann's underground network(s) is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

APPENDIX 8.1 – RESOURCE & WASTE MANAGEMENT PLAN

PLAN

Resource and Waste Management Plan for Residential Development at Monaleen Road, Castletroy, Co. Limerick

February 2026

GARLAND

Concepts Realised

GARLAND
Concepts Realised

CONTENTS

Description of change	Originator	Rev	Approval	Date
Initial Release	BL	0	BL	13/02/26

1. INTRODUCTION

GARLAND were commissioned to prepare a Resource and Waste Management Plan (RWMP) for new Residential Development at Monaleen Road, Castletroy, Co. Limerick.

This plan will provide information necessary to ensure that the management of construction waste at the site is undertaken in accordance with all current legal and industry standards including the Waste Management Act 1996 as amended and associated Regulations, Environmental Protection Agency Act 1992 as amended, Litter Pollution Act 1997 as amended and the Southern Region Waste Management Plan 2015-2021. In particular, this plan aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. It also seeks to provide guidance on the appropriate collection and transport of waste from the site to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil and/or water).

This RWMP includes information on the legal and policy framework for Construction & Demolition (C&D) waste management in Ireland, estimates of the type and quantity of waste to be generated by the proposed development and makes recommendations for management of different waste streams. The RWMP should be viewed as a live document and should be regularly revisited throughout a project's lifecycle so that opportunities to maximise waste reduction / efficiencies are exploited throughout, and that data is collected on an ongoing basis so that it is as accurate as possible.

2. C&D RESOURCE AND WASTE MANAGEMENT IN IRELAND

2.1. National Level

The Irish Government issued a policy statement in September 1998, Changing Our Ways, which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. The target for C&D waste in this report was to recycle at least 50% of C&D waste within a five year period (by 2003), with a progressive increase to at least 85% over fifteen years (i.e. 2013).

In response to the Changing Our Ways report, a task force (Task Force B4) representing the waste sector of the already established Forum for the Construction Industry, released a report entitled 'Recycling of Construction and Demolition Waste concerning the development and implementation of a voluntary construction industry programme to meet the Government's objectives for the recovery of C&D waste.

In September 2020, the Irish Government published a policy document outlining a new action plan for Ireland to cover the period of 2020-2025. This plan, 'A Waste Action Plan for a Circular Economy (WAPCE), replaces the previous national waste management plan, "A Resource Opportunity" (2012), and was prepared in response to the 'European Green Deal' which sets a roadmap for a transition to an altered economical model, where climate and environmental challenges are turned into opportunities.

The WAPCE sets the direction for waste planning and management in Ireland up to 2025. This reorientates policy from a focus on managing waste to a much greater focus on creating circular patterns of production and consumption. Other policy statements of a number of public bodies already acknowledge the circular economy as a national policy priority.

The policy document contains over 200 measures across various waste areas including circular economy, municipal waste, consumer protection and citizen engagement, plastics and packaging, construction and demolition, textiles, green public procurement and waste enforcement.

One of the first actions to be taken was the development of the Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021) to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021. It is anticipated that the Strategy will be updated in full every 18 months to 2 years.

The Circular Economy and Miscellaneous Provisions Act 2022 was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single- use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of- Waste and By-Products decisions, tackling the delays which can be encountered by industry, and supporting the availability of recycled secondary raw materials in the Irish market, and tackles illegal fly-tipping and littering.

The Environmental Protection Agency (EPA) of Ireland issued 'Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects' in November 2021. These guidelines replace the previous guidelines issued by The National Construction and Demolition Waste Council (NCDWC) and the Department of the Environment, Heritage and Local Government (DoEHLG) in 2006. The guidelines provide a practical approach which is informed by best practice in the prevention and management of C&D wastes and resources from design to construction of a project, including consideration of the deconstruction of a project. These guidelines have been followed in the preparation of this document and include the following elements:

- Predicted C&D wastes and procedures to prevent, minimise, recycle and reuse wastes;
- Design teams roles and approach;
- Relevant EU, national and local waste policy, legislation and guidelines;
- Waste disposal/recycling of C&D wastes at the site;
- Provision of training for Resource Manager (RM) and site crew;
- Details of proposed record keeping system;
- Details of waste audit procedures and plan; and
- Details of consultation with relevant bodies i.e. waste recycling companies, Local Authority, etc.

Section 3 of the Guidelines identifies thresholds above which there is a requirement for the preparation of a RWMP for developments. The new guidance classifies developments on a two-tiered system. Developments which do not exceed any of the following thresholds may be classed as Tier 1 development:

- New residential development of less than 10 dwellings.

- Retrofit of 20 dwellings or less.
- New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 1,250m^2.
- Retrofit of commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 2,000m^2; and
- Demolition projects generating in total less than 100m^3 in volume of C&D waste.

A development which exceeds one or more of these thresholds is classed as Tier-2 projects.

This development requires a RWMP as a Tier 2 development as it exceeds the following Tier 1 thresholds:

- New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 1,250m^2

Other guidelines followed in the preparation of this report include 'Construction and Demolition Waste Management – a handbook for Contractors and Site Managers, published by FÁS and the Construction Industry Federation in 2002 and the previous guidelines, 'Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects' (2006).

These guidance documents are considered to define best practice for C&D projects in Ireland and describe how C&D projects are to be undertaken such that environmental impacts and risks are minimised and maximum levels of waste recycling are achieved.

2.2. Regional Level

The proposed development is located in the Local Authority area of Limerick City and County Council (LCCC).

The Southern Region Waste Management Plan 2015 – 2021 is the regional waste management plan for the LCCC area published in 2014.
The Regional Plan sets out the strategic targets for waste management in the region and sets a specific target for C&D waste of "70% preparing for reuse, recycling and other recovery of construction and demolition waste" (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Munster Region, charges are approximately €200 per tonne of waste which includes a €85 per tonne landfill levy introduced under the Waste Management (Landfill Levy) (Amendment) Regulations 2015.

The Limerick Development Plan 2022-2028 sets out a number of objectives for the Limerick City and County area, in line with the objectives of the regional waste management plan and the Circular Economy Policy. Waste objectives with a particular relevance to the proposed development are:

Objective IN O17 Waste Management and the Circular Economy It is an objective of the Council to:

- Support innovative, smart solutions and processes, based on the principles of the circular economy to implement the Regional Waste Management Plan for the Southern Region 2015 – 2021 and any subsequent plan, including any targets contained therein.
- Collaborate with the Regional Waste Management Office and other agencies to implement the EU Action Plan for the Circular Economy – Closing the Loop, 2015, its successor the Circular Economy Action Plan: A New Circular Economy Action Plan for a Cleaner More Competitive Europe, 2020 and the Resource Opportunity Waste Management Policy, DECLG, 2012 and any subsequent plans.
- Promote sustainable patterns of consumption and production in the areas of product design, production processes and waste management.
- Implement the provisions of the Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2020 - 2025, DECC, 2020 in the assessment of planning applications.

2.3. Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the development are:

- Waste Management Act 1996 as amended.
- Environmental Protection Agency Act 1992 as amended.
- Litter Pollution Act 1997 as amended.
- Planning and Development Act 2000 as amended
- Circular Economy and Miscellaneous Provisions Act 2022.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the Waste Management Act 1996 as amended and subsequent Irish legislation, is the principle of "Duty of Care". This implies that the waste producer is responsible for waste from the time it is generated through until its legal recycling, recovery or disposal (including its method of disposal). As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final destination, waste contractors will be employed to physically transport waste to the final destination. Following on from this is the concept of "Polluter Pays" whereby the waste producer is liable to be prosecuted for pollution incidents, which may arise from the incorrect management of waste produced, including the actions of any contractors engaged (e.g. for transportation and disposal/recovery/recycling of waste).

It is therefore imperative that the applicant ensures that the waste contractors engaged by the construction contractors are legally compliant with respect to waste transportation, recycling, recovery and disposal. This includes the requirement that a contractor handle, transport and recycle/recover/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant

Local Authority under the Waste Management (Facility Permit & Registration) Regulations 2007 and Amendments or a Waste or Industrial Emissions License granted by the EPA. The COR / permit / license held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

3. DESIGN APPROACH

The client and the design team have integrated the 'Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects' into the design workshops, to help review processes, identify and evaluate resource reduction measures and investigate the impact on cost, time, quality, buildability, second life and management post construction. Further details on these design principals can be found within the aforementioned guidance document.

The design team have undertaken the design process in line with the international best practice principles to firstly prevent wastes, reuse where possible and thereafter sustainably reduce and recover materials. The below sections have been the focal point of the design process and material selections and will continue to be analysed and investigated throughout the design process and when selecting material.

The approaches presented are based on international principles of optimising resources and reducing waste on construction projects through:

- Prevention;
- Reuse;
- Recycling;
- Green Procurement Principles;
- Off-Site Construction;
- Materials Optimisation; and
- Flexibility and Deconstruction.

3.1. Designing For Prevention, Reuse and Recycling

Undertaken at the outset and during project feasibility and evaluation, the Client and Design Team considered the potential for any reusable site assets e.g. topsoils and subsoils.

There are no existing structures or buildings on site so there is no opportunity for refurbishment and refitting rather than new build.

3.2. Designing for Green Procurement

Waste prevention and minimisation pre-procurement have been discussed and will be further elaborated within in this section. The Design Team will discuss proposed design solutions, encourage innovation in tenders and incentivise competitions to recognise sustainable approaches. They will also discuss options for packaging reduction with the main construction contractor and subcontractors/suppliers using measures such as 'Just-in-Time' delivery and use ordering procedures that avoid excessive waste and unnecessary transport. The Green procurement extends from the planning stage into the detailed design and tender stage and will be an ongoing part of the long-term design and selection process for this development.

3.3. Designing for Off-Site Construction

Use of off-site manufacturing has been shown to reduce residual wastes by up to 90% (volumetric building versus traditional). The decision to use offsite construction is typically cost led but there are significant benefits for resource management. Some further considerations for procurement which are being investigated as part of the planning stage design process are listed as follows:

- Early collaboration with the market
- Standardization of components and modularization
- Designing to permit transport and assembly
- Use of structural steelwork
- Use of structural framing systems for infill wall panels
- Use of roof paneling system
- Use of pre-cast structural concrete cores which can reduce the residual volumes of concrete blocks, mortars, plasters, etc; and
- Use of prefabricated reinforcement

The use of off-site construction using Modern Methods of Construction based on off-site fabrication have already been considered in the design todate and will be further considered post grant of a planning permission.

3.4. Designing for Materials Optimisation during Construction

To ensure manufacturers and construction companies will adopt lean production models, including maximising the reuse of materials onsite. This helps to reduce the environmental impacts associated with transportation of materials and from waste management activities. This includes investigating the use of standardised sizes for certain materials to help reduce the amount of offcuts produced on site, focusing on promotion and development of off-site manufacture.

The structural design approach for the proposed development is such that all non-structural internal walls will be made in lightweight but robust partition systems appropriately rated for required impact duty. As such, heavy masonry works are not envisaged for the internal layouts.

Prefabricated Mechanical, Electrical, and Plumbing (MEP) systems present an innovative solution to enhance construction efficiency and sustainability. By specifically specifying MEP components that can be assembled off-site, projects benefit from streamlined on-site installation processes. This method not only reduces construction timelines but also minimizes material waste, as the manufacturing of MEP systems can be closely controlled in a controlled environment. The off-site assembly ensures precision and accuracy in the construction of these critical building systems, promoting a higher level of quality and consistency. Prefabricated MEP systems not only contribute to the optimization of construction processes but also align with the broader goal of sustainable and resource-efficient building practices.

3.5. Designing for Flexibility and Deconstruction

Design flexibility has and will be investigated throughout the design process to ensure that where possible products (including buildings) only contain materials that can be recycled and are designed to be easily disassembled. Material efficiency is being considered for the duration and end of life of a building project to produce; flexible, adaptable spaces that enable a resource-efficient, low-waste future change of use; durability of materials and how they can be recovered effectively when maintenance and refurbishment are undertaken and during disassembly/deconstruction.

Designing building facades with removable and reusable elements is a forward-thinking strategy that enhances both flexibility and sustainability in construction. By incorporating components that can be easily removed and replaced, the facade becomes adaptable to updates in aesthetics, energy efficiency improvements, or changing design trends without the need for significant demolition or waste generation. This approach allows for a dynamic and responsive building exterior, aligning with evolving architectural preferences and environmental standards. Moreover, the ability to update specific facade elements independently reduces the overall environmental impact, promoting a more resource-efficient and economically viable construction and renovation process. This commitment to removable and reusable facade elements reflects a commitment to long-term sustainability, where structures can evolve with minimal environmental impact over time.

Opting for bolted connections and fasteners in structural elements is a strategic design choice with long-term sustainability in mind. By favouring bolted connections over welded alternatives, structures become more amenable to disassembly during deconstruction phases. This design approach facilitates the efficient dismantling of the building, allowing for the reuse of structural components. Bolted connections offer a key advantage in their reversibility, as they can be easily undone without compromising the integrity of the materials. This not only simplifies the deconstruction process but also contributes to resource conservation by preserving structural elements for potential reuse in future construction projects. The use of bolted connections aligns with principles of circular economy, promoting a more environmentally conscious and adaptable approach to construction and demolition practices.

Designing buildings with plug-and-play building services involves integrating utility connections that are easily adaptable to future changes in technology or equipment. By implementing this approach, the installation and replacement of building systems become simplified, mitigating the need for major disruptions to the structure. The concept of plug-and-play building services allows for a seamless transition when upgrading or incorporating new technologies, ensuring that the building remains agile and responsive to evolving needs. This flexibility not only enhances the longevity of the building but also contributes to a more sustainable and resource-efficient construction and maintenance process. Whether it's accommodating advancements in energy systems, communication infrastructure, or other utilities, the plug-and-play approach promotes a future-ready and easily adaptable built environment.

4. DESCRIPTION OF THE PROJECT

4.1. Location, Size and Scale of the Development

The development includes site excavation and general site preparation works. It provides 214 two-storey houses, consisting of 10 two-bed units and 204 three-bed units. It also includes 309 apartment units made up of 159 one-bed units, 141 two-bed units, and 9 three-bed units, accommodated in apartment buildings of up to five storeys. These apartment buildings include bicycle and bin storage at ground or podium level as appropriate.

A 514 sq. metre crèche is proposed at ground level in apartment building no. 10, with associated outdoor play space. Car parking is provided at surface level through a combination of in-curtilage parking for dwellings and on-street parking for the crèche and apartment blocks 1–5 and block 10. Podium/basement parking is provided for apartment blocks 6–9, which also incorporate bicycle storage, bin storage, motorbike parking, and plant rooms at podium/basement level.

The development includes electric vehicle charge points with associated ducting throughout the site, surface-level bicycle storage facilities, associated open space and residential communal open space including formal play areas, hard and soft landscaping for private gardens and amenity spaces, public lighting, planting, and boundary treatments including walls, railings, and fencing.

Access is provided via an entrance and associated upgrade works from the Monaleen Road for vehicles and pedestrians, with a separate pedestrian access from the Dublin Road. The proposal also includes 2 ESB substations, internal site works and attenuation systems, and ancillary site development and construction works to facilitate foul, water, and service networks connecting to existing foul, water, and ESB networks.

4.2. Details of the Non-Hazardous Wastes to be produced

There will be waste materials generated from the excavation of topsoil, clay, gravel and bedrock to facilitate site clearance, site levelling, construction of new building`s foundations and installation of services.

A trial hole investigation, see APeendix A for further details, was carried out across the site that identified that ground conditions vary across the site, with rock observed close to the surface in most trial hole locations. Topsoil depths range from approx. 200-350mm. Beneath the topsoil, natural ground materials include layers of sand with silt, silty sand, and weathered rock, with the weathered rock transitioning into firmer rock at greater depths. In most locations, the excavated materials appeared dry, with no groundwater encountered in any of the trial holes, although some dampness was noted in deeper layers, suggesting minor infiltration. An area in the western corner of the site, near the existing reservoirs, was found to contain approx. 2-2.5m of construction-related fill, including materials such as CL804, bricks, plastic, concrete, and asphalt (TH-10 and TH-12). This fill overlies the natural ground and its full extent will require further investigation. Overall, the excavated materials, including both natural soils and weathered rock, are likely to be suitable for reuse on site as construction fill.

Soil, water and leachate samples are taken from tirl pits, see Appendix B for further details, and chemically tested and a waste classification undertaken based on the results, see Appendix C for further details. The HazWasteOnline waste classification results (report dated 16 December 2025) indicate that the soil and stones samples tested were classified as non-hazardous waste under LoW code 17 05 04 (soil and stones other than those mentioned in 17 05 03), with no hazardous properties identified. The associated Waste Acceptance Criteria (WAC) assessment using Irish limits shows the samples pass the non-hazardous landfill criteria, and the majority also pass the inert landfill criteria; however, sample 25/11/5977-2060362 fails the inert criteria due to TOC of 6.6% (in excess of the 3% inert limit) while still passing non-hazardous criteria. Low levels of petroleum hydrocarbons (TPH) were recorded in the samples, and while a flammability hazard statement is noted by the tool, it is explicitly forced to non-hazardous on the basis that the soil has no liquid phase and TPH is below 10,000 mg/kg

A cut and fill model has been prepared by GARLAND based on the following parameters:
- The existing surface is represented as being stripped of 300mm of topsoil;
- The proposed finished surface is represented as finished level less an assumed 300mm average build-up for roads/floors etc.;
- The model includes a cut section for the basement; and
- Services excavation and attenuation tank excavation are excluded from the base model but have been estimated separately, see below.

The following analysis is also noted:
- 300mm removal of topsoil across the site: 28,515m³
- Design level cut and fill (post topsoil strip):
    - Cut = 28,000m³;
    - Fill = 43,000m³
- Surface water trench excavation: 4,300m³ (including approx. 1,800m³ cutting into rock)
- Foul water trench excavation: 3,500m³ (including approx. 1,300m³ cutting into rock)
- Attenuation tank excavation: 13,500m³ (including approx. 5,300m³ cutting into rock)

Based on the indicative balance, fill exceeds cut by approximately 15,000m³ therefore imported fill will be required. Excavated materials will be reused on-site wherever possible to reduce export/import requirements, with off-site movement limited to situations where there is surplus, unsuitable material, or where imported material is required to meet design specification.

In alignment with sustainable construction principles and to minimize off-site material transport, the project will aim to reuse excavated and filled materials where feasible, both natural soils and historical fill as engineered fill within the site. This will be facilitated through a combination of ground improvement and stabilization techniques.

The materials targeted for improvement and reuse include:
- Silt, Clay, and Sand: Expected to be suitable for reuse following stabilization or compaction techniques (e.g., lime/cement stabilization, dynamic compaction, or soil mixing).
- Gravel and Clean Fill: Likely to be directly reusable, subject to grading and testing.
- Limited C&D Waste: To be screened and separated, with only inert or structurally acceptable fractions reused.

If any material that requires removal from the site is deemed to be a waste, removal and reuse / recycling / recovery / disposal of the material will be carried out in accordance with the Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended). The volume of waste requiring recovery / disposal will dictate whether a Certificate of Registration (COR), permit or licence is required for the receiving facility. Alternatively, the material may be classed as by-product under Regulation 27 of the European Communities (Waste Directive) Regulations 2011, as amended.

During the construction phase there may be a surplus of building materials, such as timber off-cuts, broken concrete blocks, plastics, metals and tiles generated. There may also be excess concrete during construction which will need to be disposed of. Plastic and cardboard waste from packaging and oversupply of materials will also be generated.

Waste will also be generated from construction workers e.g. organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided onsite during the construction phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices.

During the construction phase there may be a surplus of building materials, such as timber off-cuts, broken concrete blocks, plastics, metals and tiles generated. There may also be excess concrete during construction which will need to be disposed of. Plastic and cardboard waste from packaging and oversupply of materials will also be generated.

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4.3. Potential Hazardous Wastes to be produced

4.3.1. Contaminated Soil

An area in the western corner of the site, near the existing reservoirs, was found to contain approx. 2-2.5m of construction-related fill, including materials such as CL804, bricks, plastic, concrete, and asphalt (TH-10 and TH-12). This fill overlies the natural ground and its full extent will require further investigation.

In the event that any potentially contaminated material is encountered during the segregation and reuse methodology being applied to the site, it will need to be segregated from clean/inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled 'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous using the HazWasteOnline application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the EC Council Decision 2003/33/EC, which establishes the criteria for the acceptance of waste at landfills.

Note, all soils and stones removed offsite as a waste will require testing and classification as non-hazardous or hazardous in accordance with 'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous' and in accordance with the EC Council Decision 2003/33/EC, which establishes the criteria for the acceptance of waste at landfills.

If any Asbestos or Asbestos Containing Material (ACMs) are identified in the soil, the removal of asbestos will be carried out by a suitably qualified contractor will only be removed from site by a suitably permitted waste contractor. in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010. All asbestos will be taken to a suitably licensed or permitted facility.

4.3.2. Fuel/Oils

As fuels and oils are classed as hazardous materials, any on-site storage of fuel/oil, all storage tanks and all draw-off points will be bunded (or stored in double-skinned tanks) and located in a dedicated, secure area of the site. Provided that these requirements are adhered to and site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel/oil wastage at the site.

4.3.3. Japanese Knotweed and Other Invasive Plant Species

There were no invasive species recorded at the proposed development site.

4.3.4. Other known Hazardous Substances

Paints, glues, adhesives and other known hazardous substances will be stored in designated areas. They will generally be present in small volumes only and associated waste volumes generated will be kept to a minimum. Wastes will be stored in appropriate receptacles pending collection by an authorised waste contractor.

In addition, WEEE (containing hazardous components), printer toner/cartridges, batteries (Lead, Ni-Cd or Mercury) and/or fluorescent tubes and other mercury containing waste may be generated from during C&D activities or temporary site offices. These wastes (if encountered) will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

- Design teams roles and approach;
- Relevant EU, national and local waste policy, legislation and guidelines;
- Waste disposal/recycling of C&D wastes at the site;
- Provision of training for Resource Waste Manager (RM) and site crew;
- Details of proposed record keeping system;
- Details of waste audit procedures and plan; and
- Details of consultation with relevant bodies i.e. waste recycling companies, Local Authority, etc.

Section 3 of the Guidelines identifies thresholds above which there is a requirement for the preparation of a bespoke RWMP for developments. The new guidance classifies developments on a two-tiered system. Developments which do not exceed any of the following thresholds may be classed as Tier 1 development, which require a simplified RWMP:

- New residential development of less than 10 dwellings.
- Retrofit of 20 dwellings or less.
- New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 1,250m^2.
- Retrofit of commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 2,000m^2; and
- Demolition projects generating in total less than 100m^3 in volume of C&D waste.

A development which exceeds one or more of these thresholds is classed as Tier-2 development.

This development requires a RWMP as a Tier 2 development as it is above following criterion:

- New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 1,250m^2.

Other guidelines followed in the preparation of this report include *'Construction and Demolition Waste Management – a handbook for Contractors and Site Managers'* [12], published by FÁS and the Construction Industry Federation in 2002 and the previous guidelines, 'Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects' (2006).

These guidance documents are considered to define best practice for C&D projects in Ireland and describe how C&D projects are to be undertaken such that environmental impacts and risks are minimised and maximum levels of waste recycling are achieved.

2.2 Regional Level

The proposed development is located in the Local Authority area of Meath County Council (MCC)

The Eastern Midlands Region (EMR) Waste Management Plan 2015 – 2021, which previously governed waste management policy in the MCC area, has been superseded as of March 2024 by the NWMPCE 2024 – 2030, the new national waste management plan for Ireland.

The NWMPCE does not dissolve the three regional waste areas. The NWCPCE sets the ambition of the plan to have a 0% total waste growth per person over the life of the Plan with an emphasis on non-household wastes including waste from commercial activities and the construction and demolition sector. This Plan seeks to influence sustainable consumption and prevent the generation of waste, improve the capture of materials to optimise circularity and enable compliance with policy and legislation.

The national plan sets out the following strategic targets for waste management in the country that are relevant to the development:

5. ROLES AND RESPONSIBILITIES

The Best Practice Guidelines on the Preparation of Resource Waste Management Plans for Construction and Demolition Projects promotes that a RM should be appointed. The RM may be performed by number of different individuals over the life- cycle of the Project, however it is intended to be a reliable person chosen from within the Planning/Design/Contracting Team, who is technically competent and appropriately trained, who takes the responsibility to ensure that the objectives and measures within the Project RWMP are complied with. The RM is assigned the requisite authority to meet the objective and obligations of the RWMP. The role will include the important activities of conducting waste checks/audits and adopting construction methodology that is designed to facilitate maximum reuse and/or recycling of waste.

5.1. Role of the Client

The Client is the body establishing the aims and the performance targets for the project.

- The Client has commissioned the preparation and submission of a preliminary RWMP as part of the design and planning submission;
- The Client is to commission the preparation and submission of an updated RWMP as part of the construction tendering process;
- The Client will ensure that the RWMP is agreed on and submitted to the local authority prior to commencement of works on site;
- The Client is to request the end-of-project RWMP from the Contractor.

5.2. Role of the Client Advisory Team

The Client Advisory Team or Design Team is formed of architects, consultants, quantity surveyors and engineers and is responsible for:

- Drafting and maintaining the RWMP through the design, planning and procurement phases of the project;
- Appointing a RM to track and document the design process, inform the Design Team and prepare the RWMP.
- Including details and estimated quantities of all projected waste streams with the support of environmental consultants/scientists. This should also include data on waste types (e.g. waste characterisation data, site investigation information) and prevention mechanisms (such as by-products) to illustrate the positive circular economy principles applied by the Design Team;
- Handing over of the RWMP to the selected Contractor upon commencement of construction of the development, in a similar fashion to how the safety file is handed over to the Contractor;
- Working with the Contractor as required to meet the performance targets for the project.

5.3. Future Role of the Contractor

The future construction Contractors have not yet been decided upon for this RWMP. However, once selected they will have major roles to fulfil. They will be responsible for:

- Preparing, implementing and reviewing the RWMP throughout the construction phase (including the management of all suppliers and sub-contractors) as per the requirements of these guidelines;

- Identifying a designated and suitably qualified RM who will be responsible for implementing the RWMP;
- Identifying all hauliers to be engaged to transport each of the resources / wastes off-site;
- Implementing waste management policies whereby waste materials generated on site are to be segregated as far as practicable;
- Identifying all destinations for resources taken off-site. As above, any resource that is legally classified as a 'waste' must only be transported to an authorised waste facility;
- End-of-waste and by-product notifications addressed with the EPA where required;
- Clarification of any other statutory waste management obligations, which could include on-site processing;
- Full records of all resources (both wastes and other resources) should be maintained for the duration of the project; and
- Preparing a RWMP Implementation Review Report at project handover.

6. KEY MATERIALS & QUANTITIES

6.1. Project Resource Targets

Project specific resource and waste management targets for the site have not yet been set and this information should be updated for these targets once these targets have been confirmed by the client. However, it is expected for projects of this nature that a minimum of 70% of waste is fully re-used, recycled or recovered. Target setting will inform the setting of project-specific benchmarks to track target progress. Typical Key Performance Indicators (KPIs) that may be used to set targets include (as per guidelines):

- Weight (tonnes) or Volume (m3) of waste generated per construction value;
- Weight (tonnes) or Volume (m3) of waste generated per construction floor area (m2);
- Fraction of resource reused on site;
- Fraction of resource notified as by-product;
- Fraction of waste segregated at source before being sent off-site for recycling/recovery; and
- Fraction of waste recovered, fraction of waste recycled, or fraction of waste disposed.

6.2. Main C&D Waste Categories

The main non-hazardous and hazardous waste streams that could be generated by the construction activities at a typical site are shown in Table 1. The List of Waste (LoW) code (as effected from 1 June 2015) (also referred to as the European Waste Code or EWC) for each waste stream is also shown.

Waste Material	LoW/EWC Code
Concrete, bricks, tiles, ceramics	17 01 01-03 & 07
Wood, glass and plastic	17 02 01-03
Treated wood, glass, plastic, containing hazardous substances	17-02-04*

Waste Material	LoW/EWC Code
Bituminous mixtures, coal tar and tarred products	17 03 01*, 02 & 03*
Metals (including their alloys) and cable	17 04 01-11
Soil and stones	17 05 03* & 04
Gypsum-based construction material	17 08 01* & 02
Paper and cardboard	20 01 01
Mixed C&D waste	17 09 04
Green waste	20 02 01
Electrical and electronic components	20 01 35 & 36
Batteries and accumulators	20 01 33 & 34
Liquid fuels	13 07 01-10
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)	20 01 13, 19, 27-30
Insulation materials	17 06 04
Organic (food) waste	20 01 08
Mixed Municipal Waste	20 03 01

Table 1 - Typical Waste Generated

6.3. Demolition Waste Generation

There is no demolition required for the project.

6.4. Construction Waste Generation

Table 2 shows the breakdown of C&D waste types produced on a typical site based on data from the EPA National Waste Reports, the joint EPA and GMIT study and other research reports.

Waste Types	%
Mixed C&D	33
Timber	28
Plasterboard	10
Metals	8
Concrete	6
Other	15
Total	**100**

Table 2 - Waste type percentages generated on a typical Irish construction site

Table 3 shows the predicted construction waste generation for the proposed development based on the information available to date along with the targets for management of the waste streams. The predicted waste amounts are based on an average large-scale development waste generation rate per m^2, using the waste breakdown rates shown in Table 2.

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	426	10	43	80	341	10	43

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Timber	362	40	145	55	199	5	18
Plasterboard	129	30	39	60	78	10	13
Metals	103	5	5	90	93	5	5
Concrete	78	30	23	65	50	5	4
Other	194	20	39	60	116	20	39
Total	**1292**		**293**		**877**		**121**

Table 3 - Estimated Waste Generation

In addition to the information within Table 3, Approximately 28,515m³ of topsoil will be removed across the site as part of the cut and fill strategy prepared by GARLAND, with post-strip design levels indicating approximately 28,000m³ of cut and 43,000m³ of fill, in addition to 4,300m³ of surface water trench excavation (including approximately 1,800m³ in rock), 3,500m³ of foul water trench excavation (including approximately 1,300m³ in rock), and 13,500m³ of attenuation tank excavation (including approximately 5,300m³ in rock).

Based on the indicative balance, fill exceeds cut by approximately 15,000m³ and imported fill will therefore be required. Excavated materials will be reused on site wherever possible to reduce export and import requirements, with off-site movement limited to instances of surplus or unsuitable material, or where imported material is necessary to meet design specifications, thereby supporting efficient and sustainable site management.

It should be noted that until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high level of accuracy the construction waste that will be generated from the proposed works as the exact materials and quantities may be subject to some degree of change and variation during the construction process. It is anticipated that the estimates in Table 3 are conservative estimates and the actual quantum of wastes generated will be less due to sustainable design approach proposed for this development.

6.5. Proposed Resource Waste Management Options

Waste materials generated will be segregated on site, where it is practical. Where the on-site segregation of certain wastes types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source where feasible. The appointed waste contractor will collect and transfer the wastes as receptacles are filled. There are numerous waste contractors in the LCCC Region that provide this service.

All waste arisings will be handled by an approved waste contractor holding a current waste collection permit. All waste arisings requiring disposal off-site will be reused, recycled, recovered or disposed of at a facility holding the appropriate registration, permit or licence, as required.

Some of the sub-contractors on site will generate waste in relatively low quantities. The transportation of non-hazardous waste by persons who are not directly involved with the waste business, at weights less than or equal to 2 tonnes, and in vehicles not designed for the carriage of waste, are exempt from the requirement to have a waste collection permit (Ref. Article 30 (1)

(b) of the Waste Collection Permit Regulations 2007 as amended). Any sub-contractors engaged that do not generate more than 2 tonnes of waste at any one time can transport this waste offsite in their work vehicles (which are not designed for the carriage of waste). However, they are required to ensure that the receiving facility has the appropriate COR / permit / licence.

Written records will be maintained by the contractor(s) detailing the waste arising throughout the C&D phases, the classification of each waste type, waste collection permits for all waste contactors who collect waste from the site and COR/permit or licence for the receiving waste facility for all waste removed off site for appropriate reuse, recycling, recovery and/or disposal.

Dedicated bunded storage containers will be provided for hazardous wastes which may arise such as batteries, paints, oils, chemicals etc, if required.

The management of the main waste streams is outlined as follows:

6.5.1. Soil, Stone, Gravel and Clay

The Waste Management Hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling/recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal. The excavations are required to facilitate the construction works so the preferred option (prevention and minimisation) cannot be accommodated for all the material generated excavation phase. However, excavated material will be reused on site where possible to minimise the requirement to removal material from the site.

If material is removed off-site, it could be reused as a by-product (and not as a waste). If this is done, it will be done in accordance with Regulation 15 (By-products) (Previously Article 27 and referred to as Article 27 in this report) of European Union (Waste Directive) Regulations 2011-2020, which requires that certain conditions are met and that by-product notifications are made to the EPA via their online notification form. Excavated material should not be removed from site until approval from the EPA has been received. The potential to reuse material as a by-product will be confirmed during the course of the excavation works, with the objective of eliminating any unnecessary disposal of material.

The next option (beneficial reuse) may be appropriate for the excavated material pending environmental testing to classify the material as hazardous or non-hazardous in accordance with the EPA Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous publication. Clean inert material may be used as fill material in other construction projects or engineering fill for waste licensed sites. Beneficial reuse of surplus excavation material as engineering fill may be subject to further testing to determine if materials meet the specific engineering standards for their proposed end-use.

Any nearby sites requiring clean fill/capping material will be contacted to investigate reuse opportunities for clean and inert material. If any of the material is to be reused on another site as a by-product (and not as a waste), this will be done in accordance with Article 27. Similarly, if any soils/stones are imported onto the site from another construction site as a by-product, this will also be done in accordance with Article 27. Article 27 will be investigated to see if the material can be imported onto this site for beneficial reuse instead of using virgin materials.

If the material is deemed to be a waste, then it will require testing and classification as non-hazardous or hazardous in accordance with 'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous' and in accordance with the EC Council Decision 2003/33/EC, which establishes the criteria for the acceptance of waste at landfills. The removal and reuse/recovery/disposal of the material will be carried out in accordance with the Waste Management Acts 1996 – 2011 as amended, the Waste Management (Collection Permit) Regulations 2007 as amended and the Waste Management (Facility Permit & Registration) Regulations 2007 as amended.

Once all available beneficial reuse options have been exhausted, the options of recycling and recovery at waste permitted and licensed sites will be considered.

In the event that contaminated material is encountered and subsequently classified as hazardous, this material will be stored separately to any non-hazardous material. It will require off-site treatment at a suitable facility or disposal abroad via Transfrontier Shipment of Wastes (TFS).

6.5.2. Bedrock

It is possible that bedrock maybe encountered at relatively shallow depths within the site. If any bedrock is encountered that needs to be excavated, it is proposed to crush the bedrock on site for reuse as fill, subject to an assessment of suitability. If deemed necessary, approval will be sought from LCCC for the onsite crushing of bedrock.

6.5.3. Silt & Sludge

During the construction phase, silt and petrochemical interception should be carried out on runoff and pumped water from site works, where required. Sludge and silt will then be collected by a suitably licensed contractor and removed offsite.

6.5.4. Concrete Blocks, Bricks, Tiles & Ceramics

The majority of concrete blocks, bricks, tiles and ceramics generated as part of the construction works are expected to be clean, inert material and should be recycled, where possible.

6.5.5. Hard Plastic

As hard plastic is a highly recyclable material, much of the plastic generated will be primarily from material off-cuts. All recyclable plastic will be segregated and recycled, where possible.

6.5.6. Timber

Timber that is uncontaminated, i.e. free from paints, preservatives, glues etc., will be disposed of in a separate skip and recycled off-site.

6.5.7. Metal

Metals will be segregated into mixed ferrous, aluminium cladding, high grade stainless steel, low grade stainless steel etc., where practical and stored in skips. Metal is highly recyclable and there are numerous companies that will accept these materials.

6.5.8. Plasterboard

There are currently a number of recycling services for plasterboard in Ireland. Plasterboard from the construction phase will be stored in a separate skip, pending collection for recycling. The site manager will ensure that oversupply of new plasterboard is carefully monitored to minimise waste.

6.5.9. Glass

Glass materials will be segregated for recycling, where possible.

6.5.10. Waste Electrical and Electronic Equipment (WEEE)

Any WEEE will be stored in dedicated covered cages/receptacles/pallets pending collection for recycling.

6.5.11. Other Recyclables

Where any other recyclable wastes such as cardboard and soft plastic are generated, these will be segregated at source into dedicated skips and removed off-site.

6.5.12. Non-Recyclable Waste

C&D waste which is not suitable for reuse or recovery, such as polystyrene, some plastics and some cardboards, will be placed in separate skips or other receptacles. Prior to removal from site, the non-recyclable waste skip/receptacle will be examined by a member of the waste team to determine if recyclable materials have been placed in there by mistake. If this is the case, efforts will be made to determine the cause of the waste not being segregated correctly and recyclable waste will be removed and placed into the appropriate receptacle.

6.5.13. Other Hazardous Wastes

On-site storage of any hazardous wastes produced (i.e. contaminated soil if encountered and/or waste fuels) will be kept to a minimum, with removal off-site organised on a regular basis. Storage of all hazardous wastes on-site will be undertaken so as to minimise exposure to on-site personnel and the public and to also minimise potential for environmental impacts. Hazardous wastes will be recovered, wherever possible, and failing this, disposed of appropriately.

It should be noted that until a construction contractor is appointed it is not possible to provide information on the specific destinations of each construction waste stream. Prior to commencement of construction and removal of any construction waste offsite, details of the proposed destination of each waste stream will be provided to LCCC by the project team.

6.6. Tracking and Documentation Procedures for Off-Site Waste

All waste will be documented prior to leaving the site. Waste will be weighed by the contractor, either by weighing mechanism on the truck or at the receiving facility. These waste records will be maintained on site by the nominated project RM (see Section 5.0 and 10.0).

All movement of waste and the use of waste contractors will be undertaken in accordance with the Waste Management Act 1996 as amended, Waste Management (Collection Permit) Regulations 2007 as amended and Waste Management (Facility Permit & Registration) Regulations 2007 and amended. This includes the requirement for all waste contractors to have a waste collection permit issued by the NWCPO. The nominated project RM (see Section 5.0 and 10.0) will maintain a copy of all waste collection permits on-site.

If the waste is being transported to another site, a copy of the Local Authority waste COR/permit or EPA Waste/IE Licence for that site will be provided to the nominated project RM. If the waste is being shipped abroad, a copy of the Transfrontier Shipping (TFS) notification document will be obtained from DCC (as the relevant authority on behalf of all local authorities in Ireland) and kept on-site along with details of the final destination (COR, permits, licences etc.). A receipt from the final destination of the material will be kept as part of the on-site waste management records.

All information will be entered in a waste management recording system to be maintained on site.

7. ESTIMATED COST OF WASTE MANAGEMENT

The total cost of C&D waste management will be measured and will take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

7.1. Reuse

By reusing materials on site, there will be a reduction in the transport and recycle/recovery/disposal costs associated with the requirement for a waste contractor to take the material off-site.

Clean and inert soils, gravel, stones etc. which cannot be reused on site may be used as access roads or capping material for landfill sites etc. This material is often taken free of charge or a reduced fee for such purposes, reducing final waste disposal costs.

7.2. Recycling

Salvageable metals will earn a rebate which can be offset against the costs of collection and transportation of the skips.

Clean uncontaminated cardboard and certain hard plastics can also be recycled. Waste contractors will charge considerably less to take segregated wastes, such as recyclable waste, from a site than mixed waste.

Timber can be recycled as chipboard. Again, waste contractors will charge considerably less to take segregated wastes such as timber from a site than mixed waste.

7.3. Disposal

Landfill charges in the Limerick region are currently at around €200 per tonne which includes a €85 per tonne landfill levy specified in the Waste Management (Landfill Levy) Regulations 2015. In addition to disposal costs, waste contractors will also charge a collection fee for skips.

Collection of segregated C&D waste usually costs less than municipal waste. Specific C&D waste contractors take the waste off-site to a licensed or permitted facility and, where possible, remove salvageable items from the waste stream before disposing of the remainder to landfill. Clean soil, rubble, etc. is also used as fill/capping material, wherever possible.

8. TRAINING PROVISIONS

A member of the construction team will be appointed as the project RM to ensure commitment, operational efficiency and accountability during the C&D phases of the project.

8.1. Resource Manager Training and Responsibilities

The nominated RM will be given responsibility and authority to select a waste team if required, i.e. members of the site crew that will aid them in the organisation, operation and recording of the waste management system implemented on site. The RM will have overall responsibility to oversee, record and provide feedback to the client on everyday waste management at the site. Authority will be given to the RM to delegate responsibility to sub-contractors, where necessary, and to coordinate with suppliers, service providers and sub-contractors to prioritise waste prevention and material salvage.

The RM will be trained in how to set up and maintain a record keeping system, how to perform an audit and how to establish targets for waste management on site. The RM will also be trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on site and be knowledgeable in how to implement this RWMP.

8.2. Site Crew Training

Training of site crew is the responsibility of the RM and, as such, a waste training program should be organised. A basic awareness course will be held for all site crew to outline the RWMP and to detail the segregation of waste materials at source. This may be incorporated with other site training needs such as general site induction, health and safety awareness and manual handling.

This basic course will describe the materials to be segregated, the storage methods and the location of the Waste Storage Areas (WSAs). A sub-section on hazardous wastes will be incorporated into the training program and the particular dangers of each hazardous waste will be explained.

9. TRACKING AND TRACING / RECORD KEEPING

Records should be kept for all waste material which leaves the site, either for reuse on another site, recycling or disposal. A recording system will be put in place to record the waste arisings on site.

A waste tracking log should be used to track each waste movement from the site. On exit from the site the waste collection vehicle driver should stop at the site office and sign out as a visitor and provide the security personnel or RM with a waste docket (or WTF for hazardous waste) for the waste load collected. At this time, the security personnel should complete and sign the Waste Tracking Register with the following information:

- Date
- Time
- Waste Contractor
- Company waste contractor appointed by e.g. Contractor or subcontractor
- Collection Permit No.
- Vehicle Reg.
- Driver Name
- Docket No.
- Waste Type
- EWC/LoW

The waste vehicle will be checked by security personnel or the RM to ensure it has the waste collection permit no. displayed and a copy of the waste collection permit in the vehicle before they are allowed to remove the waste from the site.

The waste transfer dockets will be transferred to the RM on a weekly basis and can be placed in the Waste Tracking Log file. This information will be forwarded onto the DCC Waste Regulation Unit when requested.

Each subcontractor that has engaged their own waste contractor will be required to maintain a similar waste tracking log with the waste dockets / WTF maintained on file and available for inspection on site by the main contractor as required. These subcontractor logs will be merged with the main waste log.

Waste receipts from the receiving waste facility will also be obtained by the site contractor(s) and retained. A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences will be maintained on site at all times and will be periodically reviewed by the RM. Subcontractors who have engaged their own waste contractors, should provide the main contractor with a copy of the waste collection permits and COR / permit / licence for the receiving waste facilities and maintain a copy on file, available for inspection on site as required.

A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences will be sent to the LCCC Waste Regulation Unit prior to any material being removed from site.

10. OUTLINE WASTE AUDIT PROCEDURE

10.1. Responsibility for Waste Audit

The appointed RM will be responsible for conducting a waste audit at the site during the C&D phase of the development. Contact details for the nominated RM will be provided to the LCCC Environmental Section after the main contractor is appointed and prior to any material being removed from site.

10.2. Review of Records and Identification of Corrective Actions

A review of all the records for the waste generated and transported off-site should be undertaken mid-way through the project. If waste movements are not accounted for, the reasons for this should be established in order to see if and why the record keeping system has not been maintained. The waste records will be compared with the established recovery/reuse/recycling targets for the site.

Each material type will be examined, in order to see where the largest percentage waste generation is occurring. The waste management methods for each material type will be reviewed in order to highlight how the targets can be achieved.

Waste management costs will also be reviewed.

Upon completion of the construction phase, a final report will be prepared, summarising the outcomes of waste management processes adopted and the total recycling/reuse/recovery figures for the development.

11. CONSULTATION WITH RELEVANT BODIES

11.1. Local Authority

Once construction contractors have been appointed, have appointed waste contractors and prior to removal of any C&D waste materials offsite, details of the proposed destination of each waste stream will be provided to the LCCC Environmental Section.

LCCC will also be consulted, as required, throughout the excavation and construction phases in order to ensure that all available waste reduction, reuse and recycling opportunities are identified and utilised and that compliant waste management practices are carried out.

11.2. Recycling/Salvage Companies

Companies that specialise in C&D waste management will be contacted to determine their suitability for engagement. Where a waste contractor is engaged, each company will be audited in order to ensure that relevant and up-to-date waste collection permits and facility COR/permits/licences are held. These permit details will be sent to the LCCC Environmental Section. In addition, information regarding individual construction materials will be obtained, including the feasibility of recycling each material, the costs of recycling/reclamation and the means by which the wastes will be collected and transported off-site, and the recycling/reclamation process each material will undergo off site.

12. REFERENCES

- Waste Management Act 1996 (No. 10 of 1996) as amended.
- Environmental Protection Agency Act 1992 as amended.
- Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended.
- Southern Region Waste Management Plan 2015 – 2021 (2015).
- Department of Environment and Local Government (DoELG) Waste Management – Changing Our Ways, A Policy Statement (1998).
- Forum for the Construction Industry – Recycling of Construction and Demolition Waste.
- Department of Communications, Climate Action and Environment (DCCAE), Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025 (Sept 2020).
- DCCAE, Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021).
- Circular Economy and Miscellaneous Provisions Act 2022.
- Environmental Protection Agency (EPA) 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021).
- Department of Environment, Heritage and Local Government, Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (2006).
- FÁS and the Construction Industry Federation (CIF), Construction and Demolition Waste Management – a handbook for Contractors and site Managers (2002).
- Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended.
- EPA, Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2015).
- Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
- Environmental Protection Agency (EPA), National Waste Database Reports 1998 – 2012.
- EPA and Galway-Mayo Institute of Technology (GMIT), EPA Research Report 146 – A Review of Design and Construction Waste Management Practices in Selected Case Studies – Lessons Learned (2015).
- Limerick City and County Council (LCCC) Limerick Development Plan 2022-2028 (2022).

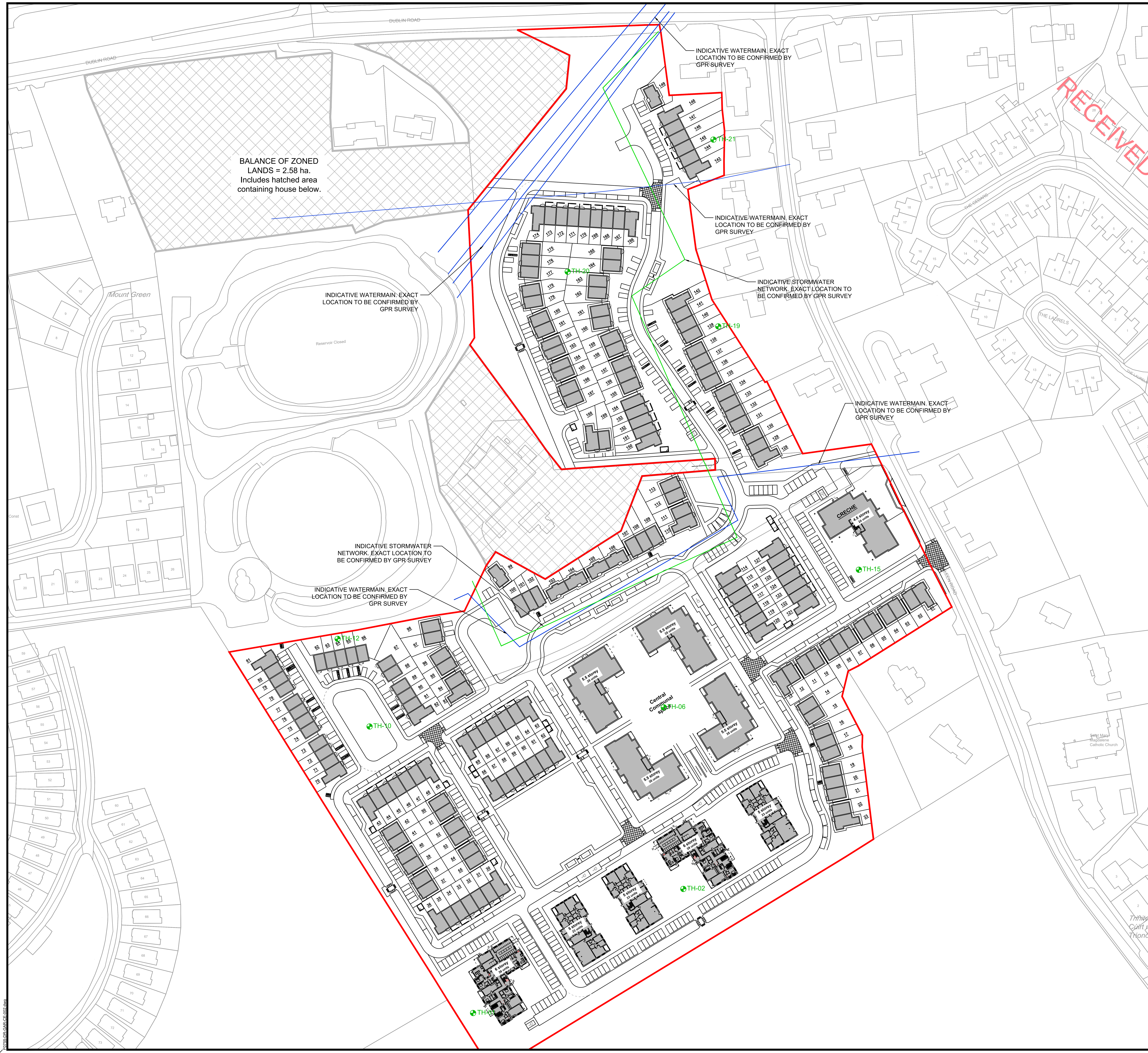
Signed:

BRIAN LAHIFF
CHARTERED ENGINEER

Date: 13 February 2026

GARLAND
Concepts Realised

Appendix A
Trial Hole Layout and Reports



Trial Hole	Easting	Northing
TH-01	561894.700	656975.899
TH-02	562007.597	657042.556
TH-06	561997.120	657140.075
TH-10	561839.119	657129.807
TH-12	561821.975	657176.881
TH-15	562101.866	657213.997
TH-19	5620[illegible].359	657344.649
TH-20	561945.51[illegible]	657374.048
TH-21	56202[illegible].763	657445.010

QUALITY
I.S. EN ISO 9001:2015
NSAI Certified

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SPECIFICATIONS AND ALL RELEVANT ARCHITECTS AND SERVICES ENGINEERS DRAWINGS.
2. DO NOT SCALE, USE FIGURED DIMENSIONS ONLY.
3. DRAWINGS SHALL BE CHECKED BY CONTRACTOR AND ANY DISCREPANCIES (DIMENSIONS) SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE WORK IS COMMENCED.
4. NOTE LOCATION AND EXTENT OF EXISTING SERVICES TO BE CONFIRMED ON SITE BY GPR SURVEY

LEGEND:

TH-01 - TRIAL PITS (9 No.)

INDICATIVE WATERMAIN SERVICE LOCATION

INDICATIVE STORMWATER SERVICE LOCATION

REV	DATE	DESCRIPTION	DRN	DES	CHK	APP
-						

CLIENT:
COLUMBIA ESTATES MANAGEMENT IRELAND LTD

ARCHITECT:
ARNOLD LEAHY ARCHITECTS LIMITED
1 CRESCENT VILLAS, O'CONNELL AVENUE,
LIMERICK

GARLAND
DUBLIN T: +353 1 4964322 | LIMERICK T: +353 61 319708 | WATERFORD T: +353 51 876511 | INTERNATIONAL T: +353 61 319708
E: info@garlandconsultancy.com W: www.garlandconsultancy.com

PROJECT:
RESIDENTIAL AND CRECHE DEVELOPMENT AT MONALEEN ROAD, CASTLETROY, LIMERICK

TITLE:
INITIAL TRIAL PITS LAYOUT

STATUS:
FOR INFORMATION

DRAWN: JM	DES. BY: PC
CHK. BY: BL	APP. BY: BL
DATE: 13/05/2025	JOB No. F0755
A1 SCALE: 1:1000	
DRG. No. 002	REV. 0

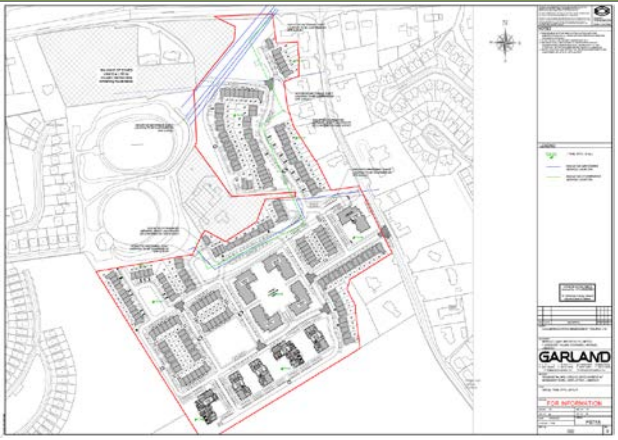
Telephone Record		**Job Number**	F0755
Record of Meeting		**Sub File**	F0755-RP-GAR-CE-001
Site Visit	X	**Date/Time**	19/05/2025
Other		**Written By**	Paul Clune

Project	Site at Sutton’s Land, Monaleen Road, Limerick

Subject	Trial Holes

Those Involved		
Paul Clune	Garland	
Backtazh Fazlrabi	Formation Homes	
Alan	Conradh	

Circulation	**Info**	**Action**

No.	**Photo**	**Description**	**Action**
1.		Trial Hole Locations, refer to drawing F0755-DR-GAR-CE-002 for more information.	
2.		TH-15 2.8m deep 350mm of topsoil on 1150mm layer of sand with silt on 650mm layer of silty sand and weathered rock on 650mm layer of firmer rock. No groundwater strike although the lower section of silty sand and weathered rock was damp indicating infiltration of water through the layers. Weathered rock broke apart when hit against each other and appeared shaley. The firmer rock was more difficult to excavate. The top 400-500mm layer of sand appeared to be softer than the lower section of silty sand.	

No.	Photo	Description	Action
3.		TH-02 1.6m deep 300mm of topsoil on 700mm layer of silty sand and weathered rock on 600mm layer of firmer rock. No groundwater observed and the excavated material was dry. The layer of firmer rock was more difficult to excavate.	
4.		TH-01 0.6m deep 200mm of topsoil on 400mm layer of silty sand and weathered rock on firmer rock. Trial hole similar to TH-02. No groundwater observed and the excavated material was dry. The layer of firmer rock was more difficult to excavate.	

No.	Photo	Description	Action
5.		TH-10 2.8m deep 200mm of topsoil on 2.05m layer of construction fill on 250mm layer of silty sand original ground on 300mm layer of silty sand and weathered rock Fill made up of construction material CL804, bricks, plastic, concrete, asphalt. Recommend samples are taken in this area to test for contamination.	
6.		TH-12 2.65m deep 200mm of topsoil on 2m layer of construction fill on 450mm layer of silty sand original ground on weathered rock Fill made up of construction material CL804, bricks, plastic, pipes, concrete. Recommend samples are taken in this area to test for contamination.	

No.	Photo	Description	Action
7.		TH-06 2.2m deep 350mm of topsoil on 400mm layer of silty sand 1.45m layer of silty sand and weathered rock on firm rock. No groundwater strike although the lower section of silty sand and weathered rock was damp indicating infiltration of water through the layers. Weathered rock broke apart when hit against each other and appeared shaley. The firmer rock was more difficult to excavate.	
8.		Note access for an excavator was not available to the northern section of the lands to undertake trial holes TH-19, TH-20 & TH-21. Access to be arranged to this section of the development for these trial holes to be undertaken.	

Signed: Paul Clune **Date:** 20/05/2025

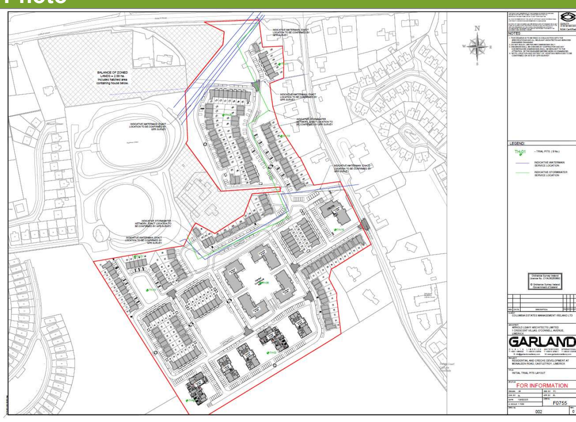
Telephone Record		**Job Number**	F0755
Record of Meeting		**Sub File**	F0755-RP-GAR-CE-002
Site Visit	X	**Date/Time**	04/07/2025
Other		**Written By**	Paul Clune

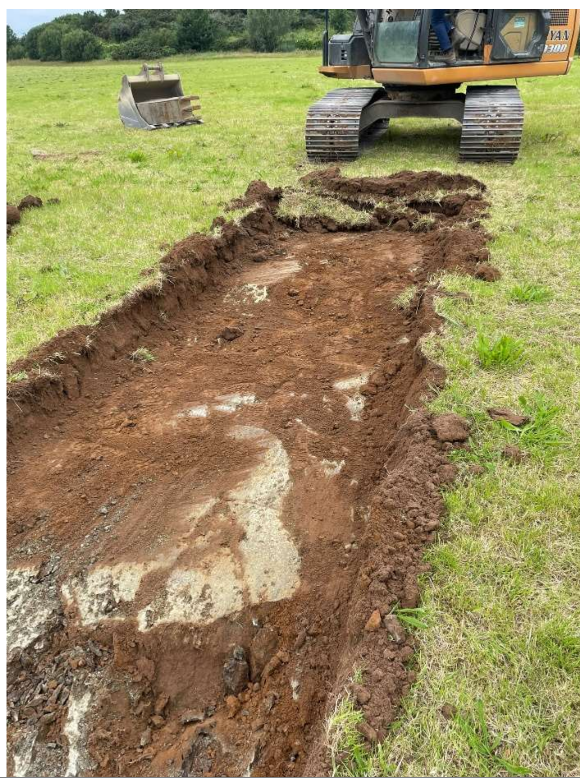
Project	Site at Sutton's Land, Monaleen Road, Limerick

Subject	Trial Holes – Northern Field

Those Involved		
Paul Clune	Garland	
Backtazh Fazlrabi	Formation Homes	
Jamie Lydon and Tadgh	Conradh	

Circulation	**Info**	**Action**

No.	**Photo**	**Description**	**Action**
1.		Trial Hole Locations, refer to drawing F0755-DR-GAR-CE-002 for more information.	
2.		TH-19 2.6m deep 300mm of topsoil on 300mm layer of silty sand on 1500mm layer of silty gravelly sand with boulders on 400mm of weathered rock on layer of firmer rock. No groundwater strike although the layer of weathered rock was damp indicating infiltration of water through the layers. Weathered rock broke apart when hit against each other and appeared shaley. The firmer rock was more difficult to excavate.	

No.	Photo	Description	Action
3.		TH-20 2.4m deep 350mm of topsoil on 300mm layer of silty sand on 1450mm layer of silty gravelly sand with boulders on 300mm of weathered rock on layer of firmer rock. . No groundwater strike although the layer of weathered rock was damp indicating infiltration of water through the layers. Weathered rock broke apart when hit against each other and appeared shaley. The firmer rock was more difficult to excavate.	
4.		TH-21 0.3m deep 250mm of topsoil on firm rock An additional trial hole was excavated approximately 3 metres from Trial Hole 21, where rock was also encountered directly beneath the topsoil. No groundwater observed and the excavated material was dry.	

Signed: Paul Clune **Date:** 08/07/2025

GARLAND
Concepts Realised

Appendix B
Soil, Leachate and Water Testing

Trial Pit No.	Depth	Description	Sample	Pit Length	Pit Width	Pit Final Depth
TP01	0-0.2m	Dark Brown Sandy Topsoil				
	0.2-0.5m	Light brown clayey slightly gravelly SILT, gravel is fine subangular to subrounded with rare rootlets	S1			
	0.5-1.8m	Light brown/ brown gravelly silty clayey SAND, gravel is occasional fine to large cobble sized subrounded to subangular	S2			1.8m
	1.8m	REFUSAL, bedrock, very dark brown shale				
		S1 and S2 sampled for WAC				
TP02	0-0.2m	Dark Brown Sandy Topsoil				
	0.2-0.9m	Light brown/ brown gravelly silty clayey SAND, gravel is occasional fine to large cobble sized subrounded to subangular	S1			
	0.9m	REFUSAL, bedrock, very dark brown shale	S2			0.9m
		S1 sampled for WAC				
TP03	0-0.15m	Dark Brown Sandy Topsoil				
	0.15-1.8m	MADE GROUND, tarmac, gravel, fine to large cobble sized	S1			
	1.8-2.0m	MADE GROUND, tarmac, shale, concrete fine to medium gravel	S2			2.0m
	2.0m	REFUSAL, Concrete				
		Water Strike 1.9m	S3			
		S1 and S2 sampled for WAC				
TP04/A	0-0.15m	Dark Brown Sandy Topsoil				
	0.15-0.4m	Brown gravelly silty clayey SAND, gravel is occasional fine to large boulder sized subrounded to subangular shale	S1			
	0.4m-0.8m	804 fill MADE GROUND	S2			1.4m
	0.8m	PIPES (refer to photos)				
	0.15-1.4m	Pit extended REFUSAL bedrock, very dark brown shale				

eurofins
Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: cs@etuki.eurofins.com

UKAS TESTING 2183

MCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Final Report

Report No.:	25-38693-1
Initial Date of Issue:	14-Dec-2025
Re-Issue Details:	
Client	*Formation Homes Ireland Limited*
Client Address:	*6 Hartstonge Street* *Limerick* *Limerick City* *Ireland*
Contact(s):	*Fionan Cahill*
Project	*Monaleen Road (Suttons Land)*
Order No.:	Not Supplied
No. of Samples:	*7*
Turnaround (Wkdays):	15
Date Approved:	14-Dec-2025
Approved By:	
Details:	David Smith, Technical Director

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

Results - Leachate

Project: BHP-MTI

Client: BHP Laboratories					**Chemtest Job No.:**	25-38693	25-38693	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:					**Chemtest Sample ID.:**	2060356	2060357	2060358	2060359	2060360	2060361	2060362
Order No.:					*Client Sample Ref.:*	*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*	*TP04 S1*	*TP04 S2*
					Client Sample ID.:	*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*	*25/11/5976*	*25/11/5977*
					Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
					Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
					Date Sampled:	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**							
Ammonium	U	1220	10:1	mg/l	0.050	0.97	1.2	0.77	1.5	1.1	1.1	0.59
Ammonium	N	1220	10:1	mg/kg	0.10	10	12	9.0	18	15	14	17

Results - Soil

Project: BHP-MTI

Client: BHP Laboratories					**Chemtest Job No.:**	25-38693	25-38693	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:					**Chemtest Sample ID.:**	2060356	2060357	2060358	2060359	2060360	2060361	2060362
Order No.:					*Client Sample Ref.:*	*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*	*TP04 S1*	*TP04 S2*
					Client Sample ID.:	*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*	*25/11/5976*	*25/11/5977*
					Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
					Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
					Date Sampled:	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
					Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
ACM Type		N	2192		N/A	-	-	-	-	-	-	-
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture		N	2030	%	0.020	16	15	17	7.2	7.5	10	2.6
Soil Colour		N	2030		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material		N	2030		N/A	Stones	Stones and Roots	Stones and Roots	Stones	Stones	Stones and Roots	Stones
Soil Texture		N	2030		N/A	Clay	Clay	Clay	Sand	Sand	Clay	Sand
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
Sulphur (Elemental)		M	2180	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.9	< 1.0	< 1.0
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	4.0	3.1	3.2	11	6.8	4.9	30
Sulphate (Total)		U	2430	%	0.010	0.030	0.030	0.050	0.49	0.80	0.050	0.050
Arsenic		M	2455	mg/kg	0.5	16	10	6.0	4.6	8.5	5.9	3.2
Barium		M	2455	mg/kg	0.5	81	97	36	29	43	65	5.6
Cadmium		M	2455	mg/kg	0.10	< 0.10	0.20	< 0.10	< 0.10	0.13	0.18	0.13
Chromium		M	2455	mg/kg	0.5	39	60	23	16	23	40	2.8
Molybdenum		M	2455	mg/kg	0.5	1.2	1.6	1.3	1.1	1.8	1.1	< 0.5
Antimony		N	2455	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper		M	2455	mg/kg	0.50	25	21	6.9	9.4	17	12	2.4
Mercury		M	2455	mg/kg	0.05	0.09	0.05	< 0.05	< 0.05	0.07	< 0.05	< 0.05
Nickel		M	2455	mg/kg	0.50	44	59	15	26	39	37	10
Lead		M	2455	mg/kg	0.50	50	24	22	11	24	19	88
Selenium		M	2455	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Zinc		M	2455	mg/kg	0.50	72	72	28	27	50	40	12
Chromium (Trivalent)		N	2490	mg/kg	1.0	39	60	23	16	23	40	2.8
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	< 2.0	< 2.0	2.6	2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16 MC	EH_2D_AL_#1	M	2690	mg/kg	1.00	< 1.0	< 1.0	4.4	5.3	4.0	3.7	1.9
Aliphatic EPH >C16-C21 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	< 2.0	< 2.0	4.4	6.7	4.0	5.6	< 2.0

Results - Soil

Project: BHP-MTI

Client: BHP Laboratories					**Chemtest Job No.:**	25-38693	25-38693	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:					**Chemtest Sample ID.:**	2060356	2060357	2060358	2060359	2060360	2060361	2060362
Order No.:					*Client Sample Ref.:*	*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*	*TP04 S1*	*TP04 S2*
					Client Sample ID.:	*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*	*25/11/5976*	*25/11/5977*
					Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
					Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
					Date Sampled:	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
					Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Aliphatic EPH >C21-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	3.00	7.3	6.8	29	14	6.7	16	< 3.0
Aliphatic EPH >C35-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00	< 10	< 10	13	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	5.00	11	8.4	40	28	17	27	7.4
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C12-C16 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C16-C21 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	3.3	2.9	2.6	3.7	2.7	2.8	2.3
Aromatic EPH >C21-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	< 2.0	< 2.0	7.0	23	2.6	16	< 2.0
Aromatic EPH >C35-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	1.00	< 1.0	< 1.0	1.9	36	1.5	2.1	1.1
Total Aromatic EPH >C10-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	5.00	< 5.0	< 5.0	9.6	27	5.3	19	< 5.0
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35 MC	EH_2D_Total_#1	U	2690	mg/kg	10.00	15	11	50	55	22	45	10
Mineral Oil EPH	EH_2D_AL	N	2670	mg/kg	10	11	< 10	53	28	17	27	< 10
Benzene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.17	< 0.10	< 0.10
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.27	< 0.10	< 0.10
Anthracene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.15	< 0.10	< 0.10
Fluoranthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.45	< 0.10	< 0.10
Pyrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.45	< 0.10	< 0.10
Benzo[a]anthracene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.33	< 0.10	< 0.10
Chrysene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.32	< 0.10	< 0.10
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.41	< 0.10	< 0.10
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.27	< 0.10	< 0.10
Benzo[a]pyrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.36	< 0.10	< 0.10

Results - Soil

Project: BHP-MTI

Client: BHP Laboratories					**Chemtest Job No.:**	25-38693	25-38693	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:					**Chemtest Sample ID.:**	2060356	2060357	2060358	2060359	2060360	2060361	2060362
Order No.:					*Client Sample Ref.:*	*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*	*TP04 S1*	*TP04 S2*
					Client Sample ID.:	*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*	*25/11/5976*	*25/11/5977*
					Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
					Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
					Date Sampled:	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
					Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Coronene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
PCB 28		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 101		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Tot PCBs Low (7 Congeners)		N	2815	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Phenols		M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Single Stage WAC

Project: BHP-MTI

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	25-38693							
Chemtest Sample ID:	2060356							
Sample Ref:	*TP01 S1*							
Sample ID:	*25/11/5971*							
Client Reference:	*Monaleen Road (Suttons Land)*					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non hazardous Landfill**	**Hazardous Waste Landfill**
Top Depth(m):	*0.2*							
Bottom Depth(m):	*0.5*							
Sampling Date:	*24-Nov-2025*							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	0.24	3	5	6
Loss On Ignition	2610		M	%	2.9	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	2690	EH_2D_AL_#1	N	mg/kg	16	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	< 1.0	100	--	--
pH at 20C	2010		M		7.8	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.014	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0005	0.0054	0.5	2	25
Barium	1455		U	0.006	0.063	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0065	0.065	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	< 0.0002	< 0.0020	0.5	10	30
Nickel	1455		U	0.0006	0.0058	0.4	10	40
Lead	1455		U	0.0011	0.011	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.004	0.039	4	50	200
Chloride	1220		U	9.9	99	800	15000	25000
Fluoride	1220		U	0.083	< 1.0	10	150	500
Sulphate	1220		U	7.5	75	1000	20000	50000
Total Dissolved Solids	1020		N	130	1300	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	5.5	55	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	5.6
WAC Sample Weight	2319

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: BHP-MTI

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	25-38693							
Chemtest Sample ID:	2060357							
Sample Ref:	*TP01 S2*							
Sample ID:	*25/11/5972*							
Client Reference:	*Monaleen Road (Suttons Land)*					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non hazardous Landfill**	**Hazardous Waste Landfill**
Top Depth(m):	*0.5*							
Bottom Depth(m):	*1.8*							
Sampling Date:	*24-Nov-2025*							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	< 0.20	3	5	6
Loss On Ignition	2610		M	%	1.9	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	2690	EH_2D_AL_#1	N	mg/kg	15	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	< 1.0	100	--	--
pH at 20C	2010		M		7.7	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.021	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	< 0.0002	< 0.0020	0.5	2	25
Barium	1455		U	0.027	0.27	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0055	0.055	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	< 0.0002	< 0.0020	0.5	10	30
Nickel	1455		U	0.0007	0.0068	0.4	10	40
Lead	1455		U	0.0006	0.0060	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.004	0.041	4	50	200
Chloride	1220		U	12	120	800	15000	25000
Fluoride	1220		U	0.11	1.1	10	150	500
Sulphate	1220		U	5.7	57	1000	20000	50000
Total Dissolved Solids	1020		N	32	320	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.1	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.4
WAC Sample Weight	2677

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: BHP-MTI

Chemtest Job No:	25-38693					**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	2060358							
Sample Ref:	*TP02 S1*					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	*25/11/5973*							
Client Reference:	*Monaleen Road (Suttons Land)*							
Top Depth(m):	*0.2*							
Bottom Depth(m):	*0.9*							
Sampling Date:	*24-Nov-2025*							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	0.29	3	5	6
Loss On Ignition	2610		M	%	2.1	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	2690	EH_2D_AL_#1	N	mg/kg	53	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	< 1.0	100	--	--
pH at 20C	2010		M		7.4	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.024	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0006	0.0060	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0017	0.017	0.5	10	70
Copper	1455		U	0.0041	0.041	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	< 0.0002	< 0.0020	0.5	10	30
Nickel	1455		U	0.0006	0.0060	0.4	10	40
Lead	1455		U	0.0025	0.025	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.007	0.071	4	50	200
Chloride	1220		U	1.1	11	800	15000	25000
Fluoride	1220		U	0.069	< 1.0	10	150	500
Sulphate	1220		U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020		N	55	550	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.1	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.2
WAC Sample Weight	2637

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: BHP-MTI

Chemtest Job No:	25-38693					Landfill Waste Acceptance Criteria Limits		
Chemtest Sample ID:	2060359							
Sample Ref:	*TP03 S1*					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non hazardous Landfill	Hazardous Waste Landfill
Sample ID:	*25/11/5974*							
Client Reference:	*Monaleen Road (Suttons Land)*							
Top Depth(m):	*0.15*							
Bottom Depth(m):	*1.8*							
Sampling Date:	*24-Nov-2025*							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	1.5	3	5	6
Loss On Ignition	2610		M	%	3.1	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	2690	EH_2D_AL_#1	N	mg/kg	30	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	< 1.0	100	--	--
pH at 20C	2010		M		8.3	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.019	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0003	0.0032	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0044	0.044	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0022	0.022	0.5	10	30
Nickel	1455		U	0.0009	0.0090	0.4	10	40
Lead	1455		U	0.0009	0.0091	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.003	0.030	4	50	200
Chloride	1220		U	2.1	21	800	15000	25000
Fluoride	1220		U	0.17	1.7	10	150	500
Sulphate	1220		U	1.8	18	1000	20000	50000
Total Dissolved Solids	1020		N	56	560	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.1
WAC Sample Weight	2644

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: BHP-MTI

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	25-38693							
Chemtest Sample ID:	2060360							
Sample Ref:	*TP03 S2*							
Sample ID:	*25/11/5975*							
Client Reference:	*Monaleen Road (Suttons Land)*							
Top Depth(m):	*1.8*							
Bottom Depth(m):	*2.0*							
Sampling Date:	*24-Nov-2025*					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	1.8	3	5	6
Loss On Ignition	2610		M	%	1.7	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	2690	EH_2D_AL_#1	N	mg/kg	17	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	3.2	100	--	--
pH at 20C	2010		M		8.3	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.020	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	< 0.0002	< 0.0020	0.5	2	25
Barium	1455		U	0.007	0.067	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0036	0.036	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0024	0.024	0.5	10	30
Nickel	1455		U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455		U	0.0006	0.0057	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	< 0.003	< 0.025	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.14	1.4	10	150	500
Sulphate	1220		U	7.9	79	1000	20000	50000
Total Dissolved Solids	1020		N	57	570	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	3.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.7
WAC Sample Weight	3200

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: BHP-MTI

Chemtest Job No:	25-38693
Chemtest Sample ID:	2060361
Sample Ref:	*TP04 S1*
Sample ID:	*25/11/5976*
Client Reference:	*Monaleen Road (Suttons Land)*
Top Depth(m):	*0.15*
Bottom Depth(m):	*0.4*
Sampling Date:	*24-Nov-2025*

Determinand	SOP	HWOL Code	Accred.	Units		Landfill Waste Acceptance Criteria Limits: Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon	2625		M	%	0.78	3	5	6
Loss On Ignition	2610		M	%	2.3	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	2690	EH_2D_AL_#1	N	mg/kg	30	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	< 1.0	100	--	--
pH at 20C	2010		M		8.3	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.017	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0011	0.011	0.5	2	25
Barium	1455		U	0.007	0.070	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0015	0.015	0.5	10	70
Copper	1455		U	0.0048	0.048	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0003	0.0034	0.5	10	30
Nickel	1455		U	0.0016	0.016	0.4	10	40
Lead	1455		U	0.0024	0.024	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.005	0.048	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.17	1.7	10	150	500
Sulphate	1220		U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020		N	46	460	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	3.0	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.1
WAC Sample Weight	2642

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: BHP-MTI

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	25-38693					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non hazardous Landfill	Hazardous Waste Landfill
Chemtest Sample ID:	2060362							
Sample Ref:	*TP04 S2*							
Sample ID:	*25/11/5977*							
Client Reference:	*Monaleen Road (Suttons Land)*							
Top Depth(m):	*0.4*							
Bottom Depth(m):	*0.8*							
Sampling Date:	*24-Nov-2025*							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	6.6	3	5	6
Loss On Ignition	2610		M	%	0.44	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	2690	EH_2D_AL_#1	N	mg/kg	10	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	< 1.0	100	--	--
pH at 20C	2010		M		8.9	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.015	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	< 0.0002	< 0.0020	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0030	0.030	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0003	0.0032	0.5	10	30
Nickel	1455		U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455		U	0.0010	0.010	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	< 0.003	< 0.025	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.068	< 1.0	10	150	500
Sulphate	1220		U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020		N	35	350	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.7
WAC Sample Weight	3018

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060356	2060357	2060358	2060359	2060360
Order No.:				*Client Sample Ref.:*	*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*
				Client Sample ID.:	*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:					
Determinand	**Accred.**	**WAC**	**Units**	**SOP**					
ACM Type	N	N		2192	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Asbestos Identification	U	N		2192	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Moisture	N	N	%	2030	03/12/25	03/12/25	03/12/25	03/12/25	03/12/25
Soil Colour	N	N		2030	02/12/25	02/12/25	02/12/25	02/12/25	02/12/25
Other Material	N	N		2030	02/12/25	02/12/25	02/12/25	02/12/25	02/12/25
Soil Texture	N	N		2030	02/12/25	02/12/25	02/12/25	02/12/25	02/12/25
pH at 20C	M	Y		2010	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Acid Neutralisation Capacity	N	N	mol/kg	2015	10/12/25	10/12/25	10/12/25	10/12/25	10/12/25
Boron (Hot Water Soluble)	M	N	mg/kg	2120	09/12/25	09/12/25	09/12/25	09/12/25	09/12/25
Sulphur (Elemental)	M	N	mg/kg	2180	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Cyanide (Total)	M	N	mg/kg	2300	08/12/25	08/12/25	08/12/25	08/12/25	08/12/25
Sulphide (Easily Liberatable)	N	N	mg/kg	2325	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Sulphate (Total)	U	N	%	2430	09/12/25	09/12/25	09/12/25	09/12/25	09/12/25
Arsenic	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Barium	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Cadmium	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Chromium	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Molybdenum	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Antimony	N	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Copper	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Mercury	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Nickel	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Lead	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Selenium	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Zinc	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Chromium (Trivalent)	N	N	mg/kg	2490	09/12/25	09/12/25	09/12/25	09/12/25	09/12/25
Chromium (Hexavalent)	N	N	mg/kg	2490	09/12/25	09/12/25	09/12/25	09/12/25	09/12/25
Aliphatic VPH >C5-C6	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Aliphatic VPH >C6-C7	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Aliphatic VPH >C7-C8	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Aliphatic VPH >C8-C10	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Total Aliphatic VPH >C5-C10	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Aliphatic EPH >C10-C12 MC	M	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060356	2060357	2060358	2060359	2060360
Order No.:				*Client Sample Ref.:*	*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*
				Client Sample ID.:	*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:					
Determinand	**Accred.**	**WAC**	**Units**	**SOP**					
Aliphatic EPH >C12-C16 MC	M	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Aliphatic EPH >C16-C21 MC	M	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Aliphatic EPH >C21-C35 MC	M	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Aliphatic EPH >C35-C40 MC	N	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Total Aliphatic EPH >C10-C35 MC	M	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Aromatic VPH >C5-C7	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Aromatic VPH >C7-C8	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Aromatic VPH >C8-C10	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Total Aromatic VPH >C5-C10	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Aromatic EPH >C10-C12 MC	U	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Aromatic EPH >C12-C16 MC	U	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Aromatic EPH >C16-C21 MC	U	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Aromatic EPH >C21-C35 MC	U	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Aromatic EPH >C35-C40 MC	N	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Total Aromatic EPH >C10-C35 MC	U	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
WAC Total C10-C40	N	Y	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Total VPH >C5-C10	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Total EPH >C10-C35 MC	U	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
WAC Received weight	U	Y	g	650	02/12/25	02/12/25	02/12/25	02/12/25	02/12/25
Loss On Ignition	M	Y	%	2610	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Total Organic Carbon	M	Y	%	2625	10/12/25	10/12/25	10/12/25	10/12/25	10/12/25
Mineral Oil EPH	N	N	mg/kg	2670	14/12/25	14/12/25	14/12/25	14/12/25	14/12/25
Benzene	M	N	µg/kg	2760	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Total BTEX	M	Y	mg/kg	2760	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Toluene	M	N	µg/kg	2760	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Ethylbenzene	M	N	µg/kg	2760	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
m & p-Xylene	M	N	µg/kg	2760	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
o-Xylene	M	N	µg/kg	2760	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Methyl Tert-Butyl Ether	M	N	µg/kg	2760	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Naphthalene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Acenaphthylene	N	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Acenaphthene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Fluorene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Phenanthrene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Anthracene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060356	2060357	2060358	2060359	2060360
Order No.:				*Client Sample Ref.:*	*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*
				Client Sample ID.:	*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:					
Determinand	**Accred.**	**WAC**	**Units**	**SOP**					
Fluoranthene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Pyrene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Benzo[a]anthracene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Chrysene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Benzo[b]fluoranthene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Benzo[k]fluoranthene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Benzo[a]pyrene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Indeno(1,2,3-c,d)Pyrene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Dibenz(a,h)Anthracene	N	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Benzo[g,h,i]perylene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Coronene	N	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Total Of 17 PAHs Lower	N	Y	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
PCB 28	U	N	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
PCB 52	U	N	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
PCB 101	U	N	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
PCB 118	U	N	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
PCB 153	U	N	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
PCB 138	U	N	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
PCB 180	U	N	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Total PCBs (7 Congeners)	M	Y	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Tot PCBs Low (7 Congeners)	N	N	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Total Phenols	M	N	mg/kg	2920	08/12/25	08/12/25	08/12/25	08/12/25	08/12/25
Ammonium	U	N	mg/l	1220	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Ammonium	N	N	mg/kg	1220	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Dry Mass Of Test Portion	N	Y	kg	640	03/12/25	03/12/25	03/12/25	03/12/25	03/12/25
Moisture	N	Y	% dry weight	640	03/12/25	03/12/25	03/12/25	03/12/25	03/12/25
Volume Of C10 Leachant	N	Y	l	640	03/12/25	03/12/25	03/12/25	03/12/25	03/12/25
Total Dissolved Solids	N	Y	mg/l	1020	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Total Dissolved Solids	N	Y	mg/kg	1020	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Chloride	U	Y	mg/l	1220	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Fluoride	U	Y	mg/l	1220	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Sulphate	U	Y	mg/l	1220	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Chloride	U	Y	mg/kg	1220	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Fluoride	U	Y	mg/kg	1220	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060356	2060357	2060358	2060359	2060360
Order No.:				*Client Sample Ref.:*	*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*
				Client Sample ID.:	*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:					
Determinand	**Accred.**	**WAC**	**Units**	**SOP**					
Sulphate	U	Y	mg/kg	1220	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Arsenic	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Boron	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Arsenic	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Boron	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Barium	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Barium	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Cadmium	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Cadmium	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Chromium	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Chromium	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Copper	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Copper	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Mercury	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Mercury	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Molybdenum	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Molybdenum	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Nickel	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Nickel	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Lead	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Lead	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Antimony	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Antimony	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Selenium	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Selenium	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Zinc	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Zinc	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Dissolved Organic Carbon	U	Y	mg/l	1610	08/12/25	08/12/25	08/12/25	08/12/25	08/12/25
Dissolved Organic Carbon	U	Y	mg/kg	1610	08/12/25	08/12/25	08/12/25	08/12/25	08/12/25
Phenol Index	U	Y	mg/l	1920	08/12/25	08/12/25	08/12/25	08/12/25	08/12/25
Phenol Index	U	Y	mg/kg	1920	08/12/25	08/12/25	08/12/25	08/12/25	08/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				Chemtest Job No.:	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060356	2060357	2060358	2060359	2060360
Order No.:				*Client Sample Ref.:*	*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*
				Client Sample ID.:	*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:					
Determinand	**Accred.**	**WAC**	**Units**	**SOP**					

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060361	2060362
Order No.:				*Client Sample Ref.:*	*TP04 S1*	*TP04 S2*
				Client Sample ID.:	*25/11/5976*	*25/11/5977*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:		
Determinand	**Accred.**	**WAC**	**Units**	**SOP**		
ACM Type	N	N		2192	04/12/25	04/12/25
Asbestos Identification	U	N		2192	04/12/25	04/12/25
Moisture	N	N	%	2030	03/12/25	03/12/25
Soil Colour	N	N		2030	02/12/25	02/12/25
Other Material	N	N		2030	02/12/25	02/12/25
Soil Texture	N	N		2030	02/12/25	02/12/25
pH at 20C	M	Y		2010	04/12/25	04/12/25
Acid Neutralisation Capacity	N	N	mol/kg	2015	10/12/25	10/12/25
Boron (Hot Water Soluble)	M	N	mg/kg	2120	09/12/25	09/12/25
Sulphur (Elemental)	M	N	mg/kg	2180	04/12/25	04/12/25
Cyanide (Total)	M	N	mg/kg	2300	08/12/25	08/12/25
Sulphide (Easily Liberatable)	N	N	mg/kg	2325	04/12/25	04/12/25
Sulphate (Total)	U	N	%	2430	09/12/25	09/12/25
Arsenic	M	N	mg/kg	2455	04/12/25	04/12/25
Barium	M	N	mg/kg	2455	04/12/25	04/12/25
Cadmium	M	N	mg/kg	2455	04/12/25	04/12/25
Chromium	M	N	mg/kg	2455	04/12/25	04/12/25
Molybdenum	M	N	mg/kg	2455	04/12/25	04/12/25
Antimony	N	N	mg/kg	2455	04/12/25	04/12/25
Copper	M	N	mg/kg	2455	04/12/25	04/12/25
Mercury	M	N	mg/kg	2455	04/12/25	04/12/25
Nickel	M	N	mg/kg	2455	04/12/25	04/12/25
Lead	M	N	mg/kg	2455	04/12/25	04/12/25
Selenium	M	N	mg/kg	2455	04/12/25	04/12/25
Zinc	M	N	mg/kg	2455	04/12/25	04/12/25
Chromium (Trivalent)	N	N	mg/kg	2490	09/12/25	09/12/25
Chromium (Hexavalent)	N	N	mg/kg	2490	09/12/25	09/12/25
Aliphatic VPH >C5-C6	U	N	mg/kg	2780	11/12/25	11/12/25
Aliphatic VPH >C6-C7	U	N	mg/kg	2780	11/12/25	11/12/25
Aliphatic VPH >C7-C8	U	N	mg/kg	2780	11/12/25	11/12/25
Aliphatic VPH >C8-C10	U	N	mg/kg	2780	11/12/25	11/12/25
Total Aliphatic VPH >C5-C10	U	N	mg/kg	2780	11/12/25	11/12/25
Aliphatic EPH >C10-C12 MC	M	N	mg/kg	2690	12/12/25	12/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060361	2060362
Order No.:				*Client Sample Ref.:*	*TP04 S1*	*TP04 S2*
				Client Sample ID.:	*25/11/5976*	*25/11/5977*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:		
Determinand	**Accred.**	**WAC**	**Units**	**SOP**		
Aliphatic EPH >C12-C16 MC	M	N	mg/kg	2690	12/12/25	12/12/25
Aliphatic EPH >C16-C21 MC	M	N	mg/kg	2690	12/12/25	12/12/25
Aliphatic EPH >C21-C35 MC	M	N	mg/kg	2690	12/12/25	12/12/25
Aliphatic EPH >C35-C40 MC	N	N	mg/kg	2690	12/12/25	12/12/25
Total Aliphatic EPH >C10-C35 MC	M	N	mg/kg	2690	12/12/25	12/12/25
Aromatic VPH >C5-C7	U	N	mg/kg	2780	11/12/25	11/12/25
Aromatic VPH >C7-C8	U	N	mg/kg	2780	11/12/25	11/12/25
Aromatic VPH >C8-C10	U	N	mg/kg	2780	11/12/25	11/12/25
Total Aromatic VPH >C5-C10	U	N	mg/kg	2780	11/12/25	11/12/25
Aromatic EPH >C10-C12 MC	U	N	mg/kg	2690	12/12/25	12/12/25
Aromatic EPH >C12-C16 MC	U	N	mg/kg	2690	12/12/25	12/12/25
Aromatic EPH >C16-C21 MC	U	N	mg/kg	2690	12/12/25	12/12/25
Aromatic EPH >C21-C35 MC	U	N	mg/kg	2690	12/12/25	12/12/25
Aromatic EPH >C35-C40 MC	N	N	mg/kg	2690	12/12/25	12/12/25
Total Aromatic EPH >C10-C35 MC	U	N	mg/kg	2690	12/12/25	12/12/25
WAC Total C10-C40	N	Y	mg/kg	2690	12/12/25	12/12/25
Total VPH >C5-C10	U	N	mg/kg	2780	11/12/25	11/12/25
Total EPH >C10-C35 MC	U	N	mg/kg	2690	12/12/25	12/12/25
WAC Received weight	U	Y	g	650	02/12/25	02/12/25
Loss On Ignition	M	Y	%	2610	04/12/25	04/12/25
Total Organic Carbon	M	Y	%	2625	10/12/25	10/12/25
Mineral Oil EPH	N	N	mg/kg	2670	14/12/25	14/12/25
Benzene	M	N	µg/kg	2760	11/12/25	11/12/25
Total BTEX	M	Y	mg/kg	2760	11/12/25	11/12/25
Toluene	M	N	µg/kg	2760	11/12/25	11/12/25
Ethylbenzene	M	N	µg/kg	2760	11/12/25	11/12/25
m & p-Xylene	M	N	µg/kg	2760	11/12/25	11/12/25
o-Xylene	M	N	µg/kg	2760	11/12/25	11/12/25
Methyl Tert-Butyl Ether	M	N	µg/kg	2760	11/12/25	11/12/25
Naphthalene	M	N	mg/kg	2800	05/12/25	05/12/25
Acenaphthylene	N	N	mg/kg	2800	05/12/25	05/12/25
Acenaphthene	M	N	mg/kg	2800	05/12/25	05/12/25
Fluorene	M	N	mg/kg	2800	05/12/25	05/12/25
Phenanthrene	M	N	mg/kg	2800	05/12/25	05/12/25
Anthracene	M	N	mg/kg	2800	05/12/25	05/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060361	2060362
Order No.:				*Client Sample Ref.:*	*TP04 S1*	*TP04 S2*
				Client Sample ID.:	*25/11/5976*	*25/11/5977*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:		
Determinand	**Accred.**	**WAC**	**Units**	**SOP**		
Fluoranthene	M	N	mg/kg	2800	05/12/25	05/12/25
Pyrene	M	N	mg/kg	2800	05/12/25	05/12/25
Benzo[a]anthracene	M	N	mg/kg	2800	05/12/25	05/12/25
Chrysene	M	N	mg/kg	2800	05/12/25	05/12/25
Benzo[b]fluoranthene	M	N	mg/kg	2800	05/12/25	05/12/25
Benzo[k]fluoranthene	M	N	mg/kg	2800	05/12/25	05/12/25
Benzo[a]pyrene	M	N	mg/kg	2800	05/12/25	05/12/25
Indeno(1,2,3-c,d)Pyrene	M	N	mg/kg	2800	05/12/25	05/12/25
Dibenz(a,h)Anthracene	N	N	mg/kg	2800	05/12/25	05/12/25
Benzo[g,h,i]perylene	M	N	mg/kg	2800	05/12/25	05/12/25
Coronene	N	N	mg/kg	2800	05/12/25	05/12/25
Total Of 17 PAHs Lower	N	Y	mg/kg	2800	05/12/25	05/12/25
PCB 28	U	N	mg/kg	2815	12/12/25	12/12/25
PCB 52	U	N	mg/kg	2815	12/12/25	12/12/25
PCB 101	U	N	mg/kg	2815	12/12/25	12/12/25
PCB 118	U	N	mg/kg	2815	12/12/25	12/12/25
PCB 153	U	N	mg/kg	2815	12/12/25	12/12/25
PCB 138	U	N	mg/kg	2815	12/12/25	12/12/25
PCB 180	U	N	mg/kg	2815	12/12/25	12/12/25
Total PCBs (7 Congeners)	M	Y	mg/kg	2815	12/12/25	12/12/25
Tot PCBs Low (7 Congeners)	N	N	mg/kg	2815	12/12/25	12/12/25
Total Phenols	M	N	mg/kg	2920	08/12/25	08/12/25
Ammonium	U	N	mg/l	1220	11/12/25	11/12/25
Ammonium	N	N	mg/kg	1220	11/12/25	11/12/25
Dry Mass Of Test Portion	N	Y	kg	640	03/12/25	03/12/25
Moisture	N	Y	% dry weight	640	03/12/25	03/12/25
Volume Of C10 Leachant	N	Y	l	640	03/12/25	03/12/25
Total Dissolved Solids	N	Y	mg/l	1020	04/12/25	04/12/25
Total Dissolved Solids	N	Y	mg/kg	1020	04/12/25	04/12/25
Chloride	U	Y	mg/l	1220	11/12/25	11/12/25
Fluoride	U	Y	mg/l	1220	11/12/25	11/12/25
Sulphate	U	Y	mg/l	1220	11/12/25	11/12/25
Chloride	U	Y	mg/kg	1220	11/12/25	11/12/25
Fluoride	U	Y	mg/kg	1220	11/12/25	11/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060361	2060362
Order No.:				*Client Sample Ref.:*	*TP04 S1*	*TP04 S2*
				Client Sample ID.:	*25/11/5976*	*25/11/5977*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:		
Determinand	**Accred.**	**WAC**	**Units**	**SOP**		
Sulphate	U	Y	mg/kg	1220	11/12/25	11/12/25
Arsenic	U	Y	mg/l	1455	05/12/25	05/12/25
Boron	U	Y	mg/l	1455	05/12/25	05/12/25
Arsenic	U	Y	mg/kg	1455	05/12/25	05/12/25
Boron	U	Y	mg/kg	1455	05/12/25	05/12/25
Barium	U	Y	mg/l	1455	05/12/25	05/12/25
Barium	U	Y	mg/kg	1455	05/12/25	05/12/25
Cadmium	U	Y	mg/l	1455	05/12/25	05/12/25
Cadmium	U	Y	mg/kg	1455	05/12/25	05/12/25
Chromium	U	Y	mg/l	1455	05/12/25	05/12/25
Chromium	U	Y	mg/kg	1455	05/12/25	05/12/25
Copper	U	Y	mg/l	1455	05/12/25	05/12/25
Copper	U	Y	mg/kg	1455	05/12/25	05/12/25
Mercury	U	Y	mg/l	1455	05/12/25	05/12/25
Mercury	U	Y	mg/kg	1455	05/12/25	05/12/25
Molybdenum	U	Y	mg/l	1455	05/12/25	05/12/25
Molybdenum	U	Y	mg/kg	1455	05/12/25	05/12/25
Nickel	U	Y	mg/l	1455	05/12/25	05/12/25
Nickel	U	Y	mg/kg	1455	05/12/25	05/12/25
Lead	U	Y	mg/l	1455	05/12/25	05/12/25
Lead	U	Y	mg/kg	1455	05/12/25	05/12/25
Antimony	U	Y	mg/l	1455	05/12/25	05/12/25
Antimony	U	Y	mg/kg	1455	05/12/25	05/12/25
Selenium	U	Y	mg/l	1455	05/12/25	05/12/25
Selenium	U	Y	mg/kg	1455	05/12/25	05/12/25
Zinc	U	Y	mg/l	1455	05/12/25	05/12/25
Zinc	U	Y	mg/kg	1455	05/12/25	05/12/25
Dissolved Organic Carbon	U	Y	mg/l	1610	08/12/25	08/12/25
Dissolved Organic Carbon	U	Y	mg/kg	1610	08/12/25	08/12/25
Phenol Index	U	Y	mg/l	1920	08/12/25	08/12/25
Phenol Index	U	Y	mg/kg	1920	08/12/25	08/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060361	2060362
Order No.:				*Client Sample Ref.:*	*TP04 S1*	*TP04 S2*
				Client Sample ID.:	*25/11/5976*	*25/11/5977*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:		
Determinand	**Accred.**	**WAC**	**Units**	**SOP**		

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity at 25°C and Total Dissolved Solids (TDS) in Waters	Conductivity Meter	
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.	RE PW PL LE DW GW
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	RE PW PL SW DW GW
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation	PL SW GW
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	PL GW
2010	pH Value of Soils	pH at 20°C	pH Meter	
2015	Acid Neutralisation Capacity	Acid Reserve	Titration	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <30°C.	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection	
2192	Asbestos Quantification in Soils Sediments Ballast & Aggregate Crushed Concrete & Demolition Rubble	Asbestos	Polarised light microscopy / Gravimetry	
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.	
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.	
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID	
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection	

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.	
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection	
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS	
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS. Reported PCB 101 results may contain contributions from PCB 90 due to inseparable chromatography.	
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.	
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	
650	Characterisation of Waste (Leaching C2,C8,C10,WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection
Text example	All items indicated in italic font represent customer-supplied information that may not be independently verified by the laboratory

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

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

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

Uncertainty of measurement for the determinands tested are available upon request .

None of the results in this report have been recovery corrected.

All results are expressed on a dry weight basis.

The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at ≤ 30°C prior to analysis.

All Asbestos testing is performed at the indicated laboratory .

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.

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

NEW_ASB	Eurofins Chemtest Limited, 11 Depot Road, Newmarket, CB8 0AL
DURHAM	Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

Sample Deviation Codes

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

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - The required amount of sample for analysis was not received

H - Appropriate cooling measures were not taken for sample transportation

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt.

All water samples will be retained for 14 days from the date of receipt.

Charges may apply to extended sample storage.

Report Information

Water Sample Category Key for Accreditation

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

Clean Up Codes

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

HWOL Acronym System

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

Asbestos Tests LOD = LOQ

Limit of Detection = Limit of Quantification for asbestos results only

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

UKAS TESTING 2183

eurofins | Chemtest

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: cs@etuki.eurofins.com

RECEIVED: 04/03/2026

Final Report

Report No.: 25-38712-1

Initial Date of Issue: 17-Dec-2025

Re-Issue Details:

Client *Formation Homes Ireland Limited*

Client Address: *6 Hartstonge Street*
Limerick City
Limerick
Ireland

Contact(s): *Fionan Cahill*

Project *Monaleen Road (Suttons Land)*

Order No.: Not supplied

No. of Samples: *1*

Turnaround (Wkdays): 15

Date Approved: 17-Dec-2025

Approved By:

Details: David Smith, Technical Director

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

Results - Water

Project: BHP-MTI

Client: BHP Laboratories		**Chemtest Job No.:**				25-38712
Quotation No.: Q25-39939		**Chemtest Sample ID.:**				2060435
Order No.:		*Client Sample Ref.:*				*TP03 S3 (Water)*
		Client Sample ID.:				*25/11/5990*
		Client Reference:				*Monaleen Road (Suttons Land)*
		Sample Type:				*WATER*
		Sample Sub Type:				
		Date Sampled:				*24-Nov-2025*
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
pH at 20C		U	1010		4.0	7.0
Ammonium		U	1220	mg/l	0.050	1.7
Cyanide (Total)		U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)		U	1455	µg/l	0.20	0.24
Boron (Dissolved)		U	1455	µg/l	10.0	80
Cadmium (Dissolved)		U	1455	µg/l	0.11	< 0.11
Chromium (Dissolved)		U	1455	µg/l	0.50	< 0.50
Copper (Dissolved)		U	1455	µg/l	0.50	3.3
Mercury (Dissolved)		U	1455	µg/l	0.05	< 0.05
Molybdenum (Dissolved)		U	1455	µg/l	0.20	2.0
Nickel (Dissolved)		U	1455	µg/l	0.50	11
Lead (Dissolved)		U	1455	µg/l	0.50	0.59
Antimony (Dissolved)		U	1455	µg/l	0.50	< 0.50
Selenium (Dissolved)		U	1455	µg/l	0.50	< 0.50
Zinc (Dissolved)		U	1455	µg/l	2.5	6.6
Chromium (Trivalent)		N	1490	µg/l	20	< 20
Chromium (Hexavalent)		U	1490	µg/l	20	< 20
Total Organic Carbon		U	1610	mg/l	2.0	6.3
Aliphatic TPH >C5-C6	EH_2D_AL_#1	N	1780	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	EH_2D_AL_#1	N	1780	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	EH_2D_AL_#1	N	1780	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	EH_2D_AL_#1	N	1680	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	EH_2D_AL_#1	N	1680	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	EH_2D_AL_#1	N	1680	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	EH_2D_AL_#1	N	1680	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	EH_2D_AL_#1	N	1680	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	EH_2D_AL_#1	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	EH_2D_AR_#1	N	1780	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	EH_2D_AR_#1	N	1780	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	EH_2D_AR_#1	N	1780	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	EH_2D_AR_#1	N	1680	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	EH_2D_AR_#1	N	1680	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	EH_2D_AR_#1	N	1680	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	EH_2D_AR_#1	N	1680	µg/l	0.10	< 0.10

Results - Water

Project: BHP-MTI

Client: BHP Laboratories						**Chemtest Job No.:**	25-38712
Quotation No.: Q25-39939						**Chemtest Sample ID.:**	2060435
Order No.:						*Client Sample Ref.:*	*TP03 S3 (Water)*
						Client Sample ID.:	*25/11/5990*
						Client Reference:	*Monaleen Road (Suttons Land)*
						Sample Type:	*WATER*
						Sample Sub Type:	
						Date Sampled:	*24-Nov-2025*
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic TPH >C35-C44	EH_2D_AR_#1	N	1680	µg/l	0.10		< 0.10
Total Aromatic Hydrocarbons	EH_2D_AR_#1	N	1675	µg/l	5.0		< 5.0
Total Petroleum Hydrocarbons	EH_2D_Total_#1	N	1675	µg/l	10		< 10
Benzene		U	1760	µg/l	1.0		< 1.0
Toluene		U	1760	µg/l	1.0		< 1.0
Ethylbenzene		U	1760	µg/l	1.0		< 1.0
m & p-Xylene		U	1760	µg/l	1.0		< 1.0
o-Xylene		U	1760	µg/l	1.0		< 1.0
Methyl Tert-Butyl Ether		N	1760	µg/l	1.0		< 1.0
Naphthalene		U	1800	µg/l	0.10		< 0.10
Acenaphthylene		U	1800	µg/l	0.10		< 0.10
Acenaphthene		U	1800	µg/l	0.10		< 0.10
Fluorene		U	1800	µg/l	0.10		< 0.10
Phenanthrene		U	1800	µg/l	0.10		< 0.10
Anthracene		U	1800	µg/l	0.10		< 0.10
Fluoranthene		U	1800	µg/l	0.10		< 0.10
Pyrene		U	1800	µg/l	0.10		< 0.10
Benzo[a]anthracene		U	1800	µg/l	0.10		< 0.10
Chrysene		U	1800	µg/l	0.10		< 0.10
Benzo[b]fluoranthene		U	1800	µg/l	0.10		< 0.10
Benzo[k]fluoranthene		U	1800	µg/l	0.10		< 0.10
Benzo[a]pyrene		U	1800	µg/l	0.10		< 0.10
Indeno(1,2,3-c,d)Pyrene		U	1800	µg/l	0.10		< 0.10
Dibenz(a,h)Anthracene		U	1800	µg/l	0.10		< 0.10
Benzo[g,h,i]perylene		U	1800	µg/l	0.10		< 0.10
Coronene		N	1800	µg/l	0.10		< 0.10
Total Of 17 PAH's		N	1800	µg/l	2.0		< 2.0
PCB 28		N	1815	µg/l	0.010		< 0.010
PCB 52		N	1815	µg/l	0.010		< 0.010
PCB 101		N	1815	µg/l	0.010		< 0.010
PCB 118		N	1815	µg/l	0.010		< 0.010
PCB 153		N	1815	µg/l	0.010		< 0.010
PCB 138		N	1815	µg/l	0.010		< 0.010
PCB 180		N	1815	µg/l	0.010		< 0.010

Results - Water

Project: BHP-MTI

Client: BHP Laboratories		**Chemtest Job No.:**				25-38712
Quotation No.: Q25-39939		**Chemtest Sample ID.:**				2060435
Order No.:		*Client Sample Ref.:*				*TP03 S3 (Water)*
		Client Sample ID.:				*25/11/5990*
		Client Reference:				*Monaleen Road (Suttons Land)*
		Sample Type:				*WATER*
		Sample Sub Type:				
		Date Sampled:				*24-Nov-2025*
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
Total PCBs (7 congeners)		N	1815	µg/l	0.010	< 0.010
Total Phenols		U	1920	mg/l	0.030	< 0.030

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38712
Quotation No.: Q25-39939				**Chemtest Sample ID.:**	2060435
Order No.:				*Client Sample Ref.:*	*TP03 S3 (Water)*
				Client Sample ID.:	*25/11/5990*
				Client Reference:	*Monaleen Road (Suttons Land)*
				Sample Type:	*WATER*
				Date Sampled:	*24-Nov-2025*
				Time Sampled:	
Determinand	**Accred.**	**WAC**	**Units**	**SOP**	
pH at 20C	U	N		1010	05/12/25
Ammonium	U	N	mg/l	1220	11/12/25
Cyanide (Total)	U	N	mg/l	1300	09/12/25
Arsenic (Dissolved)	U	N	µg/l	1455	05/12/25
Boron (Dissolved)	U	N	µg/l	1455	05/12/25
Cadmium (Dissolved)	U	N	µg/l	1455	05/12/25
Chromium (Dissolved)	U	N	µg/l	1455	05/12/25
Copper (Dissolved)	U	N	µg/l	1455	05/12/25
Mercury (Dissolved)	U	N	µg/l	1455	05/12/25
Molybdenum (Dissolved)	U	N	µg/l	1455	05/12/25
Nickel (Dissolved)	U	N	µg/l	1455	05/12/25
Lead (Dissolved)	U	N	µg/l	1455	05/12/25
Antimony (Dissolved)	U	N	µg/l	1455	05/12/25
Selenium (Dissolved)	U	N	µg/l	1455	05/12/25
Zinc (Dissolved)	U	N	µg/l	1455	05/12/25
Chromium (Trivalent)	N	N	µg/l	1490	11/12/25
Chromium (Hexavalent)	U	N	µg/l	1490	11/12/25
Total Organic Carbon	U	N	mg/l	1610	04/12/25
Aliphatic TPH >C5-C6	N	N	µg/l	1780	09/12/25
Aliphatic TPH >C6-C8	N	N	µg/l	1780	09/12/25
Aliphatic TPH >C8-C10	N	N	µg/l	1780	09/12/25
Aliphatic TPH >C10-C12	N	N	µg/l	1680	08/12/25
Aliphatic TPH >C12-C16	N	N	µg/l	1680	08/12/25
Aliphatic TPH >C16-C21	N	N	µg/l	1680	08/12/25
Aliphatic TPH >C21-C35	N	N	µg/l	1680	08/12/25
Aliphatic TPH >C35-C44	N	N	µg/l	1680	08/12/25
Total Aliphatic Hydrocarbons	N	N	µg/l	1675	09/12/25
Aromatic TPH >C5-C7	N	N	µg/l	1780	09/12/25
Aromatic TPH >C7-C8	N	N	µg/l	1780	09/12/25
Aromatic TPH >C8-C10	N	N	µg/l	1780	09/12/25
Aromatic TPH >C10-C12	N	N	µg/l	1680	08/12/25
Aromatic TPH >C12-C16	N	N	µg/l	1680	08/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38712
Quotation No.: Q25-39939				**Chemtest Sample ID.:**	2060435
Order No.:				*Client Sample Ref.:*	*TP03 S3 (Water)*
				Client Sample ID.:	*25/11/5990*
				Client Reference:	*Monaleen Road (Suttons Land)*
				Sample Type:	*WATER*
				Date Sampled:	*24-Nov-2025*
				Time Sampled:	
Determinand	**Accred.**	**WAC**	**Units**	**SOP**	
Aromatic TPH >C16-C21	N	N	µg/l	1680	08/12/25
Aromatic TPH >C21-C35	N	N	µg/l	1680	08/12/25
Aromatic TPH >C35-C44	N	N	µg/l	1680	08/12/25
Total Aromatic Hydrocarbons	N	N	µg/l	1675	09/12/25
Total Petroleum Hydrocarbons	N	N	µg/l	1675	09/12/25
Benzene	U	N	µg/l	1760	17/12/25
Toluene	U	N	µg/l	1760	17/12/25
Ethylbenzene	U	N	µg/l	1760	17/12/25
m & p-Xylene	U	N	µg/l	1760	17/12/25
o-Xylene	U	N	µg/l	1760	17/12/25
Methyl Tert-Butyl Ether	N	N	µg/l	1760	17/12/25
Naphthalene	U	N	µg/l	1800	04/12/25
Acenaphthylene	U	N	µg/l	1800	04/12/25
Acenaphthene	U	N	µg/l	1800	04/12/25
Fluorene	U	N	µg/l	1800	04/12/25
Phenanthrene	U	N	µg/l	1800	04/12/25
Anthracene	U	N	µg/l	1800	04/12/25
Fluoranthene	U	N	µg/l	1800	04/12/25
Pyrene	U	N	µg/l	1800	04/12/25
Benzo[a]anthracene	U	N	µg/l	1800	04/12/25
Chrysene	U	N	µg/l	1800	04/12/25
Benzo[b]fluoranthene	U	N	µg/l	1800	04/12/25
Benzo[k]fluoranthene	U	N	µg/l	1800	04/12/25
Benzo[a]pyrene	U	N	µg/l	1800	04/12/25
Indeno(1,2,3-c,d)Pyrene	U	N	µg/l	1800	04/12/25
Dibenz(a,h)Anthracene	U	N	µg/l	1800	04/12/25
Benzo[g,h,i]perylene	U	N	µg/l	1800	04/12/25
Coronene	N	N	µg/l	1800	04/12/25
Total Of 17 PAH's	N	N	µg/l	1800	04/12/25
PCB 28	N	N	µg/l	1815	10/12/25
PCB 52	N	N	µg/l	1815	10/12/25
PCB 101	N	N	µg/l	1815	10/12/25
PCB 118	N	N	µg/l	1815	10/12/25
PCB 153	N	N	µg/l	1815	10/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38712
Quotation No.: Q25-39939				**Chemtest Sample ID.:**	2060435
Order No.:				*Client Sample Ref.:*	*TP03 S3 (Water)*
				Client Sample ID.:	*25/11/5990*
				Client Reference:	*Monaleen Road (Suttons Land)*
				Sample Type:	*WATER*
				Date Sampled:	*24-Nov-2025*
				Time Sampled:	
Determinand	**Accred.**	**WAC**	**Units**	**SOP**	
PCB 138	N	N	µg/l	1815	10/12/25
PCB 180	N	N	µg/l	1815	10/12/25
Total PCBs (7 congeners)	N	N	µg/l	1815	10/12/25
Total Phenols	U	N	mg/l	1920	09/12/25

<u>**Deviations**</u>

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Chemtest Sample ID	***Clients Sample Ref:***	***Clients Sample ID:***	***Clients Reference:***	***Sampled Date:***	**Deviation Code(s):**	**Containers Received:**
2060435	*TP03 S3 (Water)*	*25/11/5990*	*Monaleen Road (Suttons Land)*	*24-Nov-2025*	B,C	Amber Glass 250ml
2060435	*TP03 S3 (Water)*	*25/11/5990*	*Monaleen Road (Suttons Land)*	*24-Nov-2025*	B,C	Amber Glass 60ml
2060435	*TP03 S3 (Water)*	*25/11/5990*	*Monaleen Road (Suttons Land)*	*24-Nov-2025*	B,C	Plastic Bottle 1000ml

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	RE PW TE TS PL DW GW
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.	RE PW TE TS PL LE DW GW
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.	GW
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	RE PW PL SW DW GW
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	PL GW
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation	PL SW GW
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection	
1680	Extractable Petroleum Hydrocarbons	Aliphatics: >C5–C6, >C6–C8, >C8– C10*, >C10–C12*, >C12–C16*, >C16–C21*, >C21– C35*, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10*, >C10–C12*, >C12–C16*, >C16– C21*, >C21– C35*, >C35– C44	Dichloromethane extraction / GCxGC FID detection	
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.	PL GW
1780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10 Aromatics: >C5–C6, >C6–C8,>C8–C10	Water extraction / Headspace GCxGC FID detection	
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection	PL GW SW
1815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Waters by GC-MS	ICES7 PCB congeners	Solvent extraction / GCMS detection	
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	PL GW

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection
Text example	All items indicated in italic font represent customer-supplied information that may not be independently verified by the laboratory

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

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

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

Uncertainty of measurement for the determinands tested are available upon request .

None of the results in this report have been recovery corrected.

All results are expressed on a dry weight basis.

The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at ≤ 30°C prior to analysis.

All Asbestos testing is performed at the indicated laboratory .

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.

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

NEW_ASB	Eurofins Chemtest Limited, 11 Depot Road, Newmarket, CB8 0AL
DURHAM	Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

Sample Deviation Codes

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

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - The required amount of sample for analysis was not received

H - Appropriate cooling measures were not taken for sample transportation

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt.

All water samples will be retained for 14 days from the date of receipt.

Charges may apply to extended sample storage.

Report Information

Water Sample Category Key for Accreditation

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

Clean Up Codes

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

HWOL Acronym System

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

Asbestos Tests LOD = LOQ

Limit of Detection = Limit of Quantification for asbestos results only

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

GARLAND
Concepts Realised

Appendix C
Waste Classification Report

Classification of sample: 25/11/5971-2060356-

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

Sample details

Sample name:		LoW Code:	
25/11/5971-2060356-		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
16% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				16	mg/kg	1.895	25.462	mg/kg	0.00255 %	✓	
3	barium { barium diboron tetraoxide }	056-005-00-3	237-222-4	13701-59-2		81	mg/kg	1.623	110.461	mg/kg	0.011 %	✓	
4	boron { boric acid; [1] boric acid [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]	11	<0.4	mg/kg	5.719	<2.288	mg/kg	<0.000229 %		<LOD
5	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		<0.1	mg/kg	1.855	<0.185	mg/kg	<0.0000185 %		<LOD
6	chromium in Cr(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		39	mg/kg	1.462	47.881	mg/kg	0.00479 %	✓	
7	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
8	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		25	mg/kg	3.929	82.51	mg/kg	0.00825 %	✓	
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	50	mg/kg	1.56	65.512	mg/kg	0.0042 %	✓	
10	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.09	mg/kg	1.353	0.102	mg/kg	0.0000102 %	✓	
11	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.2	mg/kg	1.5	1.512	mg/kg	0.000151 %	✓	
12	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		44	mg/kg	5.358	198.043	mg/kg	0.0198 %	✓	
13	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.25	mg/kg	2.554	<0.638	mg/kg	<0.0000638 %		<LOD
14	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		72	mg/kg	2.774	167.78	mg/kg	0.0168 %	✓	
15	TPH (C6 to C40) petroleum group			TPH		15	mg/kg		12.6	mg/kg	0.00126 %	✓	

RECEIVED: 04/03/2026

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
21		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23		acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24		acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25		fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26		phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27		anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28		fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29		pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37		benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
39		sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
40		coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
41		monohydric phenols			P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
									Total:	0.0688 %		

WAC results for sample: 25/11/5971-2060356-

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

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

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

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand Header		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.24	3	-
2	LOI (loss on ignition)	%	2.9	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.05	1	-
5	Mineral oil (C10 to C40)	mg/kg	16	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<1	100	-
7	pH	pH	7.8	-	-
8	ANC (acid neutralisation capacity)	mol/kg	0.014	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0054	0.5	2
10	barium	mg/kg	0.063	20	100
11	cadmium	mg/kg	<0.0011	0.04	1
12	chromium	mg/kg	<0.005	0.5	10
13	copper	mg/kg	0.065	2	50
14	mercury	mg/kg	<0.0005	0.01	0.2
15	molybdenum	mg/kg	<0.002	0.5	10
16	nickel	mg/kg	0.0058	0.4	10
17	lead	mg/kg	0.011	0.5	10
18	antimony	mg/kg	<0.005	0.06	0.7
19	selenium	mg/kg	<0.005	0.1	0.5
20	zinc	mg/kg	0.039	4	50
21	chloride	mg/kg	99	800	15000
22	fluoride	mg/kg	<1	10	150
23	sulphate	mg/kg	75	1000	20000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	55	500	800
26	TDS (total dissolved solids)	mg/kg	1300	4000	60000

Key

User supplied data

RECEIVED: 04/03/2026

Classification of sample: 25/11/5972-2060357-

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

Sample details

Sample name:		LoW Code:	
25/11/5972-2060357-		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
15% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				10 mg/kg	1.895	16.103 mg/kg	0.00161 %	✓	
3	barium { barium diboron tetraoxide }	056-005-00-3	237-222-4	13701-59-2		97 mg/kg	1.623	133.855 mg/kg	0.0134 %	✓	
4	boron { boric acid; [1] boric acid [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]	11	<0.4 mg/kg	5.719	<2.288 mg/kg	<0.000229 %		<LOD
5	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2 mg/kg	1.855	0.315 mg/kg	0.0000315 %	✓	
6	chromium in Cr(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		60 mg/kg	1.462	74.539 mg/kg	0.00745 %	✓	
7	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
8	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		21 mg/kg	3.929	70.134 mg/kg	0.00701 %	✓	
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	24 mg/kg	1.56	31.82 mg/kg	0.00204 %	✓	
10	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.05 mg/kg	1.353	0.0575 mg/kg	0.00000575 %	✓	
11	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.6 mg/kg	1.5	2.04 mg/kg	0.000204 %	✓	
12	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		59 mg/kg	5.358	268.72 mg/kg	0.0269 %	✓	
13	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.25 mg/kg	2.554	<0.638 mg/kg	<0.0000638 %		<LOD
14	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		72 mg/kg	2.774	169.778 mg/kg	0.017 %	✓	
15	TPH (C6 to C40) petroleum group			TPH		11 mg/kg		9.35 mg/kg	0.000935 %	✓	

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the concentration of: 10000 mg/kg (1%) because: The soil had no liquid phase or liquid film meaning that the soil will not be flammable with TPH below 10,000 mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00093%)

WAC results for sample: 25/11/5972-2060357-

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

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

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

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand Header		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	<0.2	3	-
2	LOI (loss on ignition)	%	1.9	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.05	1	-
5	Mineral oil (C10 to C40)	mg/kg	15	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<1	100	-
7	pH	pH	7.7	-	-
8	ANC (acid neutralisation capacity)	mol/kg	0.021	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.002	0.5	2
10	barium	mg/kg	0.27	20	100
11	cadmium	mg/kg	<0.0011	0.04	1
12	chromium	mg/kg	<0.005	0.5	10
13	copper	mg/kg	0.055	2	50
14	mercury	mg/kg	<0.0005	0.01	0.2
15	molybdenum	mg/kg	<0.002	0.5	10
16	nickel	mg/kg	0.0068	0.4	10
17	lead	mg/kg	0.006	0.5	10
18	antimony	mg/kg	<0.005	0.06	0.7
19	selenium	mg/kg	<0.005	0.1	0.5
20	zinc	mg/kg	0.041	4	50
21	chloride	mg/kg	120	800	15000
22	fluoride	mg/kg	1.1	10	150
23	sulphate	mg/kg	57	1000	20000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	320	4000	60000

Key

User supplied data

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
21	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
22	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
39	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
40	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
41	monohydric phenols			P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
								Total:	0.0313 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the concentration of: 10000 mg/kg (1%) because: The soil had no liquid phase or liquid film meaning that the soil will not be flammable with TPH below 10,000 mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00539%)

Classification of sample: 25/11/5974-2060359-

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

Sample details

Sample name:		LoW Code:	
25/11/5974-2060359-		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
7.2% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.2% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				4.6	mg/kg	1.895	8.087	mg/kg	0.000809 %	✓	
3	barium { barium diboron tetraoxide }	056-005-00-3	237-222-4	13701-59-2		29	mg/kg	1.623	43.691	mg/kg	0.00437 %	✓	
4	boron { boric acid; [1] boric acid [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]	11	<0.4	mg/kg	5.719	<2.288	mg/kg	<0.000229 %		<LOD
5	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		<0.1	mg/kg	1.855	<0.185	mg/kg	<0.0000185 %		<LOD
6	chromium in Cr(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		16	mg/kg	1.462	21.701	mg/kg	0.00217 %	✓	
7	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
8	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		9.4	mg/kg	3.929	34.274	mg/kg	0.00343 %	✓	
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	11	mg/kg	1.56	15.923	mg/kg	0.00102 %	✓	
10	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05	mg/kg	1.353	<0.0677	mg/kg	<0.00000677 %		<LOD
11	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.1	mg/kg	1.5	1.531	mg/kg	0.000153 %	✓	
12	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		26	mg/kg	5.358	129.285	mg/kg	0.0129 %	✓	
13	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.25	mg/kg	2.554	<0.638	mg/kg	<0.0000638 %		<LOD
14	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		27	mg/kg	2.774	69.509	mg/kg	0.00695 %	✓	
15	TPH (C6 to C40) petroleum group			TPH		91	mg/kg		84.448	mg/kg	0.00844 %	✓	

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
21	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
22	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
39	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
40	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
41	monohydric phenols			P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
								Total:	0.0403 %		

WAC results for sample: 25/11/5974-2060359-

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

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

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

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand Header		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.5	3	-
2	LOI (loss on ignition)	%	3.1	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.05	1	-
5	Mineral oil (C10 to C40)	mg/kg	30	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<1	100	-
7	pH	pH	8.3	-	-
8	ANC (acid neutralisation capacity)	mol/kg	0.019	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0032	0.5	2
10	barium	mg/kg	<0.05	20	100
11	cadmium	mg/kg	<0.0011	0.04	1
12	chromium	mg/kg	<0.005	0.5	10
13	copper	mg/kg	0.044	2	50
14	mercury	mg/kg	<0.0005	0.01	0.2
15	molybdenum	mg/kg	0.022	0.5	10
16	nickel	mg/kg	0.009	0.4	10
17	lead	mg/kg	0.0091	0.5	10
18	antimony	mg/kg	<0.005	0.06	0.7
19	selenium	mg/kg	<0.005	0.1	0.5
20	zinc	mg/kg	0.03	4	50
21	chloride	mg/kg	21	800	15000
22	fluoride	mg/kg	1.7	10	150
23	sulphate	mg/kg	18	1000	20000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	560	4000	60000

Key

User supplied data

RECEIVED: 04/03/2026

Classification of sample: 25/11/5975-2060360-

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

Sample details

Sample name:		LoW Code:	
25/11/5975-2060360-		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
7.5% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.5% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				8.5	mg/kg	1.895	14.896	mg/kg	0.00149 %	✓	
3	barium { barium diboron tetraoxide }	056-005-00-3	237-222-4	13701-59-2		43	mg/kg	1.623	64.574	mg/kg	0.00646 %	✓	
4	boron { boric acid; [1] boric acid [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]	11	<0.4	mg/kg	5.719	<2.288	mg/kg	<0.000229 %		<LOD
5	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.13	mg/kg	1.855	0.223	mg/kg	0.0000223 %	✓	
6	chromium in Cr(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		23	mg/kg	1.462	31.095	mg/kg	0.00311 %	✓	
7	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
8	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		17	mg/kg	3.929	61.784	mg/kg	0.00618 %	✓	
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	24	mg/kg	1.56	34.628	mg/kg	0.00222 %	✓	
10	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.07	mg/kg	1.353	0.0876	mg/kg	0.00000876 %	✓	
11	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.8	mg/kg	1.5	2.498	mg/kg	0.00025 %	✓	
12	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		39	mg/kg	5.358	193.301	mg/kg	0.0193 %	✓	
13	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.25	mg/kg	2.554	<0.638	mg/kg	<0.0000638 %		<LOD
14	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		50	mg/kg	2.774	128.304	mg/kg	0.0128 %	✓	
15	TPH (C6 to C40) petroleum group			TPH		23.5	mg/kg		21.738	mg/kg	0.00217 %	✓	

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"
Force this Hazardous Property to non-hazardous for cumulative determinand results below the concentration of: 10000 mg/kg (1%) because: The soil had no liquid phase or liquid film meaning that the soil will not be flammable with TPH below 10,000 mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00217%)

WAC results for sample: 25/11/5975-2060360-

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

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

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

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand Header		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.8	3	-
2	LOI (loss on ignition)	%	1.7	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.05	1	-
5	Mineral oil (C10 to C40)	mg/kg	17	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	3.2	100	-
7	pH	pH	8.3	-	-
8	ANC (acid neutralisation capacity)	mol/kg	0.02	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.002	0.5	2
10	barium	mg/kg	0.067	20	100
11	cadmium	mg/kg	<0.0011	0.04	1
12	chromium	mg/kg	<0.005	0.5	10
13	copper	mg/kg	0.036	2	50
14	mercury	mg/kg	<0.0005	0.01	0.2
15	molybdenum	mg/kg	0.024	0.5	10
16	nickel	mg/kg	<0.005	0.4	10
17	lead	mg/kg	0.0057	0.5	10
18	antimony	mg/kg	<0.005	0.06	0.7
19	selenium	mg/kg	<0.005	0.1	0.5
20	zinc	mg/kg	<0.025	4	50
21	chloride	mg/kg	<10	800	15000
22	fluoride	mg/kg	1.4	10	150
23	sulphate	mg/kg	79	1000	20000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	570	4000	60000

Key

User supplied data

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
21	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
22	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
39	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
40	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
41	monohydric phenols			P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
								Total:	0.054 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the concentration of: 10000 mg/kg (1%) because: The soil had no liquid phase or liquid film meaning that the soil will not be flammable with TPH below 10,000 mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00424%)

RECEIVED: 04/03/2026

Classification of sample: 25/11/5977-2060362-

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

Sample details

Sample name:	LoW Code:	
25/11/5977-2060362-	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:		
2.6% (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 2.6% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				3.2	mg/kg	1.895	5.905	mg/kg	0.00059 %	✓	
3	barium { barium diboron tetraoxide }	056-005-00-3	237-222-4	13701-59-2		5.6	mg/kg	1.623	8.855	mg/kg	0.000886 %	✓	
4	boron { boric acid; [1] boric acid [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]	11	<0.4	mg/kg	5.719	<2.288	mg/kg	<0.000229 %		<LOD
5	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.13	mg/kg	1.855	0.235	mg/kg	0.0000235 %	✓	
6	chromium in Cr(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		2.8	mg/kg	1.462	3.986	mg/kg	0.000399 %	✓	
7	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
8	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		2.4	mg/kg	3.929	9.185	mg/kg	0.000918 %	✓	
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	88	mg/kg	1.56	133.695	mg/kg	0.00857 %	✓	
10	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05	mg/kg	1.353	<0.0677	mg/kg	<0.00000677 %		<LOD
11	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<0.5	mg/kg	1.5	<0.75	mg/kg	<0.000075 %		<LOD
12	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		10	mg/kg	5.358	52.19	mg/kg	0.00522 %	✓	
13	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.25	mg/kg	2.554	<0.638	mg/kg	<0.0000638 %		<LOD
14	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		12	mg/kg	2.774	32.424	mg/kg	0.00324 %	✓	
15	TPH (C6 to C40) petroleum group			TPH		11.1	mg/kg		10.811	mg/kg	0.00108 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
21		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23		acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24		acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25		fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26		phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27		anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28		fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29		pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37		benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
39		sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
40		coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
41		monohydric phenols			P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
									Total:	0.0209 %		

WAC results for sample: 25/11/5977-2060362-

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

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand Header		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	6.6	3	-
2	LOI (loss on ignition)	%	0.44	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.05	1	-
5	Mineral oil (C10 to C40)	mg/kg	10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<1	100	-
7	pH	pH	8.9	-	-
8	ANC (acid neutralisation capacity)	mol/kg	0.015	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.002	0.5	2
10	barium	mg/kg	<0.05	20	100
11	cadmium	mg/kg	<0.0011	0.04	1
12	chromium	mg/kg	<0.005	0.5	10
13	copper	mg/kg	0.03	2	50
14	mercury	mg/kg	<0.0005	0.01	0.2
15	molybdenum	mg/kg	0.0032	0.5	10
16	nickel	mg/kg	<0.005	0.4	10
17	lead	mg/kg	0.01	0.5	10
18	antimony	mg/kg	<0.005	0.06	0.7
19	selenium	mg/kg	<0.005	0.1	0.5
20	zinc	mg/kg	<0.025	4	50
21	chloride	mg/kg	<10	800	15000
22	fluoride	mg/kg	<1	10	150
23	sulphate	mg/kg	<10	1000	20000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	350	4000	60000

Key

User supplied data

Inert WAC criteria fail

Appendix A: Classifier defined and non EU CLP determinands

chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from ECHA's C&L inventory database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 30 Apr 2020
Hazard Statements: Acute Tox. 4; H302 , Skin Sens. 1; H317 , Eye Irrit. 2; H319

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Unknown Oil

Hazard statements taken from WM3 1st Edition 2015
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

EU CLP index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2; H351 hazard statement sourced from:: IARC Group 2B (77) 2000

salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

EU CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from:: WM3, Table C12.2

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

chromium in Cr(III) compounds {chromium(III) oxide}

There was no Chromium VI detected in the sample.

chromium in Cr(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case species based on hazard statements/molecular weight (edit as required)

copper {copper sulphate pentahydrate}

Worst case CLP species based on hazard statements/molecular weight. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Reasonable worst case CLP species based on hazard statements/molecular weight and assuming no evidence for the use of explosives. (edit as required)

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel dibromate}

Worst case CLP species based on hazard statements/molecular weight. (edit as required)

selenium {nickel selenate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

sulfur {sulfur}

Elemental sulfur

Appendix C: Version

HazWasteOnline Classification Engine: EU WM3 1st Edition v1.1.NI using the EU LoW
HazWasteOnline Classification Engine Version: 2025.345.6921.12504 (11 Dec 2025)
HazWasteOnline Database: 2025.345.6921.12504 (11 Dec 2025)

This classification utilises the following guidance and legislation:
WM3 v1.1.NI - Waste Classification - 1st Edition v1.1.NI - Jan 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
17th ATP - Regulation (EU) 2021/849 of 11 March 2021
18th ATP - Regulation (EU) 2022/692 of 16 February 2022
POPs Amendment 2022 - Regulation (EU) 2022/2400 of 23 November 2022
19th ATP - Regulation (EU) 2023/1434 of 25 April 2023
20th ATP - Regulation (EU) 2023/1435 of 2 May 2023
21st ATP - Regulation (EU) 2024/197 of 19 October 2023
22nd ATP - Regulation (EU) 2024/2564 of 19th June 2024
23rd ATP - Regulation (EU) 2025/1222 of 2nd April 2025

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APPENDIX 8.2-OPERATIONAL WASTE MANAGEMENT PLAN

GENESIS
PLANNING
CONSULTANTS

Document Control Sheet

Job Title: Monaleen Road, Castletroy

Job Number: 2025-44

Report ref: Operational Waste Management Plan

Author: N Carr & R Woods

Date: February 2026

Client: Columbia Estates Management IE Limited

Document Status				
Rev	Purpose of Document	Authored by	Approved by	Review Date
1	Draft	N Carr		10-02-2026
2	Final	R Woods	R Woods	11-02-2026

Approval for Issue		
Ronan Woods		

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GENESIS
PLANNING
CONSULTANTS

TABLE OF CONTENTS PAGE

EXECUTIVE SUMMARY

This report is an Operational Waste Management Plan prepared as part of the Planning Application for a Large-scale Residential Development (hereafter referred to as the 'proposed development') on lands located at Monaleen Road, Castletroy.

Waste will be generated from both residential and commercial spaces in the proposed development during the operational phase.

All waste will be stored and segregated into separate fractions to facilitate the collection of dry mixed recyclables, residual waste, organic waste and glass.

A waste handling area has been identified for the storage of wheeled bins and other waste equipment at the ground level of the proposed development.

Bins will be transported for collection to a collection point located at ground level. Storage and collection of wastes will be undertaken on site in accordance with the Limerick Council (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-Laws, 2019, the Limerick Development Plan 2022- 2028 and the standard BS 5906:2005 Waste management in buildings—Code of Practice, as appropriate.

1 INTRODUCTION

1.1 Overview

1.1.1 This report is an Operational Waste Management Plan prepared as part of the planning application for a Large-scale Residential Development(hereafter referred to as the 'proposed development') on lands located at Monaleen Road, Castletroy, Limerick.

2 PROPOSED DEVELOPMENT

2.1 Connect Investments Limited intend to apply to the Planning Authority for permission for a Large-scale Residential Development on lands located at Castletroy.

2.2 For reference Figure 1 below is an outline of the location and boundary of the proposed development.

Figure 1: Location of the proposed development site. (Source: Google Earth © 2022. Not to scale)

2.3 The proposed development involves and the construction of a Large-scale Residential Development of a total of 523no. residential units and a creche which will consist of the following unit mix:

- 214no. dwellings (10no. 2bed units and 204no. 3bed units);
- 309 apartments (159no. 1bed units, 141no. 2bed units and 9no. 3bed units);
- a creche.

Figure 2 Site layout for reference purposes

3 PLANNING AND POLICY

3.1 Overview

3.1.1 The principal objective of sustainable resource and waste management is to use resources more efficiently, where the value of products, material and resources is maintained in the economy for as long as possible such that the generation of waste is minimised. To achieve resource efficiency there is a need to move from a traditional linear economy to a circular economy (refer to Figure 2).

3.1.2 A Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2024 – 2030 notes that:

'The circular economy offers … one in which resources are kept in use for as long as possible, the maximum value of the resources is extracted whilst in use, then products and materials are recovered and regenerated at the end of life.'

3.1.3 The aim of the plan is to:

'*This Plan seeks to influence sustainable consumption and prevent the generation of waste, improve the capture of materials to optimize circularity and enable compliance with policy and legislation.*'

3.1.4 The EU Circular Economy Action Plan (European Commission, 2020) notes that:

'the EU needs to accelerate the transition towards a regenerative growth model that gives back to the planet more than it takes, advance towards keeping its resource consumption within planetary boundaries, and therefore strive to reduce its consumption footprint and double its circular material use rate in the coming decade.'
.'

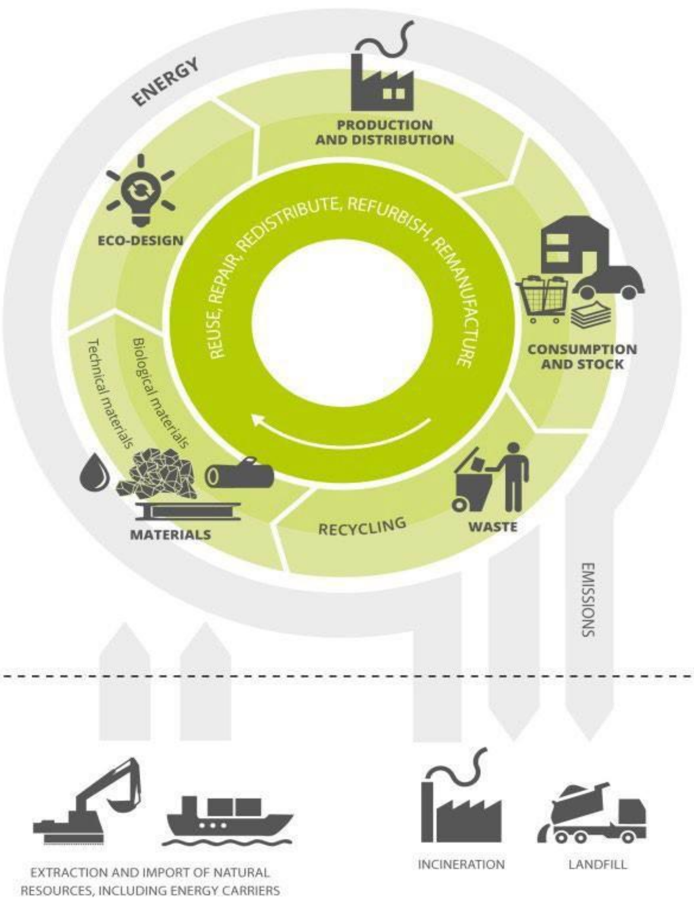


Figure 3 A Simplified Model of the Circular Economy for Materials and Energy (European Environment Agency, 2016)

3.1.4 Where residual waste is generated it should be dealt with in a way that follows the waste hierarchy (refer to Figure 3) and set out in Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2009 on waste and repealing certain Directives and Directive 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste.

3.1.5 The waste hierarchy supports the need to achieve efficient use of material resources, minimise the amount of waste produced (or otherwise increase its value as a resource) and reduce, as far as possible, the amount of waste that is disposed to landfill.

3.1.6 Key resource and waste management policy and planning documents were taken into account in preparing this Operational Waste Management Plan.

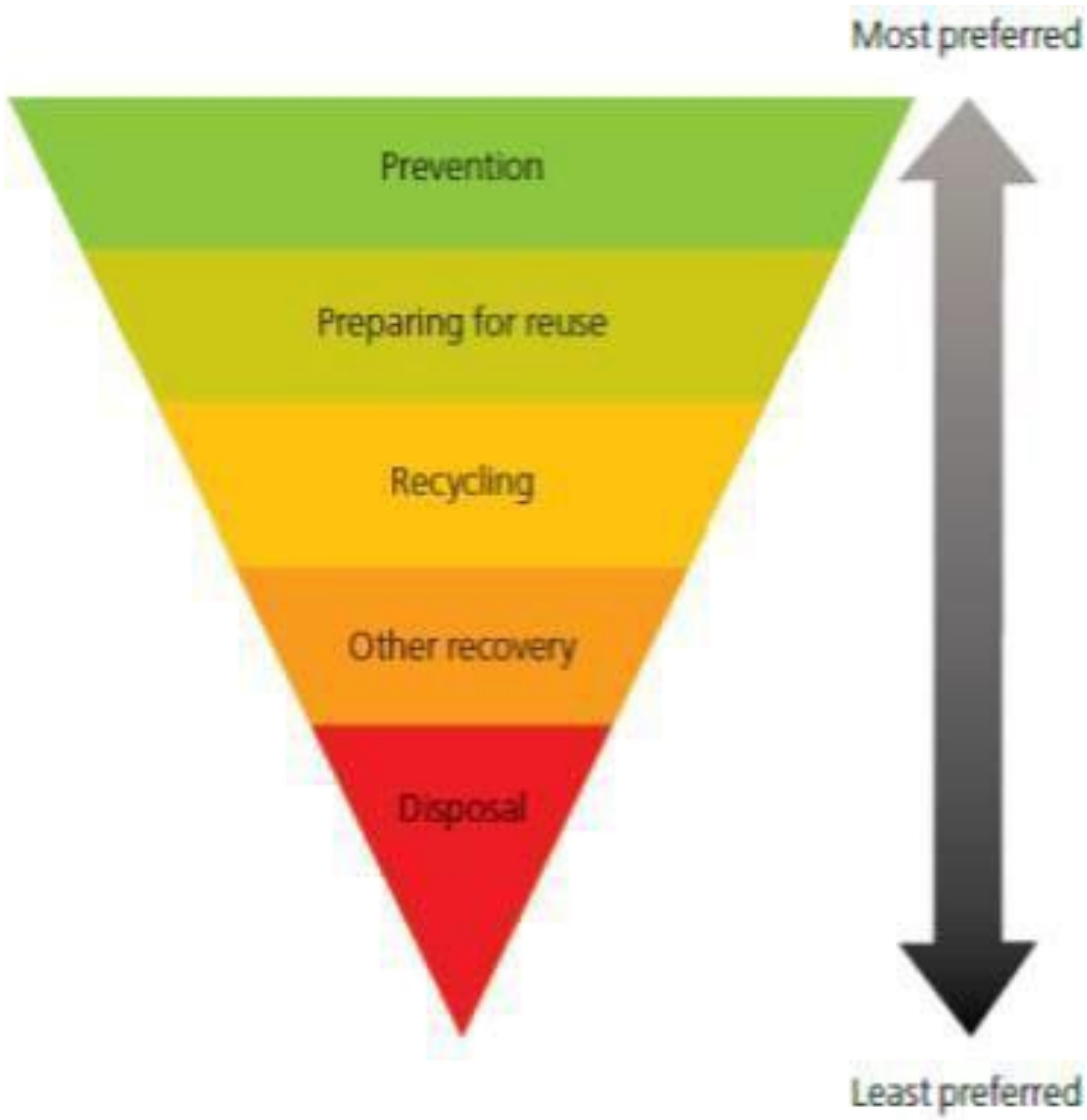


Figure 4 Waste Hierarchy

3.1.7 We highlight the plan has developed Eight national targets have been developed as follows:

4 RECEIVING ENVIRONMENT

4.1 Municipal Waste

4.1.1 Municipal waste is the waste type that will be most relevant to the operational phase of the proposed development. Municipal waste includes the following waste types:

- **Residual** (sometimes known as black bin) waste i.e. waste that cannot be recycled;
- **Recyclable** (sometimes known as green bin) waste e.g. plastic, paper and cardboard, metals;
- **Organic** (sometimes known as brown bin) waste e.g. food and garden waste;
- **Glass**
- **Bulky waste** i.e. waste that is too large to be accepted by regular waste collection e.g. furniture, mattresses, carpets, bicycles etc.; and
- **Waste Electrical and Electronic Equipment** (WEEE).

Limerick City and County Council Waste Bye-Laws

4.1.2 The LCCC "City and County of Limerick (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-Laws (2019)" came into use in March 2019. The Bye-Laws set a number of enforceable requirements on waste holders with regard to storage, separation and presentation of waste within the LCCC functional area. Key requirements under these Bye-Laws of relevance to the proposed development include the following:

4.1.3 Kerbside waste presented for collection shall not be presented for collection earlier than 6.00 pm on the day immediately preceding the designated waste collection day; while the Metropolitan District of Limerick area shall not be presented for collection earlier than 8.00 pm on the day immediately preceding the designated waste collection day.

4.1.4 All containers used for the presentation of kerbside waste and any uncollected waste shall be removed from any roadway, footway, footpath or any other public place no later than 9.00pm the day of collection; while the Metropolitan District of Limerick area shall remove their bins no later than 9.30am on the designated waste collection day.

4.1.5 Documentation, including receipts, is obtained and retained for a period of no less than one year to provide proof that any waste removed from the premises has been managed in a manner that conforms to these bye-laws, to the Waste Management Act and, where such legislation is applicable to that person, to the European Union (Household Food Waste and Bio-Waste) Regulations 2015; and

4.1.6 Adequate access and egress onto and from the premises by waste collection vehicles is maintained.

4.1.7 The full text of the Waste Bye-Laws is available from the LCCC website.

4.1.8 The most recent complete figures published by the EPA relating to municipal waste are for the year 2019 and note that 3,085,652 tonnes of municipal waste were generated in Ireland (EPA, 2021). Of this 83% was recovered, which means the waste was recycled, incinerated for energy recovery or used to cover landfilled waste. 37% was recycled. 'Recycled' means the waste was broken down and used to make new items and includes the breakdown of food and garden waste to make compost. 15% of municipal waste was disposed of in 2019.

4.1.9 The figures in Table 1 below were obtained from the most recent waste characterisation surveys conducted in Ireland undertaken in 2016 and published in 2018. They should be considered as a guide only as municipal waste can vary significantly from one location to another, depending on the nature of the development and the waste management practices employed on-site.

4.1.10 The predominant waste streams in municipal waste include plastics, papers and organic waste, with these streams comprising 40% of total municipal waste composition.

Category	Composition
Plastics	17.2%
Papers	15.3%
Organic waste (non-garden)	12.5%
Cardboards	8.5%
Fines (<20mm)	8.6%
Organic waste (garden)	7.6%
Textiles excl. nappies	7.6%
Nappies	6.7%
Metals	4.2%
Unclassified Combustibles	4.3%
Glass	2.6%
Unclassified Incombustibles	1.7%
Haz Municipal Waste (excl. WEEE &Tubes)	0.9%
Composite beverage cartons	0.8%
Wood	0.8%
WEEE & Tubes	0.7%
Total	**100.0%**

Table 1 Composition of Municipal Waste[1]

[1] EPA Household Waste Characterisation Campaign - Final Report. https://www.epa.ie/publications/monitoring--assessment/waste/national-waste-statistics/Household_Surveys_Final_Report1.pdf

5 WASTE GENERATION

5.1 Residential

5.1.1 Residential waste generation from the proposed development has been estimated to enable the number of bins required for storage to be calculated. This calculation was based on the schedule of accommodation for the scheme. To demonstrate how this was calculated, the calculation for residential units is set out in this section. Residential waste storage requirements for the proposed development are presented in Section 6.2.

5.1.2 In terms of project particulars the approach to calculating bin storage areas is based solely on apartments, as residential dwellings will provide storage in-curtilage which are stand-alone buildings and have adequate areas for bin storage. We refer to the accompanying drawings denoting bin storage areas for each dwelling typology.

5.1.3 Therefore with the proposal incorporating 309no. apartments in 10no. blocks the assumptions are as follows:

- Occupancy rates are assumed to be 2 persons per 1 bed apartment, 4 persons per 2 bed apartment and 5 persons per 3 bed apartment.
- Household waste will be source separated into recyclables, residual, organic and glass waste. Wheeled bins will also be available in waste storage room for WEEE.
- It is assumed that approximately 60% of waste generated will be dry mixed recyclables , 30% of waste generated will be residual waste, 5% of waste generated will be organic waste and 5% of waste generated will be glass waste. The waste management system will be flexible to allow for increases in the proportion of source segregated recyclables and reduction of residual wastes in the future. This includes the European Commission's 70% target for re-use and recycling of waste by 2030.
- Weekly waste collection of residential waste is assumed for the purpose of these calculations.
- It is assumed that all waste will be delivered by householders to the ground level communal waste stores.
- The EPA reported a household waste generation rate per capita of 330kg per annum for 2020[2], the most recent year for which published data is available.
- Over a third (39%) of all waste collected from households was placed in the residual waste (black) bin in 2020 (722,911). Therefore it is assumed that 61% of all waste is dry mixed recyclables.
- Specific assumptions, formula and calculations used are presented in Table 2 below.

Assumptions	Formula	Calculation
1 bed: 2 person occupancy rate	No of People = No. of units * occupancy rate	1bed: 159 units *2 people= 318 people
2 bed: 3/4 person occupancy rate		2 Bed: 141 units * 4 people = 564 people. 3 Bed: 9 units *5 people= 45 people.
3 bed: 5 person occupancy rate		
		Total = 927 people
330kg per annum waste generation	Tonnes of waste = waste per annum * No. of people	0.33 tonnes/person/year * 927 people = 306 tonnes / year

Table 2: Assumptions, Formulas and Calculations used – Apartments (Residential**)**

Container/ Equipment Type	Length (mm)	Width (mm)	Height (mm)	Clearance Required	
1,100 litre bin (residual waste and dry mixed recyclables) (note 1)	1070	1370	1450	150mm	 1100 Litre Wheeled Bin (www.ecostore.ie)
360 litre bin (organic waste) (note 2)	880	590	1100	150mm	 360 litre wheeled bin (www.ecostore.ie)
240 litre bin (glass waste) (note 2)	740	590	1100	150mm	 240 Litre Wheeled Bin (www.ecostore.ie)

Figure 5 Types of bins for reference purposes

---

2 https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/household/

Assumptions	Formula	Calculation
Density of 0.21 tonnes/m^3	Volume of waste = Tonnes/density	306 tonnes / 0.21 tonnes/m^3 = 1456m3 per annum
1,100 litre (1.1m^3) wheeled bins will be used for communal waste collection of dry mixed recyclables and residual waste. 360 litre (0.36m^3) wheeled bins will be used for communal waste collection of organic waste. 240 litre (0.24m^3) wheeled bins will be used for communal waste collection of glass waste. Assume once weekly waste collection.	Volume per week = Total volume / 52	1456 m^3 per annum / 52 weeks = 28 m^3 per week
Bins Required	**Volume per week / 1,100 communal waste bins = total bins required**	**28m^3 per week / 1.1 m^3 = 26no. 1100 litre bins** **= 26 bins for apartments (to be split pro-rata per apartment block & with all provided for via 1100 litre bins)**
Appropriate Bin Provision Based on the EPA assumption discussed above that 60% of all bins within the development are required for dry mixed recycling, 30% Municipal Waste & 10% for organic/glass wastes.	**To include for % of dry mixed recyclables & glass** **= Total amount of bins**	**60% of 26 bins = 16 bins for recycling purposes &** **30% of 26 bins = 8 bins for Municipal Waste** **5% of 28m3 (26 bins)= 1.4m3 for organic waste or 4no. 360 litre brown bin** **5% of 28m3 = 1.4m3 for glass waste or 4no. 240 litre black bins**

Table 3: Assumptions, Formulas and Calculations used – Apartments (Residential- Minimum bin provision)

6 WASTE MANAGEMENT AND STORAGE

6.1 Overview

6.1.1 This section presents information on the storage and movement of residential and commercial waste within the proposed development.

6.1.2 It is noted that a number of different tenants will use the waste management facilities on site. As a result, and in order to ensure the waste storage and collection facilities on site will be effectively used and managed, a facilities manager will be required to arrange both movement of waste and recyclables around the site and access to the waste management storage area. Going forward this can be addressed by planning condition as per management of the apartments.

6.1.3 Storage and collection of recyclables and wastes will be undertaken on site in accordance with the Limerick City & County Council (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-Laws, 2019 (Limerick City & County Council, 2019), the Limerick County Development Plan 2022- 2028 and the standard BS 5906:2005 Waste management in buildings — Code of practice (BSI, 2005), as appropriate.

6.1.4 The design of all kitchens in the apartments shall include sufficient space for the segregation and storage of waste; shown below. Each resident will simply go downstairs to the main bin store and empty their bins into the larger bins; as is the norm for apartment schemes.

6.1.5 The facilities management team will be responsible for the maintenance of the waste handling areas and will act as a single point of contact for the waste collection contractor.

6.1.6 BS 5906:2005 Waste management in buildings - Code of practice (BSI, 2005) notes that waste operatives should not be required to move 4 wheeled waste containers a distance of more than 10 metres. As a result the layout has been designed so that bin stores are proximate to the internal road to minimize the movement required of wheeled bins on collection days.

6.1.7 The waste storage room will be appropriately ventilated and sufficient drainage will be provided to enable a thorough wash down of all bins and the waste storage rooms.

6.2 **Residential Waste**

6.2.1 Residential waste will be source separated by householders into separate fractions to facilitate the collection of dry mixed recyclables, residual waste, organic waste, glass waste and WEEE in line with the Limerick City & County Council (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-Laws, 2019 (Limerick City & County Council, 2019).

6.2.2 The various residential waste fractions will be delivered by householders to a designated communal waste storage room located at ground level.

6.2.3 All rooms containing wheeled bins should have a head height of 2m or greater and be designed in accordance with BS5906:2005 Waste Management in Buildings - Code of Practice (BSI, 2005) particularly in relation to fire risk. It is recommended that a fire engineer review the waste storage room design.

6.2.4 It is proposed that dry mixed recyclable and residual waste will be stored in 1,100 litre bins, while organic waste will also be stored in 1100 litre bins and glass waste will be stored in 1100 litre bins. Waste collectors operating in Limerick City & County Council have confirmed that these are the appropriate bin sizes to use for the respective wastes.

6.2.5 The number of bins required for apartments (assuming weekly collections) to cater for the volume of residential waste estimated are presented in Table 4. The numbers have been calculated using the formulas assumptions and calculations previously noted in Table 2.

6.2.6 Of the total waste generated for each apartment block the above bin storage requirements are to be split appropriate between apartment blocks 1-10 pro rata given the different unit numbers proposed for each block.

6.2.7 We summarise each waste storage area in the table below and as can be noted there is adequate spare capacity across the scheme to cater for the anticipated bins totalling for 26no. 1100 litre bins as calculated above, with a total of 48no. 1100 litre bins, 15no. 360 litre bins and 13no. 240 litre bins capable of being stored within the bin storage rooms for apartments. This is in line with good practice to provide spare capacity.

Dry Mixed Recyclable 1,100 litre bins	Residual Waste 1,100 litre bins	Organic Waste 360 litre bins	Glass Waste 240 litre bins
6	6	4	2

Table 4: Apartment blocks 1 & 4 (32 units each x 2= 64 units)

Dry Mixed Recyclable 1,100 litre bins	Residual Waste 1,100 litre bins	Organic Waste 360 litre bins	Glass Waste 240 litre bins
6	6	6	6

Table 5: Apartment blocks 2, 3 & 5 (32 units each x 2= 64 units)

Dry Mixed Recyclable 1,100 litre bins	Residual Waste 1,100 litre bins	Organic Waste 360 litre bins	Glass Waste 240 litre bins
12	8	4	4

Table 6: Apartment blocks 6 – 9 (128 units)

Dry Mixed Recyclable 1,100 litre bins	Residual Waste 1,100 litre bins	Organic Waste 360 litre bins	Glass Waste 240 litre bins
2	2	1	1

Table 7: Apartment block 10 (24 units)

6.3 Commercial Waste

6.3.1 A creche facility is also proposed on-site. In addition to the residential waste provision will also be made for the creche facility via storage per table 8 below in the external storage area shown on the site plan.

Dry Mixed Recyclable 360 litre bin	Residual Waste 360 litre bins	Organic Waste 360 litre bins	Glass Waste 240 litre bins
1	1	1	1

Table 8: Commercial Waste Storage, assuming weekly collection

6.4 Waste Collection

6.4.1 Residential and commercial waste will be collected on a weekly basis from the proposed development. Dry mixed recyclables, residual waste, organic waste and glass waste will be collected on different days.

6.4.2 A marshalling area will be located at ground level. Bins will be transported from the waste storage room to the designated marshalling area for collection.

6.4.3 A facilities manager will be required to arrange movement of waste and recyclables around the site on collection days.

6.4.4 The marshalling area will be located adjacent to a waste collection vehicle set down area so that the waste operatives will not be required to move 4 wheeled waste containers a distance of more than 10 metres. This is in line with guidance specified in BS 5906:2005 Waste management in buildings — Code of practice (BSI, 2005).

6.4.5 Following appointment of a residential and commercial waste collector and prior to commencement, collection arrangements, including the proposed days of collection, will be notified to and agreed with the waste department of Limerick City & County Council.

7 CONCLUSIONS

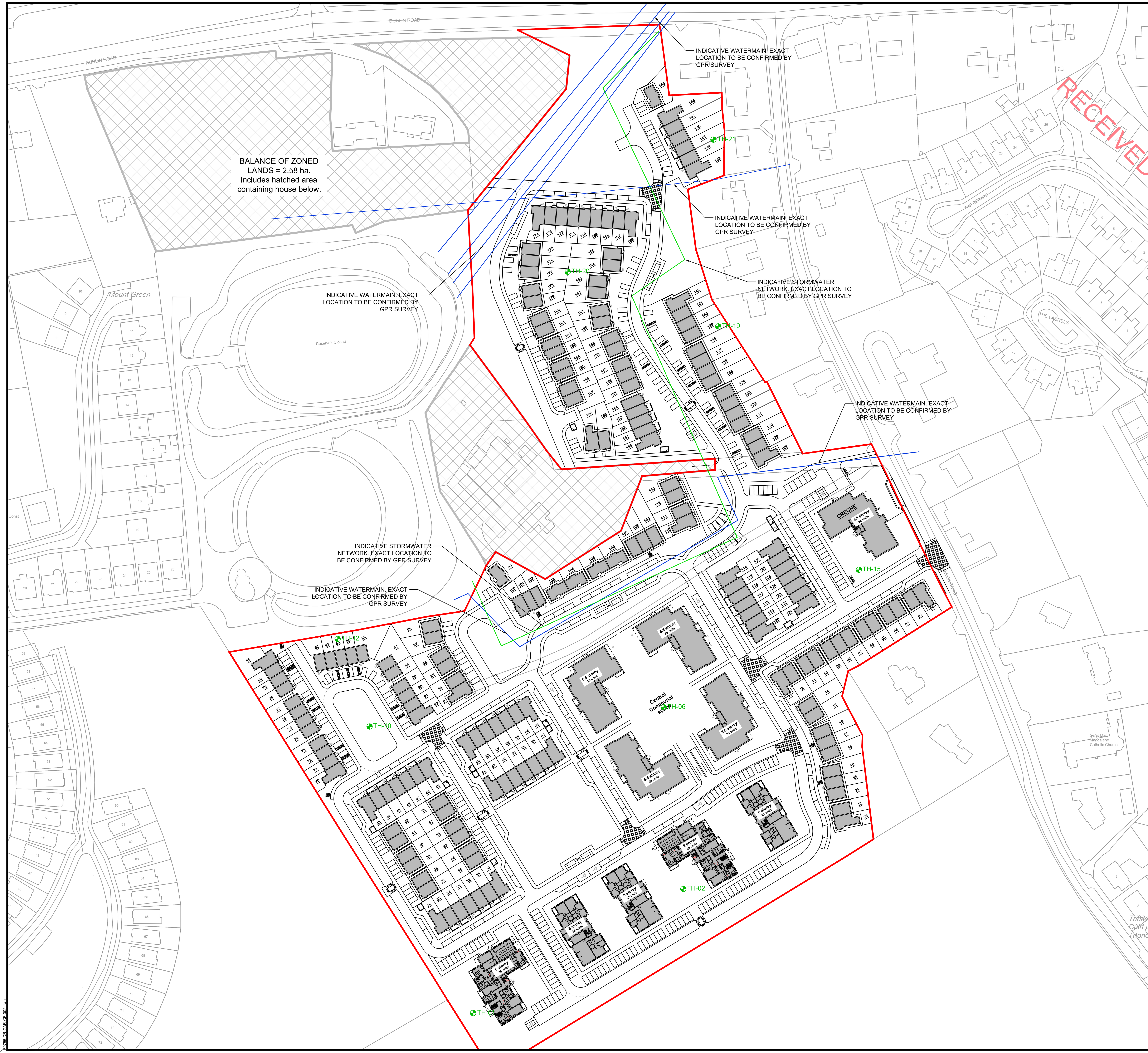
7.1 In summary, this OWMP presents a waste strategy that addresses all legal requirements, waste policies and best practice guidelines and demonstrates that the required storage areas have been incorporated into the design of the proposed development.

7.2 Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus contributing to the targets set out in the National Waste Management Plan.

7.3 Adherence to this plan will also ensure that waste management at the development is carried out in accordance with the requirements of the LCCC Waste Bye-Laws.

7.4 The waste strategy presented in this document will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated areas for waste storage will provide sufficient room for the required receptacles in accordance with the details of this strategy.

APPENDIX 9.1 SITE INVESTIGATION REPORTS



N
W
E
S

Trial Hole	Easting	Northing
TH-01	561894.700	656975.899
TH-02	562007.597	657042.556
TH-06	561997.120	657140.075
TH-10	561839.119	657129.807
TH-12	561821.975	657176.881
TH-15	562101.866	657213.997
TH-19	5620[illegible].359	657344.649
TH-20	561945.51[illegible]	657374.048
TH-21	56202[illegible].763	657445.010

QUALITY
I.S. EN ISO 9001:2015
NSAI Certified

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SPECIFICATIONS AND ALL RELEVANT ARCHITECTS AND SERVICES ENGINEERS DRAWINGS.
2. DO NOT SCALE, USE FIGURED DIMENSIONS ONLY.
3. DRAWINGS SHALL BE CHECKED BY CONTRACTOR AND ANY DISCREPANCIES (DIMENSIONS) SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE WORK IS COMMENCED.
4. NOTE LOCATION AND EXTENT OF EXISTING SERVICES TO BE CONFIRMED ON SITE BY GPR SURVEY

LEGEND:

TH-01 - TRIAL PITS (9 No.)

INDICATIVE WATERMAIN SERVICE LOCATION

INDICATIVE STORMWATER SERVICE LOCATION

REV	DATE	DESCRIPTION	DRN	DES	CHK	APP
-						

CLIENT:
COLUMBIA ESTATES MANAGEMENT IRELAND LTD

ARCHITECT:
ARNOLD LEAHY ARCHITECTS LIMITED
1 CRESCENT VILLAS, O'CONNELL AVENUE, LIMERICK

GARLAND
DUBLIN T: +353 1 4964322
LIMERICK T: +353 61 319708
WATERFORD T: +353 51 876511
INTERNATIONAL T: +353 61 319708
E: info@garlandconsultancy.com W: www.garlandconsultancy.com

PROJECT:
RESIDENTIAL AND CRECHE DEVELOPMENT AT MONALEEN ROAD, CASTLETROY, LIMERICK

TITLE:
INITIAL TRIAL PITS LAYOUT

STATUS:
FOR INFORMATION

DRAWN: JM	DES. BY: PC
CHK. BY: BL	APP. BY: BL
DATE: 13/05/2025	JOB No. F0755
A1 SCALE: 1:1000	
DRG. No. 002	REV. 0

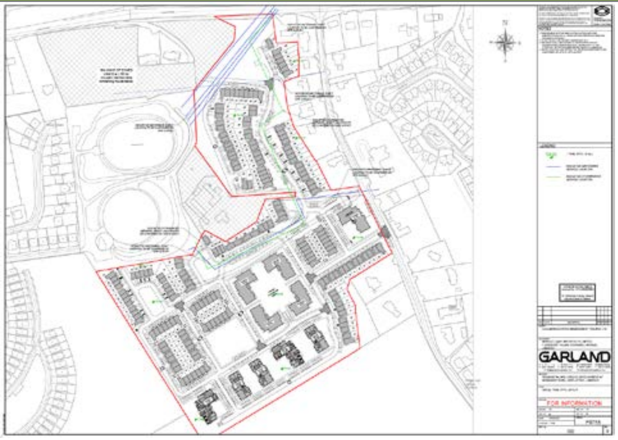
Telephone Record		**Job Number**	F0755
Record of Meeting		**Sub File**	F0755-RP-GAR-CE-001
Site Visit	X	**Date/Time**	19/05/2025
Other		**Written By**	Paul Clune

Project	Site at Sutton’s Land, Monaleen Road, Limerick

Subject	Trial Holes

Those Involved		
Paul Clune	Garland	
Backtazh Fazlrabi	Formation Homes	
Alan	Conradh	

Circulation	**Info**	**Action**

No.	**Photo**	**Description**	**Action**
1.		Trial Hole Locations, refer to drawing F0755-DR-GAR-CE-002 for more information.	
2.		TH-15 2.8m deep 350mm of topsoil on 1150mm layer of sand with silt on 650mm layer of silty sand and weathered rock on 650mm layer of firmer rock. No groundwater strike although the lower section of silty sand and weathered rock was damp indicating infiltration of water through the layers. Weathered rock broke apart when hit against each other and appeared shaley. The firmer rock was more difficult to excavate. The top 400-500mm layer of sand appeared to be softer than the lower section of silty sand.	

RECEIVED: 04/03/2026

No.	Photo	Description	Action
3.		TH-02 1.6m deep 300mm of topsoil on 700mm layer of silty sand and weathered rock on 600mm layer of firmer rock. No groundwater observed and the excavated material was dry. The layer of firmer rock was more difficult to excavate.	
4.		TH-01 0.6m deep 200mm of topsoil on 400mm layer of silty sand and weathered rock on firmer rock. Trial hole similar to TH-02. No groundwater observed and the excavated material was dry. The layer of firmer rock was more difficult to excavate.	

No.	Photo	Description	Action
5.		TH-10 2.8m deep 200mm of topsoil on 2.05m layer of construction fill on 250mm layer of silty sand original ground on 300mm layer of silty sand and weathered rock Fill made up of construction material CL804, bricks, plastic, concrete, asphalt. Recommend samples are taken in this area to test for contamination.	
6.		TH-12 2.65m deep 200mm of topsoil on 2m layer of construction fill on 450mm layer of silty sand original ground on weathered rock Fill made up of construction material CL804, bricks, plastic, pipes, concrete. Recommend samples are taken in this area to test for contamination.	

No.	Photo	Description	Action
7.		TH-06 2.2m deep 350mm of topsoil on 400mm layer of silty sand 1.45m layer of silty sand and weathered rock on firm rock. No groundwater strike although the lower section of silty sand and weathered rock was damp indicating infiltration of water through the layers. Weathered rock broke apart when hit against each other and appeared shaley. The firmer rock was more difficult to excavate.	
8.		Note access for an excavator was not available to the northern section of the lands to undertake trial holes TH-19, TH-20 & TH-21. Access to be arranged to this section of the development for these trial holes to be undertaken.	

Signed: Paul Clune **Date:** 20/05/2025

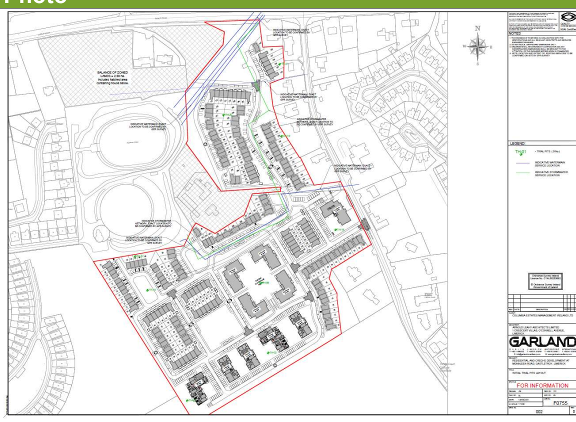
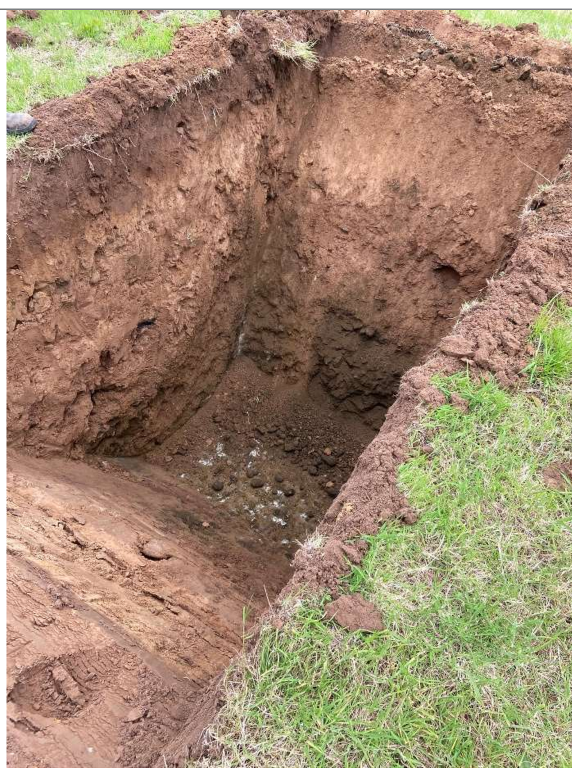
Telephone Record		**Job Number**	F0755
Record of Meeting		**Sub File**	F0755-RP-GAR-CE-002
Site Visit	X	**Date/Time**	04/07/2025
Other		**Written By**	Paul Clune

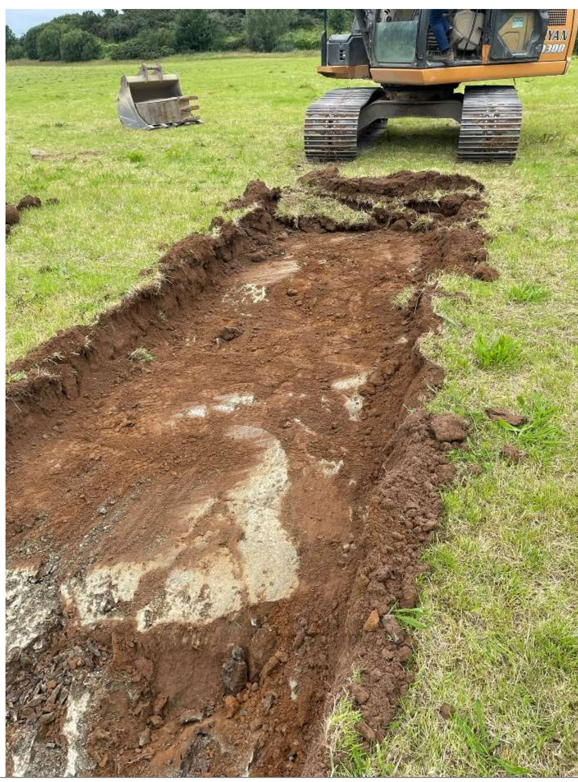
Project	Site at Sutton's Land, Monaleen Road, Limerick

Subject	Trial Holes – Northern Field

Those Involved		
Paul Clune	Garland	
Backtazh Fazlrabi	Formation Homes	
Jamie Lydon and Tadgh	Conradh	

Circulation	**Info**	**Action**

No.	**Photo**	**Description**	**Action**
1.		Trial Hole Locations, refer to drawing F0755-DR-GAR-CE-002 for more information.	
2.		TH-19 2.6m deep 300mm of topsoil on 300mm layer of silty sand on 1500mm layer of silty gravelly sand with boulders on 400mm of weathered rock on layer of firmer rock. No groundwater strike although the layer of weathered rock was damp indicating infiltration of water through the layers. Weathered rock broke apart when hit against each other and appeared shaley. The firmer rock was more difficult to excavate.	

No.	Photo	Description	Action
3.		TH-20 2.4m deep 350mm of topsoil on 300mm layer of silty sand on 1450mm layer of silty gravelly sand with boulders on 300mm of weathered rock on layer of firmer rock. . No groundwater strike although the layer of weathered rock was damp indicating infiltration of water through the layers. Weathered rock broke apart when hit against each other and appeared shaley. The firmer rock was more difficult to excavate.	
4.		TH-21 0.3m deep 250mm of topsoil on firm rock An additional trial hole was excavated approximately 3 metres from Trial Hole 21, where rock was also encountered directly beneath the topsoil. No groundwater observed and the excavated material was dry.	

Signed: Paul Clune **Date:** 08/07/2025

Trial Pit No.	Depth	Description	Sample	Pit Length	Pit Width	Pit Final Depth
TP01	0-0.2m	Dark Brown Sandy Topsoil				
	0.2-0.5m	Light brown clayey slightly gravelly SILT, gravel is fine subangular to subrounded with rare rootlets	S1			
	0.5-1.8m	Light brown/ brown gravelly silty clayey SAND, gravel is occasional fine to large cobble sized subrounded to subangular	S2			1.8m
	1.8m	REFUSAL, bedrock, very dark brown shale				
		S1 and S2 sampled for WAC				
TP02	0-0.2m	Dark Brown Sandy Topsoil				
	0.2-0.9m	Light brown/ brown gravelly silty clayey SAND, gravel is occasional fine to large cobble sized subrounded to subangular	S1			
	0.9m	REFUSAL, bedrock, very dark brown shale	S2			0.9m
		S1 sampled for WAC				
TP03	0-0.15m	Dark Brown Sandy Topsoil				
	0.15-1.8m	MADE GROUND, tarmac, gravel, fine to large cobble sized	S1			
	1.8-2.0m	MADE GROUND, tarmac, shale, concrete fine to medium gravel	S2			2.0m
	2.0m	REFUSAL, Concrete				
		Water Strike 1.9m	S3			
		S1 and S2 sampled for WAC				
TP04/A	0-0.15m	Dark Brown Sandy Topsoil				
	0.15-0.4m	Brown gravelly silty clayey SAND, gravel is occasional fine to large boulder sized subrounded to subangular shale	S1			
	0.4m-0.8m	804 fill MADE GROUND	S2			1.4m
	0.8m	PIPES (refer to photos)				
	0.15-1.4m	Pit extended REFUSAL bedrock, very dark brown shale				

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: cs@etuki.eurofins.com

Final Report

Report No.: 25-38693-1

Initial Date of Issue: 14-Dec-2025

Re-Issue Details:

Client *Formation Homes Ireland Limited*

Client Address: *6 Hartstonge Street*
Limerick
Limerick City
Ireland

Contact(s): *Fionan Cahill*

Project *Monaleen Road (Suttons Land)*

Order No.: Not Supplied

No. of Samples: *7*

Turnaround (Wkdays): 15

Date Approved: 14-Dec-2025

Approved By:

Details: David Smith, Technical Director

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

Results - Leachate

Project: BHP-MTI

Client: BHP Laboratories					**Chemtest Job No.:**	25-38693	25-38693	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:					**Chemtest Sample ID.:**	2060356	2060357	2060358	2060359	2060360	2060361	2060362
Order No.:					*Client Sample Ref.:*	*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*	*TP04 S1*	*TP04 S2*
					Client Sample ID.:	*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*	*25/11/5976*	*25/11/5977*
					Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
					Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
					Date Sampled:	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**							
Ammonium	U	1220	10:1	mg/l	0.050	0.97	1.2	0.77	1.5	1.1	1.1	0.59
Ammonium	N	1220	10:1	mg/kg	0.10	10	12	9.0	18	15	14	17

Results - Soil

Project: BHP-MTI

Client: BHP Laboratories					**Chemtest Job No.:**	25-38693	25-38693	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:					**Chemtest Sample ID.:**	2060356	2060357	2060358	2060359	2060360	2060361	2060362
Order No.:					*Client Sample Ref.:*	*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*	*TP04 S1*	*TP04 S2*
					Client Sample ID.:	*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*	*25/11/5976*	*25/11/5977*
					Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
					Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
					Date Sampled:	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
					Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
ACM Type		N	2192		N/A	-	-	-	-	-	-	-
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture		N	2030	%	0.020	16	15	17	7.2	7.5	10	2.6
Soil Colour		N	2030		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material		N	2030		N/A	Stones	Stones and Roots	Stones and Roots	Stones	Stones	Stones and Roots	Stones
Soil Texture		N	2030		N/A	Clay	Clay	Clay	Sand	Sand	Clay	Sand
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
Sulphur (Elemental)		M	2180	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.9	< 1.0	< 1.0
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	4.0	3.1	3.2	11	6.8	4.9	30
Sulphate (Total)		U	2430	%	0.010	0.030	0.030	0.050	0.49	0.80	0.050	0.050
Arsenic		M	2455	mg/kg	0.5	16	10	6.0	4.6	8.5	5.9	3.2
Barium		M	2455	mg/kg	0.5	81	97	36	29	43	65	5.6
Cadmium		M	2455	mg/kg	0.10	< 0.10	0.20	< 0.10	< 0.10	0.13	0.18	0.13
Chromium		M	2455	mg/kg	0.5	39	60	23	16	23	40	2.8
Molybdenum		M	2455	mg/kg	0.5	1.2	1.6	1.3	1.1	1.8	1.1	< 0.5
Antimony		N	2455	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper		M	2455	mg/kg	0.50	25	21	6.9	9.4	17	12	2.4
Mercury		M	2455	mg/kg	0.05	0.09	0.05	< 0.05	< 0.05	0.07	< 0.05	< 0.05
Nickel		M	2455	mg/kg	0.50	44	59	15	26	39	37	10
Lead		M	2455	mg/kg	0.50	50	24	22	11	24	19	88
Selenium		M	2455	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Zinc		M	2455	mg/kg	0.50	72	72	28	27	50	40	12
Chromium (Trivalent)		N	2490	mg/kg	1.0	39	60	23	16	23	40	2.8
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	< 2.0	< 2.0	2.6	2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16 MC	EH_2D_AL_#1	M	2690	mg/kg	1.00	< 1.0	< 1.0	4.4	5.3	4.0	3.7	1.9
Aliphatic EPH >C16-C21 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	< 2.0	< 2.0	4.4	6.7	4.0	5.6	< 2.0

Results - Soil

Project: BHP-MTI

Client: BHP Laboratories		**Chemtest Job No.:**				25-38693	25-38693	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:		**Chemtest Sample ID.:**				2060356	2060357	2060358	2060359	2060360	2060361	2060362
Order No.:		*Client Sample Ref.:*				*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*	*TP04 S1*	*TP04 S2*
		Client Sample ID.:				*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*	*25/11/5976*	*25/11/5977*
		Client Reference:				*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
		Sample Type:				*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
		Date Sampled:				*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
		Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Aliphatic EPH >C21-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	3.00	7.3	6.8	29	14	6.7	16	< 3.0
Aliphatic EPH >C35-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00	< 10	< 10	13	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	5.00	11	8.4	40	28	17	27	7.4
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C12-C16 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C16-C21 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	3.3	2.9	2.6	3.7	2.7	2.8	2.3
Aromatic EPH >C21-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	< 2.0	< 2.0	7.0	23	2.6	16	< 2.0
Aromatic EPH >C35-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	1.00	< 1.0	< 1.0	1.9	36	1.5	2.1	1.1
Total Aromatic EPH >C10-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	5.00	< 5.0	< 5.0	9.6	27	5.3	19	< 5.0
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35 MC	EH_2D_Total_#1	U	2690	mg/kg	10.00	15	11	50	55	22	45	10
Mineral Oil EPH	EH_2D_AL	N	2670	mg/kg	10	11	< 10	53	28	17	27	< 10
Benzene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.17	< 0.10	< 0.10
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.27	< 0.10	< 0.10
Anthracene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.15	< 0.10	< 0.10
Fluoranthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.45	< 0.10	< 0.10
Pyrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.45	< 0.10	< 0.10
Benzo[a]anthracene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.33	< 0.10	< 0.10
Chrysene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.32	< 0.10	< 0.10
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.41	< 0.10	< 0.10
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.27	< 0.10	< 0.10
Benzo[a]pyrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.36	< 0.10	< 0.10

Results - Soil

Project: BHP-MTI

Client: BHP Laboratories					**Chemtest Job No.:**	25-38693	25-38693	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:					**Chemtest Sample ID.:**	2060356	2060357	2060358	2060359	2060360	2060361	2060362
Order No.:					*Client Sample Ref.:*	*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*	*TP04 S1*	*TP04 S2*
					Client Sample ID.:	*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*	*25/11/5976*	*25/11/5977*
					Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
					Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
					Date Sampled:	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
					Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Coronene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
PCB 28		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 101		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Tot PCBs Low (7 Congeners)		N	2815	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Phenols		M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Single Stage WAC

Project: BHP-MTI

Chemtest Job No:	25-38693					**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	2060356							
Sample Ref:	*TP01 S1*					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	*25/11/5971*							
Client Reference:	*Monaleen Road (Suttons Land)*							
Top Depth(m):	*0.2*							
Bottom Depth(m):	*0.5*							
Sampling Date:	*24-Nov-2025*							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	0.24	3	5	6
Loss On Ignition	2610		M	%	2.9	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	2690	EH_2D_AL_#1	N	mg/kg	16	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	< 1.0	100	--	--
pH at 20C	2010		M		7.8	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.014	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0005	0.0054	0.5	2	25
Barium	1455		U	0.006	0.063	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0065	0.065	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	< 0.0002	< 0.0020	0.5	10	30
Nickel	1455		U	0.0006	0.0058	0.4	10	40
Lead	1455		U	0.0011	0.011	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.004	0.039	4	50	200
Chloride	1220		U	9.9	99	800	15000	25000
Fluoride	1220		U	0.083	< 1.0	10	150	500
Sulphate	1220		U	7.5	75	1000	20000	50000
Total Dissolved Solids	1020		N	130	1300	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	5.5	55	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	5.6
WAC Sample Weight	2319

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: BHP-MTI

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	25-38693							
Chemtest Sample ID:	2060357							
Sample Ref:	*TP01 S2*							
Sample ID:	*25/11/5972*							
Client Reference:	*Monaleen Road (Suttons Land)*							
Top Depth(m):	*0.5*							
Bottom Depth(m):	*1.8*							
Sampling Date:	*24-Nov-2025*					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	< 0.20	3	5	6
Loss On Ignition	2610		M	%	1.9	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	2690	EH_2D_AL_#1	N	mg/kg	15	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	< 1.0	100	--	--
pH at 20C	2010		M		7.7	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.021	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	< 0.0002	< 0.0020	0.5	2	25
Barium	1455		U	0.027	0.27	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0055	0.055	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	< 0.0002	< 0.0020	0.5	10	30
Nickel	1455		U	0.0007	0.0068	0.4	10	40
Lead	1455		U	0.0006	0.0060	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.004	0.041	4	50	200
Chloride	1220		U	12	120	800	15000	25000
Fluoride	1220		U	0.11	1.1	10	150	500
Sulphate	1220		U	5.7	57	1000	20000	50000
Total Dissolved Solids	1020		N	32	320	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.1	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.4
WAC Sample Weight	2677

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: BHP-MTI

Chemtest Job No:	25-38693
Chemtest Sample ID:	2060358
Sample Ref:	*TP02 S1*
Sample ID:	*25/11/5973*
Client Reference:	*Monaleen Road (Suttons Land)*
Top Depth(m):	*0.2*
Bottom Depth(m):	*0.9*
Sampling Date:	*24-Nov-2025*

Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Landfill Waste Acceptance Criteria Limits**		
						Inert Waste Landfill	**Stable, Non-reactive hazardous waste in non hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	0.29	3	5	6
Loss On Ignition	2610		M	%	2.1	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	2690	EH_2D_AL_#1	N	mg/kg	53	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	< 1.0	100	--	--
pH at 20C	2010		M		7.4	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.024	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0006	0.0060	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0017	0.017	0.5	10	70
Copper	1455		U	0.0041	0.041	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	< 0.0002	< 0.0020	0.5	10	30
Nickel	1455		U	0.0006	0.0060	0.4	10	40
Lead	1455		U	0.0025	0.025	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.007	0.071	4	50	200
Chloride	1220		U	1.1	11	800	15000	25000
Fluoride	1220		U	0.069	< 1.0	10	150	500
Sulphate	1220		U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020		N	55	550	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.1	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.2
WAC Sample Weight	2637

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: BHP-MTI

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	25-38693							
Chemtest Sample ID:	2060359							
Sample Ref:	*TP03 S1*							
Sample ID:	*25/11/5974*							
Client Reference:	*Monaleen Road (Suttons Land)*					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non hazardous Landfill	Hazardous Waste Landfill
Top Depth(m):	*0.15*							
Bottom Depth(m):	*1.8*							
Sampling Date:	*24-Nov-2025*							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	1.5	3	5	6
Loss On Ignition	2610		M	%	3.1	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	2690	EH_2D_AL_#1	N	mg/kg	30	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	< 1.0	100	--	--
pH at 20C	2010		M		8.3	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.019	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0003	0.0032	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0044	0.044	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0022	0.022	0.5	10	30
Nickel	1455		U	0.0009	0.0090	0.4	10	40
Lead	1455		U	0.0009	0.0091	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.003	0.030	4	50	200
Chloride	1220		U	2.1	21	800	15000	25000
Fluoride	1220		U	0.17	1.7	10	150	500
Sulphate	1220		U	1.8	18	1000	20000	50000
Total Dissolved Solids	1020		N	56	560	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.1
WAC Sample Weight	2644

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: BHP-MTI

Chemtest Job No:	25-38693					**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	2060360							
Sample Ref:	*TP03 S2*					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	*25/11/5975*							
Client Reference:	*Monaleen Road (Suttons Land)*							
Top Depth(m):	*1.8*							
Bottom Depth(m):	*2.0*							
Sampling Date:	*24-Nov-2025*							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	1.8	3	5	6
Loss On Ignition	2610		M	%	1.7	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	2690	EH_2D_AL_#1	N	mg/kg	17	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	3.2	100	--	--
pH at 20C	2010		M		8.3	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.020	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	< 0.0002	< 0.0020	0.5	2	25
Barium	1455		U	0.007	0.067	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0036	0.036	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0024	0.024	0.5	10	30
Nickel	1455		U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455		U	0.0006	0.0057	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	< 0.003	< 0.025	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.14	1.4	10	150	500
Sulphate	1220		U	7.9	79	1000	20000	50000
Total Dissolved Solids	1020		N	57	570	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	3.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.7
WAC Sample Weight	3200

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: BHP-MTI

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	25-38693							
Chemtest Sample ID:	2060361							
Sample Ref:	*TP04 S1*							
Sample ID:	*25/11/5976*							
Client Reference:	*Monaleen Road (Suttons Land)*							
Top Depth(m):	*0.15*							
Bottom Depth(m):	*0.4*							
Sampling Date:	*24-Nov-2025*					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non hazardous Landfill	Hazardous Waste Landfill
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	0.78	3	5	6
Loss On Ignition	2610		M	%	2.3	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	2690	EH_2D_AL_#1	N	mg/kg	30	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	< 1.0	100	--	--
pH at 20C	2010		M		8.3	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.017	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0011	0.011	0.5	2	25
Barium	1455		U	0.007	0.070	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0015	0.015	0.5	10	70
Copper	1455		U	0.0048	0.048	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0003	0.0034	0.5	10	30
Nickel	1455		U	0.0016	0.016	0.4	10	40
Lead	1455		U	0.0024	0.024	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.005	0.048	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.17	1.7	10	150	500
Sulphate	1220		U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020		N	46	460	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	3.0	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.1
WAC Sample Weight	2642

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: BHP-MTI

Chemtest Job No:	25-38693					Landfill Waste Acceptance Criteria Limits		
Chemtest Sample ID:	2060362							
Sample Ref:	*TP04 S2*					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non hazardous Landfill	Hazardous Waste Landfill
Sample ID:	*25/11/5977*							
Client Reference:	*Monaleen Road (Suttons Land)*							
Top Depth(m):	*0.4*							
Bottom Depth(m):	*0.8*							
Sampling Date:	*24-Nov-2025*							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	6.6	3	5	6
Loss On Ignition	2610		M	%	0.44	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
WAC Total C10-C40	2690	EH_2D_AL_#1	N	mg/kg	10	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	< 1.0	100	--	--
pH at 20C	2010		M		8.9	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.015	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	< 0.0002	< 0.0020	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0030	0.030	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0003	0.0032	0.5	10	30
Nickel	1455		U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455		U	0.0010	0.010	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	< 0.003	< 0.025	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.068	< 1.0	10	150	500
Sulphate	1220		U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020		N	35	350	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.7
WAC Sample Weight	3018

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060356	2060357	2060358	2060359	2060360
Order No.:				*Client Sample Ref.:*	*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*
				Client Sample ID.:	*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:					
Determinand	**Accred.**	**WAC**	**Units**	**SOP**					
ACM Type	N	N		2192	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Asbestos Identification	U	N		2192	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Moisture	N	N	%	2030	03/12/25	03/12/25	03/12/25	03/12/25	03/12/25
Soil Colour	N	N		2030	02/12/25	02/12/25	02/12/25	02/12/25	02/12/25
Other Material	N	N		2030	02/12/25	02/12/25	02/12/25	02/12/25	02/12/25
Soil Texture	N	N		2030	02/12/25	02/12/25	02/12/25	02/12/25	02/12/25
pH at 20C	M	Y		2010	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Acid Neutralisation Capacity	N	N	mol/kg	2015	10/12/25	10/12/25	10/12/25	10/12/25	10/12/25
Boron (Hot Water Soluble)	M	N	mg/kg	2120	09/12/25	09/12/25	09/12/25	09/12/25	09/12/25
Sulphur (Elemental)	M	N	mg/kg	2180	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Cyanide (Total)	M	N	mg/kg	2300	08/12/25	08/12/25	08/12/25	08/12/25	08/12/25
Sulphide (Easily Liberatable)	N	N	mg/kg	2325	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Sulphate (Total)	U	N	%	2430	09/12/25	09/12/25	09/12/25	09/12/25	09/12/25
Arsenic	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Barium	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Cadmium	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Chromium	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Molybdenum	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Antimony	N	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Copper	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Mercury	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Nickel	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Lead	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Selenium	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Zinc	M	N	mg/kg	2455	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Chromium (Trivalent)	N	N	mg/kg	2490	09/12/25	09/12/25	09/12/25	09/12/25	09/12/25
Chromium (Hexavalent)	N	N	mg/kg	2490	09/12/25	09/12/25	09/12/25	09/12/25	09/12/25
Aliphatic VPH >C5-C6	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Aliphatic VPH >C6-C7	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Aliphatic VPH >C7-C8	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Aliphatic VPH >C8-C10	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Total Aliphatic VPH >C5-C10	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Aliphatic EPH >C10-C12 MC	M	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060356	2060357	2060358	2060359	2060360
Order No.:				*Client Sample Ref.:*	*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*
				Client Sample ID.:	*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:					
Determinand	**Accred.**	**WAC**	**Units**	**SOP**					
Aliphatic EPH >C12-C16 MC	M	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Aliphatic EPH >C16-C21 MC	M	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Aliphatic EPH >C21-C35 MC	M	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Aliphatic EPH >C35-C40 MC	N	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Total Aliphatic EPH >C10-C35 MC	M	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Aromatic VPH >C5-C7	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Aromatic VPH >C7-C8	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Aromatic VPH >C8-C10	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Total Aromatic VPH >C5-C10	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Aromatic EPH >C10-C12 MC	U	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Aromatic EPH >C12-C16 MC	U	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Aromatic EPH >C16-C21 MC	U	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Aromatic EPH >C21-C35 MC	U	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Aromatic EPH >C35-C40 MC	N	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Total Aromatic EPH >C10-C35 MC	U	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
WAC Total C10-C40	N	Y	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Total VPH >C5-C10	U	N	mg/kg	2780	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Total EPH >C10-C35 MC	U	N	mg/kg	2690	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
WAC Received weight	U	Y	g	650	02/12/25	02/12/25	02/12/25	02/12/25	02/12/25
Loss On Ignition	M	Y	%	2610	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Total Organic Carbon	M	Y	%	2625	10/12/25	10/12/25	10/12/25	10/12/25	10/12/25
Mineral Oil EPH	N	N	mg/kg	2670	14/12/25	14/12/25	14/12/25	14/12/25	14/12/25
Benzene	M	N	µg/kg	2760	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Total BTEX	M	Y	mg/kg	2760	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Toluene	M	N	µg/kg	2760	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Ethylbenzene	M	N	µg/kg	2760	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
m & p-Xylene	M	N	µg/kg	2760	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
o-Xylene	M	N	µg/kg	2760	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Methyl Tert-Butyl Ether	M	N	µg/kg	2760	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Naphthalene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Acenaphthylene	N	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Acenaphthene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Fluorene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Phenanthrene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Anthracene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060356	2060357	2060358	2060359	2060360
Order No.:				*Client Sample Ref.:*	*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*
				Client Sample ID.:	*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:					
Determinand	**Accred.**	**WAC**	**Units**	**SOP**					
Fluoranthene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Pyrene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Benzo[a]anthracene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Chrysene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Benzo[b]fluoranthene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Benzo[k]fluoranthene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Benzo[a]pyrene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Indeno(1,2,3-c,d)Pyrene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Dibenz(a,h)Anthracene	N	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Benzo[g,h,i]perylene	M	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Coronene	N	N	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
Total Of 17 PAHs Lower	N	Y	mg/kg	2800	05/12/25	05/12/25	05/12/25	08/12/25	05/12/25
PCB 28	U	N	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
PCB 52	U	N	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
PCB 101	U	N	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
PCB 118	U	N	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
PCB 153	U	N	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
PCB 138	U	N	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
PCB 180	U	N	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Total PCBs (7 Congeners)	M	Y	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Tot PCBs Low (7 Congeners)	N	N	mg/kg	2815	12/12/25	12/12/25	12/12/25	12/12/25	12/12/25
Total Phenols	M	N	mg/kg	2920	08/12/25	08/12/25	08/12/25	08/12/25	08/12/25
Ammonium	U	N	mg/l	1220	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Ammonium	N	N	mg/kg	1220	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Dry Mass Of Test Portion	N	Y	kg	640	03/12/25	03/12/25	03/12/25	03/12/25	03/12/25
Moisture	N	Y	% dry weight	640	03/12/25	03/12/25	03/12/25	03/12/25	03/12/25
Volume Of C10 Leachant	N	Y	l	640	03/12/25	03/12/25	03/12/25	03/12/25	03/12/25
Total Dissolved Solids	N	Y	mg/l	1020	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Total Dissolved Solids	N	Y	mg/kg	1020	04/12/25	04/12/25	04/12/25	04/12/25	04/12/25
Chloride	U	Y	mg/l	1220	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Fluoride	U	Y	mg/l	1220	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Sulphate	U	Y	mg/l	1220	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Chloride	U	Y	mg/kg	1220	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Fluoride	U	Y	mg/kg	1220	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060356	2060357	2060358	2060359	2060360
Order No.:				*Client Sample Ref.:*	*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*
				Client Sample ID.:	*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:					
Determinand	**Accred.**	**WAC**	**Units**	**SOP**					
Sulphate	U	Y	mg/kg	1220	11/12/25	11/12/25	11/12/25	11/12/25	11/12/25
Arsenic	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Boron	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Arsenic	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Boron	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Barium	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Barium	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Cadmium	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Cadmium	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Chromium	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Chromium	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Copper	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Copper	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Mercury	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Mercury	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Molybdenum	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Molybdenum	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Nickel	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Nickel	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Lead	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Lead	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Antimony	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Antimony	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Selenium	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Selenium	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Zinc	U	Y	mg/l	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Zinc	U	Y	mg/kg	1455	05/12/25	05/12/25	05/12/25	05/12/25	05/12/25
Dissolved Organic Carbon	U	Y	mg/l	1610	08/12/25	08/12/25	08/12/25	08/12/25	08/12/25
Dissolved Organic Carbon	U	Y	mg/kg	1610	08/12/25	08/12/25	08/12/25	08/12/25	08/12/25
Phenol Index	U	Y	mg/l	1920	08/12/25	08/12/25	08/12/25	08/12/25	08/12/25
Phenol Index	U	Y	mg/kg	1920	08/12/25	08/12/25	08/12/25	08/12/25	08/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				Chemtest Job No.:	25-38693	25-38693	25-38693	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060356	2060357	2060358	2060359	2060360
Order No.:				*Client Sample Ref.:*	*TP01 S1*	*TP01 S2*	*TP02 S1*	*TP03 S1*	*TP03 S2*
				Client Sample ID.:	*25/11/5971*	*25/11/5972*	*25/11/5973*	*25/11/5974*	*25/11/5975*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:					
Determinand	**Accred.**	**WAC**	**Units**	**SOP**					

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060361	2060362
Order No.:				*Client Sample Ref.:*	*TP04 S1*	*TP04 S2*
				Client Sample ID.:	*25/11/5976*	*25/11/5977*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:		
Determinand	**Accred.**	**WAC**	**Units**	**SOP**		
ACM Type	N	N		2192	04/12/25	04/12/25
Asbestos Identification	U	N		2192	04/12/25	04/12/25
Moisture	N	N	%	2030	03/12/25	03/12/25
Soil Colour	N	N		2030	02/12/25	02/12/25
Other Material	N	N		2030	02/12/25	02/12/25
Soil Texture	N	N		2030	02/12/25	02/12/25
pH at 20C	M	Y		2010	04/12/25	04/12/25
Acid Neutralisation Capacity	N	N	mol/kg	2015	10/12/25	10/12/25
Boron (Hot Water Soluble)	M	N	mg/kg	2120	09/12/25	09/12/25
Sulphur (Elemental)	M	N	mg/kg	2180	04/12/25	04/12/25
Cyanide (Total)	M	N	mg/kg	2300	08/12/25	08/12/25
Sulphide (Easily Liberatable)	N	N	mg/kg	2325	04/12/25	04/12/25
Sulphate (Total)	U	N	%	2430	09/12/25	09/12/25
Arsenic	M	N	mg/kg	2455	04/12/25	04/12/25
Barium	M	N	mg/kg	2455	04/12/25	04/12/25
Cadmium	M	N	mg/kg	2455	04/12/25	04/12/25
Chromium	M	N	mg/kg	2455	04/12/25	04/12/25
Molybdenum	M	N	mg/kg	2455	04/12/25	04/12/25
Antimony	N	N	mg/kg	2455	04/12/25	04/12/25
Copper	M	N	mg/kg	2455	04/12/25	04/12/25
Mercury	M	N	mg/kg	2455	04/12/25	04/12/25
Nickel	M	N	mg/kg	2455	04/12/25	04/12/25
Lead	M	N	mg/kg	2455	04/12/25	04/12/25
Selenium	M	N	mg/kg	2455	04/12/25	04/12/25
Zinc	M	N	mg/kg	2455	04/12/25	04/12/25
Chromium (Trivalent)	N	N	mg/kg	2490	09/12/25	09/12/25
Chromium (Hexavalent)	N	N	mg/kg	2490	09/12/25	09/12/25
Aliphatic VPH >C5-C6	U	N	mg/kg	2780	11/12/25	11/12/25
Aliphatic VPH >C6-C7	U	N	mg/kg	2780	11/12/25	11/12/25
Aliphatic VPH >C7-C8	U	N	mg/kg	2780	11/12/25	11/12/25
Aliphatic VPH >C8-C10	U	N	mg/kg	2780	11/12/25	11/12/25
Total Aliphatic VPH >C5-C10	U	N	mg/kg	2780	11/12/25	11/12/25
Aliphatic EPH >C10-C12 MC	M	N	mg/kg	2690	12/12/25	12/12/25

Result Dates

Project: BHP-MTI

RECEIVED: 04/03/2026

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060361	2060362
Order No.:				*Client Sample Ref.:*	*TP04 S1*	*TP04 S2*
				Client Sample ID.:	*25/11/5976*	*25/11/5977*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:		
Determinand	**Accred.**	**WAC**	**Units**	**SOP**		
Aliphatic EPH >C12-C16 MC	M	N	mg/kg	2690	12/12/25	12/12/25
Aliphatic EPH >C16-C21 MC	M	N	mg/kg	2690	12/12/25	12/12/25
Aliphatic EPH >C21-C35 MC	M	N	mg/kg	2690	12/12/25	12/12/25
Aliphatic EPH >C35-C40 MC	N	N	mg/kg	2690	12/12/25	12/12/25
Total Aliphatic EPH >C10-C35 MC	M	N	mg/kg	2690	12/12/25	12/12/25
Aromatic VPH >C5-C7	U	N	mg/kg	2780	11/12/25	11/12/25
Aromatic VPH >C7-C8	U	N	mg/kg	2780	11/12/25	11/12/25
Aromatic VPH >C8-C10	U	N	mg/kg	2780	11/12/25	11/12/25
Total Aromatic VPH >C5-C10	U	N	mg/kg	2780	11/12/25	11/12/25
Aromatic EPH >C10-C12 MC	U	N	mg/kg	2690	12/12/25	12/12/25
Aromatic EPH >C12-C16 MC	U	N	mg/kg	2690	12/12/25	12/12/25
Aromatic EPH >C16-C21 MC	U	N	mg/kg	2690	12/12/25	12/12/25
Aromatic EPH >C21-C35 MC	U	N	mg/kg	2690	12/12/25	12/12/25
Aromatic EPH >C35-C40 MC	N	N	mg/kg	2690	12/12/25	12/12/25
Total Aromatic EPH >C10-C35 MC	U	N	mg/kg	2690	12/12/25	12/12/25
WAC Total C10-C40	N	Y	mg/kg	2690	12/12/25	12/12/25
Total VPH >C5-C10	U	N	mg/kg	2780	11/12/25	11/12/25
Total EPH >C10-C35 MC	U	N	mg/kg	2690	12/12/25	12/12/25
WAC Received weight	U	Y	g	650	02/12/25	02/12/25
Loss On Ignition	M	Y	%	2610	04/12/25	04/12/25
Total Organic Carbon	M	Y	%	2625	10/12/25	10/12/25
Mineral Oil EPH	N	N	mg/kg	2670	14/12/25	14/12/25
Benzene	M	N	µg/kg	2760	11/12/25	11/12/25
Total BTEX	M	Y	mg/kg	2760	11/12/25	11/12/25
Toluene	M	N	µg/kg	2760	11/12/25	11/12/25
Ethylbenzene	M	N	µg/kg	2760	11/12/25	11/12/25
m & p-Xylene	M	N	µg/kg	2760	11/12/25	11/12/25
o-Xylene	M	N	µg/kg	2760	11/12/25	11/12/25
Methyl Tert-Butyl Ether	M	N	µg/kg	2760	11/12/25	11/12/25
Naphthalene	M	N	mg/kg	2800	05/12/25	05/12/25
Acenaphthylene	N	N	mg/kg	2800	05/12/25	05/12/25
Acenaphthene	M	N	mg/kg	2800	05/12/25	05/12/25
Fluorene	M	N	mg/kg	2800	05/12/25	05/12/25
Phenanthrene	M	N	mg/kg	2800	05/12/25	05/12/25
Anthracene	M	N	mg/kg	2800	05/12/25	05/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060361	2060362
Order No.:				*Client Sample Ref.:*	*TP04 S1*	*TP04 S2*
				Client Sample ID.:	*25/11/5976*	*25/11/5977*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:		
Determinand	**Accred.**	**WAC**	**Units**	**SOP**		
Fluoranthene	M	N	mg/kg	2800	05/12/25	05/12/25
Pyrene	M	N	mg/kg	2800	05/12/25	05/12/25
Benzo[a]anthracene	M	N	mg/kg	2800	05/12/25	05/12/25
Chrysene	M	N	mg/kg	2800	05/12/25	05/12/25
Benzo[b]fluoranthene	M	N	mg/kg	2800	05/12/25	05/12/25
Benzo[k]fluoranthene	M	N	mg/kg	2800	05/12/25	05/12/25
Benzo[a]pyrene	M	N	mg/kg	2800	05/12/25	05/12/25
Indeno(1,2,3-c,d)Pyrene	M	N	mg/kg	2800	05/12/25	05/12/25
Dibenz(a,h)Anthracene	N	N	mg/kg	2800	05/12/25	05/12/25
Benzo[g,h,i]perylene	M	N	mg/kg	2800	05/12/25	05/12/25
Coronene	N	N	mg/kg	2800	05/12/25	05/12/25
Total Of 17 PAHs Lower	N	Y	mg/kg	2800	05/12/25	05/12/25
PCB 28	U	N	mg/kg	2815	12/12/25	12/12/25
PCB 52	U	N	mg/kg	2815	12/12/25	12/12/25
PCB 101	U	N	mg/kg	2815	12/12/25	12/12/25
PCB 118	U	N	mg/kg	2815	12/12/25	12/12/25
PCB 153	U	N	mg/kg	2815	12/12/25	12/12/25
PCB 138	U	N	mg/kg	2815	12/12/25	12/12/25
PCB 180	U	N	mg/kg	2815	12/12/25	12/12/25
Total PCBs (7 Congeners)	M	Y	mg/kg	2815	12/12/25	12/12/25
Tot PCBs Low (7 Congeners)	N	N	mg/kg	2815	12/12/25	12/12/25
Total Phenols	M	N	mg/kg	2920	08/12/25	08/12/25
Ammonium	U	N	mg/l	1220	11/12/25	11/12/25
Ammonium	N	N	mg/kg	1220	11/12/25	11/12/25
Dry Mass Of Test Portion	N	Y	kg	640	03/12/25	03/12/25
Moisture	N	Y	% dry weight	640	03/12/25	03/12/25
Volume Of C10 Leachant	N	Y	l	640	03/12/25	03/12/25
Total Dissolved Solids	N	Y	mg/l	1020	04/12/25	04/12/25
Total Dissolved Solids	N	Y	mg/kg	1020	04/12/25	04/12/25
Chloride	U	Y	mg/l	1220	11/12/25	11/12/25
Fluoride	U	Y	mg/l	1220	11/12/25	11/12/25
Sulphate	U	Y	mg/l	1220	11/12/25	11/12/25
Chloride	U	Y	mg/kg	1220	11/12/25	11/12/25
Fluoride	U	Y	mg/kg	1220	11/12/25	11/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060361	2060362
Order No.:				*Client Sample Ref.:*	*TP04 S1*	*TP04 S2*
				Client Sample ID.:	*25/11/5976*	*25/11/5977*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:		
Determinand	**Accred.**	**WAC**	**Units**	**SOP**		
Sulphate	U	Y	mg/kg	1220	11/12/25	11/12/25
Arsenic	U	Y	mg/l	1455	05/12/25	05/12/25
Boron	U	Y	mg/l	1455	05/12/25	05/12/25
Arsenic	U	Y	mg/kg	1455	05/12/25	05/12/25
Boron	U	Y	mg/kg	1455	05/12/25	05/12/25
Barium	U	Y	mg/l	1455	05/12/25	05/12/25
Barium	U	Y	mg/kg	1455	05/12/25	05/12/25
Cadmium	U	Y	mg/l	1455	05/12/25	05/12/25
Cadmium	U	Y	mg/kg	1455	05/12/25	05/12/25
Chromium	U	Y	mg/l	1455	05/12/25	05/12/25
Chromium	U	Y	mg/kg	1455	05/12/25	05/12/25
Copper	U	Y	mg/l	1455	05/12/25	05/12/25
Copper	U	Y	mg/kg	1455	05/12/25	05/12/25
Mercury	U	Y	mg/l	1455	05/12/25	05/12/25
Mercury	U	Y	mg/kg	1455	05/12/25	05/12/25
Molybdenum	U	Y	mg/l	1455	05/12/25	05/12/25
Molybdenum	U	Y	mg/kg	1455	05/12/25	05/12/25
Nickel	U	Y	mg/l	1455	05/12/25	05/12/25
Nickel	U	Y	mg/kg	1455	05/12/25	05/12/25
Lead	U	Y	mg/l	1455	05/12/25	05/12/25
Lead	U	Y	mg/kg	1455	05/12/25	05/12/25
Antimony	U	Y	mg/l	1455	05/12/25	05/12/25
Antimony	U	Y	mg/kg	1455	05/12/25	05/12/25
Selenium	U	Y	mg/l	1455	05/12/25	05/12/25
Selenium	U	Y	mg/kg	1455	05/12/25	05/12/25
Zinc	U	Y	mg/l	1455	05/12/25	05/12/25
Zinc	U	Y	mg/kg	1455	05/12/25	05/12/25
Dissolved Organic Carbon	U	Y	mg/l	1610	08/12/25	08/12/25
Dissolved Organic Carbon	U	Y	mg/kg	1610	08/12/25	08/12/25
Phenol Index	U	Y	mg/l	1920	08/12/25	08/12/25
Phenol Index	U	Y	mg/kg	1920	08/12/25	08/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38693	25-38693
Quotation No.:				**Chemtest Sample ID.:**	2060361	2060362
Order No.:				*Client Sample Ref.:*	*TP04 S1*	*TP04 S2*
				Client Sample ID.:	*25/11/5976*	*25/11/5977*
				Client Reference:	*Monaleen Road (Suttons Land)*	*Monaleen Road (Suttons Land)*
				Sample Type:	*SOIL*	*SOIL*
				Date Sampled:	*24-Nov-2025*	*24-Nov-2025*
				Time Sampled:		
Determinand	**Accred.**	**WAC**	**Units**	**SOP**		

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity at 25°C and Total Dissolved Solids (TDS) in Waters	Conductivity Meter	
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.	RE PW PL LE DW GW
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	RE PW PL SW DW GW
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation	PL SW GW
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	PL GW
2010	pH Value of Soils	pH at 20°C	pH Meter	
2015	Acid Neutralisation Capacity	Acid Reserve	Titration	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <30°C.	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection	
2192	Asbestos Quantification in Soils Sediments Ballast & Aggregate Crushed Concrete & Demolition Rubble	Asbestos	Polarised light microscopy / Gravimetry	
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.	
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.	
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID	
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection	

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.	
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection	
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS	
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS. Reported PCB 101 results may contain contributions from PCB 90 due to inseparable chromatography.	
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.	
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	
650	Characterisation of Waste (Leaching C2,C8,C10,WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection
Text example	All items indicated in italic font represent customer-supplied information that may not be independently verified by the laboratory

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

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

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

Uncertainty of measurement for the determinands tested are available upon request .

None of the results in this report have been recovery corrected.

All results are expressed on a dry weight basis.

The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at ≤ 30°C prior to analysis.

All Asbestos testing is performed at the indicated laboratory .

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.

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

NEW_ASB	Eurofins Chemtest Limited, 11 Depot Road, Newmarket, CB8 0AL
DURHAM	Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

Sample Deviation Codes

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

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - The required amount of sample for analysis was not received
H - Appropriate cooling measures were not taken for sample transportation

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt.
All water samples will be retained for 14 days from the date of receipt.
Charges may apply to extended sample storage.

Report Information

Water Sample Category Key for Accreditation

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

Clean Up Codes

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

HWOL Acronym System

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

Asbestos Tests LOD = LOQ

Limit of Detection = Limit of Quantification for asbestos results only

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

Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: cs@etuki.eurofins.com

Final Report

Report No.:	25-38712-1
Initial Date of Issue:	17-Dec-2025
Re-Issue Details:	
Client	*Formation Homes Ireland Limited*
Client Address:	*6 Hartstonge Street* *Limerick City* *Limerick* *Ireland*
Contact(s):	*Fionan Cahill*
Project	*Monaleen Road (Suttons Land)*
Order No.:	Not supplied
No. of Samples:	*1*
Turnaround (Wkdays):	15
Date Approved:	17-Dec-2025
Approved By:	
Details:	David Smith, Technical Director

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

Results - Water

Project: BHP-MTI

Client: BHP Laboratories					**Chemtest Job No.:**	25-38712
Quotation No.: Q25-39939					**Chemtest Sample ID.:**	2060435
Order No.:					*Client Sample Ref.:*	*TP03 S3 (Water)*
					Client Sample ID.:	*25/11/5990*
					Client Reference:	*Monaleen Road (Suttons Land)*
					Sample Type:	*WATER*
					Sample Sub Type:	
					Date Sampled:	*24-Nov-2025*
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
pH at 20C		U	1010		4.0	7.0
Ammonium		U	1220	mg/l	0.050	1.7
Cyanide (Total)		U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)		U	1455	µg/l	0.20	0.24
Boron (Dissolved)		U	1455	µg/l	10.0	80
Cadmium (Dissolved)		U	1455	µg/l	0.11	< 0.11
Chromium (Dissolved)		U	1455	µg/l	0.50	< 0.50
Copper (Dissolved)		U	1455	µg/l	0.50	3.3
Mercury (Dissolved)		U	1455	µg/l	0.05	< 0.05
Molybdenum (Dissolved)		U	1455	µg/l	0.20	2.0
Nickel (Dissolved)		U	1455	µg/l	0.50	11
Lead (Dissolved)		U	1455	µg/l	0.50	0.59
Antimony (Dissolved)		U	1455	µg/l	0.50	< 0.50
Selenium (Dissolved)		U	1455	µg/l	0.50	< 0.50
Zinc (Dissolved)		U	1455	µg/l	2.5	6.6
Chromium (Trivalent)		N	1490	µg/l	20	< 20
Chromium (Hexavalent)		U	1490	µg/l	20	< 20
Total Organic Carbon		U	1610	mg/l	2.0	6.3
Aliphatic TPH >C5-C6	EH_2D_AL_#1	N	1780	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	EH_2D_AL_#1	N	1780	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	EH_2D_AL_#1	N	1780	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	EH_2D_AL_#1	N	1680	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	EH_2D_AL_#1	N	1680	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	EH_2D_AL_#1	N	1680	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	EH_2D_AL_#1	N	1680	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	EH_2D_AL_#1	N	1680	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	EH_2D_AL_#1	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	EH_2D_AR_#1	N	1780	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	EH_2D_AR_#1	N	1780	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	EH_2D_AR_#1	N	1780	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	EH_2D_AR_#1	N	1680	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	EH_2D_AR_#1	N	1680	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	EH_2D_AR_#1	N	1680	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	EH_2D_AR_#1	N	1680	µg/l	0.10	< 0.10

Results - Water

Project: BHP-MTI

Client: BHP Laboratories		**Chemtest Job No.:**				25-38712
Quotation No.: Q25-39939		**Chemtest Sample ID.:**				2060435
Order No.:		*Client Sample Ref.:*				*TP03 S3 (Water)*
		Client Sample ID.:				*25/11/5990*
		Client Reference:				*Monaleen Road (Suttons Land)*
		Sample Type:				*WATER*
		Sample Sub Type:				
		Date Sampled:				*24-Nov-2025*
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
Aromatic TPH >C35-C44	EH_2D_AR_#1	N	1680	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	EH_2D_AR_#1	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	EH_2D_Total_#1	N	1675	µg/l	10	< 10
Benzene		U	1760	µg/l	1.0	< 1.0
Toluene		U	1760	µg/l	1.0	< 1.0
Ethylbenzene		U	1760	µg/l	1.0	< 1.0
m & p-Xylene		U	1760	µg/l	1.0	< 1.0
o-Xylene		U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether		N	1760	µg/l	1.0	< 1.0
Naphthalene		U	1800	µg/l	0.10	< 0.10
Acenaphthylene		U	1800	µg/l	0.10	< 0.10
Acenaphthene		U	1800	µg/l	0.10	< 0.10
Fluorene		U	1800	µg/l	0.10	< 0.10
Phenanthrene		U	1800	µg/l	0.10	< 0.10
Anthracene		U	1800	µg/l	0.10	< 0.10
Fluoranthene		U	1800	µg/l	0.10	< 0.10
Pyrene		U	1800	µg/l	0.10	< 0.10
Benzo[a]anthracene		U	1800	µg/l	0.10	< 0.10
Chrysene		U	1800	µg/l	0.10	< 0.10
Benzo[b]fluoranthene		U	1800	µg/l	0.10	< 0.10
Benzo[k]fluoranthene		U	1800	µg/l	0.10	< 0.10
Benzo[a]pyrene		U	1800	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene		U	1800	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene		U	1800	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene		U	1800	µg/l	0.10	< 0.10
Coronene		N	1800	µg/l	0.10	< 0.10
Total Of 17 PAH's		N	1800	µg/l	2.0	< 2.0
PCB 28		N	1815	µg/l	0.010	< 0.010
PCB 52		N	1815	µg/l	0.010	< 0.010
PCB 101		N	1815	µg/l	0.010	< 0.010
PCB 118		N	1815	µg/l	0.010	< 0.010
PCB 153		N	1815	µg/l	0.010	< 0.010
PCB 138		N	1815	µg/l	0.010	< 0.010
PCB 180		N	1815	µg/l	0.010	< 0.010

Results - Water

Project: BHP-MTI

Client: BHP Laboratories		**Chemtest Job No.:**				25-38712
Quotation No.: Q25-39939		**Chemtest Sample ID.:**				2060435
Order No.:		*Client Sample Ref.:*				*TP03 S3 (Water)*
		Client Sample ID.:				*25/11/5990*
		Client Reference:				*Monaleen Road (Suttons Land)*
		Sample Type:				*WATER*
		Sample Sub Type:				
		Date Sampled:				*24-Nov-2025*
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
Total PCBs (7 congeners)		N	1815	µg/l	0.010	< 0.010
Total Phenols		U	1920	mg/l	0.030	< 0.030

RECEIVED: 04/03/2026

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38712
Quotation No.: Q25-39939				**Chemtest Sample ID.:**	2060435
Order No.:				*Client Sample Ref.:*	*TP03 S3 (Water)*
				Client Sample ID.:	*25/11/5990*
				Client Reference:	*Monaleen Road (Suttons Land)*
				Sample Type:	*WATER*
				Date Sampled:	*24-Nov-2025*
				Time Sampled:	
Determinand	**Accred.**	**WAC**	**Units**	**SOP**	
pH at 20C	U	N		1010	05/12/25
Ammonium	U	N	mg/l	1220	11/12/25
Cyanide (Total)	U	N	mg/l	1300	09/12/25
Arsenic (Dissolved)	U	N	µg/l	1455	05/12/25
Boron (Dissolved)	U	N	µg/l	1455	05/12/25
Cadmium (Dissolved)	U	N	µg/l	1455	05/12/25
Chromium (Dissolved)	U	N	µg/l	1455	05/12/25
Copper (Dissolved)	U	N	µg/l	1455	05/12/25
Mercury (Dissolved)	U	N	µg/l	1455	05/12/25
Molybdenum (Dissolved)	U	N	µg/l	1455	05/12/25
Nickel (Dissolved)	U	N	µg/l	1455	05/12/25
Lead (Dissolved)	U	N	µg/l	1455	05/12/25
Antimony (Dissolved)	U	N	µg/l	1455	05/12/25
Selenium (Dissolved)	U	N	µg/l	1455	05/12/25
Zinc (Dissolved)	U	N	µg/l	1455	05/12/25
Chromium (Trivalent)	N	N	µg/l	1490	11/12/25
Chromium (Hexavalent)	U	N	µg/l	1490	11/12/25
Total Organic Carbon	U	N	mg/l	1610	04/12/25
Aliphatic TPH >C5-C6	N	N	µg/l	1780	09/12/25
Aliphatic TPH >C6-C8	N	N	µg/l	1780	09/12/25
Aliphatic TPH >C8-C10	N	N	µg/l	1780	09/12/25
Aliphatic TPH >C10-C12	N	N	µg/l	1680	08/12/25
Aliphatic TPH >C12-C16	N	N	µg/l	1680	08/12/25
Aliphatic TPH >C16-C21	N	N	µg/l	1680	08/12/25
Aliphatic TPH >C21-C35	N	N	µg/l	1680	08/12/25
Aliphatic TPH >C35-C44	N	N	µg/l	1680	08/12/25
Total Aliphatic Hydrocarbons	N	N	µg/l	1675	09/12/25
Aromatic TPH >C5-C7	N	N	µg/l	1780	09/12/25
Aromatic TPH >C7-C8	N	N	µg/l	1780	09/12/25
Aromatic TPH >C8-C10	N	N	µg/l	1780	09/12/25
Aromatic TPH >C10-C12	N	N	µg/l	1680	08/12/25
Aromatic TPH >C12-C16	N	N	µg/l	1680	08/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38712
Quotation No.: Q25-39939				**Chemtest Sample ID.:**	2060435
Order No.:				*Client Sample Ref.:*	*TP03 S3 (Water)*
				Client Sample ID.:	*25/11/5990*
				Client Reference:	*Monaleen Road (Suttons Land)*
				Sample Type:	*WATER*
				Date Sampled:	*24-Nov-2025*
				Time Sampled:	
Determinand	**Accred.**	**WAC**	**Units**	**SOP**	
Aromatic TPH >C16-C21	N	N	µg/l	1680	08/12/25
Aromatic TPH >C21-C35	N	N	µg/l	1680	08/12/25
Aromatic TPH >C35-C44	N	N	µg/l	1680	08/12/25
Total Aromatic Hydrocarbons	N	N	µg/l	1675	09/12/25
Total Petroleum Hydrocarbons	N	N	µg/l	1675	09/12/25
Benzene	U	N	µg/l	1760	17/12/25
Toluene	U	N	µg/l	1760	17/12/25
Ethylbenzene	U	N	µg/l	1760	17/12/25
m & p-Xylene	U	N	µg/l	1760	17/12/25
o-Xylene	U	N	µg/l	1760	17/12/25
Methyl Tert-Butyl Ether	N	N	µg/l	1760	17/12/25
Naphthalene	U	N	µg/l	1800	04/12/25
Acenaphthylene	U	N	µg/l	1800	04/12/25
Acenaphthene	U	N	µg/l	1800	04/12/25
Fluorene	U	N	µg/l	1800	04/12/25
Phenanthrene	U	N	µg/l	1800	04/12/25
Anthracene	U	N	µg/l	1800	04/12/25
Fluoranthene	U	N	µg/l	1800	04/12/25
Pyrene	U	N	µg/l	1800	04/12/25
Benzo[a]anthracene	U	N	µg/l	1800	04/12/25
Chrysene	U	N	µg/l	1800	04/12/25
Benzo[b]fluoranthene	U	N	µg/l	1800	04/12/25
Benzo[k]fluoranthene	U	N	µg/l	1800	04/12/25
Benzo[a]pyrene	U	N	µg/l	1800	04/12/25
Indeno(1,2,3-c,d)Pyrene	U	N	µg/l	1800	04/12/25
Dibenz(a,h)Anthracene	U	N	µg/l	1800	04/12/25
Benzo[g,h,i]perylene	U	N	µg/l	1800	04/12/25
Coronene	N	N	µg/l	1800	04/12/25
Total Of 17 PAH's	N	N	µg/l	1800	04/12/25
PCB 28	N	N	µg/l	1815	10/12/25
PCB 52	N	N	µg/l	1815	10/12/25
PCB 101	N	N	µg/l	1815	10/12/25
PCB 118	N	N	µg/l	1815	10/12/25
PCB 153	N	N	µg/l	1815	10/12/25

Result Dates

Project: BHP-MTI

Client: BHP Laboratories				**Chemtest Job No.:**	25-38712
Quotation No.: Q25-39939				**Chemtest Sample ID.:**	2060435
Order No.:				*Client Sample Ref.:*	*TP03 S3 (Water)*
				Client Sample ID.:	*25/11/5990*
				Client Reference:	*Monaleen Road (Suttons Land)*
				Sample Type:	*WATER*
				Date Sampled:	*24-Nov-2025*
				Time Sampled:	
Determinand	**Accred.**	**WAC**	**Units**	**SOP**	
PCB 138	N	N	µg/l	1815	10/12/25
PCB 180	N	N	µg/l	1815	10/12/25
Total PCBs (7 congeners)	N	N	µg/l	1815	10/12/25
Total Phenols	U	N	mg/l	1920	09/12/25

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Chemtest Sample ID	*Clients Sample Ref:*	*Clients Sample ID:*	*Clients Reference:*	*Sampled Date:*	Deviation Code(s):	Containers Received:
2060435	*TP03 S3 (Water)*	*25/11/5990*	*Monaleen Road (Suttons Land)*	*24-Nov-2025*	B,C	Amber Glass 250ml
2060435	*TP03 S3 (Water)*	*25/11/5990*	*Monaleen Road (Suttons Land)*	*24-Nov-2025*	B,C	Amber Glass 60ml
2060435	*TP03 S3 (Water)*	*25/11/5990*	*Monaleen Road (Suttons Land)*	*24-Nov-2025*	B,C	Plastic Bottle 1000ml

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	RE PW TE TS PL DW GW
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.	RE PW TE TS PL LE DW GW
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.	GW
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	RE PW PL SW DW GW
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	PL GW
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation	PL SW GW
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection	
1680	Extractable Petroleum Hydrocarbons	Aliphatics: >C5–C6, >C6–C8, >C8– C10*, >C10–C12*, >C12–C16*, >C16–C21*, >C21– C35*, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10*, >C10–C12*, >C12–C16*, >C16– C21*, >C21– C35*, >C35– C44	Dichloromethane extraction / GCxGC FID detection	
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.	PL GW
1780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10 Aromatics: >C5–C6, >C6–C8,>C8–C10	Water extraction / Headspace GCxGC FID detection	
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection	PL GW SW
1815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Waters by GC-MS	ICES7 PCB congeners	Solvent extraction / GCMS detection	
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	PL GW

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection
Text example	All items indicated in italic font represent customer-supplied information that may not be independently verified by the laboratory
	This report shall not be reproduced except in full, and only with the prior approval of the laboratory.
	Any comments or interpretations are outside the scope of UKAS accreditation.
	The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.
	Uncertainty of measurement for the determinands tested are available upon request .
	None of the results in this report have been recovery corrected.
	All results are expressed on a dry weight basis.
	The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.
	For all other tests the samples were dried at ≤ 30°C prior to analysis.
	All Asbestos testing is performed at the indicated laboratory .
	Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.
	Where analysis is performed on a dried and crushed sample, it has been prepared by crushing all of the sample. If material has been removed prior to crushing, or by request of the client, this will be stated on the report.
NEW_ASB	Eurofins Chemtest Limited, 11 Depot Road, Newmarket, CB8 0AL
DURHAM	Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

Sample Deviation Codes

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

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - The required amount of sample for analysis was not received

H - Appropriate cooling measures were not taken for sample transportation

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt.

All water samples will be retained for 14 days from the date of receipt.

Charges may apply to extended sample storage.

Report Information

RECEIVED: 04/03/2026

Water Sample Category Key for Accreditation

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

Clean Up Codes

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

HWOL Acronym System

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

Asbestos Tests LOD = LOQ

Limit of Detection = Limit of Quantification for asbestos results only

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

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

a) understand the origin of the waste
b) select the correct List of Waste code(s)
c) confirm that the list of determinands, results and sampling plan are fit for purpose
d) select and justify the chosen metal species (Appendix B)
e) correctly apply moisture correction and other available corrections
f) add the meta data for their user-defined substances (Appendix A)
g) check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

U4JO1-XDQYG-J18Y7

Report is invalid if pages are removed.

Job name

HWOL_25-38693-20251214 175937

Description/Comments

25/11/5971-TP01 S1-0.2m/05m
25/11/5972-TP01 S2 -0.5m/1.8m
25/11/5973-TP02 S1 -0.2m/0.9m
25/11/5974-TP03 S1-0.15m/1.8m
25/11/5975-TP03 S2-1.8m/2.0m
25/11/5976-TP04 S1-0.15m/0.4m
25/11/5977-TP04 S2-0.4m/0.8m

-

Project

Formation Homes Ireland Limited

Site

Monaleen Road (Suttons Land)

Classified by

Name:
James Purcell
Date:
16 Dec 2025 09:36 GMT
Telephone:
061 455399

Company:
BHP Labratories
New Road, Thomondgate
Limerick

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification: **CERTIFIED**

Course	**Date**
Hazardous Waste Classification	09 Feb 2023
Most recent 3 year Refresher	03 Feb 2026 *

Next 3 year Refresher due by Feb 2026
* training course booked

Purpose of classification

2 - Material Characterisation

Address of the waste

Monaleen Road (Suttons Land) **Post Code** N/A

Description of industry/producer giving rise to the waste

Construction works on site.

Description of the specific process, sub-process and/or activity that created the waste

Waste created from excavations.

Description of the waste

Waste materials removed from site - brown, CLAY/SAND with some gravel/cobbles.

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	WAC Results		Page
					Inert	Non Haz	
1	25/11/5971-2060356-		Non Hazardous		Pass	Pass	4
2	25/11/5972-2060357-		Non Hazardous		Pass	Pass	8
3	25/11/5973-2060358-		Non Hazardous		Pass	Pass	12
4	25/11/5974-2060359-		Non Hazardous		Pass	Pass	16
5	25/11/5975-2060360-		Non Hazardous		Pass	Pass	20
6	25/11/5976-2060361-		Non Hazardous		Pass	Pass	24
7	25/11/5977-2060362-		Non Hazardous		Fail	Pass	28

Related documents

#	Name	Description
1	HWOL_25-38693-20251214 175937.hwol	Eurofins Chemtest .hwol file used to populate the Job
2	Example worst case waste stream template: 17 05 04 or 17 05 03 *	waste stream template used to create this Job

WAC Results

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

WAC limits used to evaluate the samples in this Job: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

Report

Created by: James Purcell

Created date: 16 Dec 2025 09:36 GMT

Appendices Page

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Classification of sample: 25/11/5971-2060356-

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

Sample details

Sample name: **25/11/5971-2060356-**	LoW Code:	
Moisture content: **16%** (wet weight correction)	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				16 mg/kg	1.895	25.462 mg/kg	0.00255 %	✓	
3	barium { barium diboron tetraoxide }	056-005-00-3	237-222-4	13701-59-2		81 mg/kg	1.623	110.461 mg/kg	0.011 %	✓	
4	boron { boric acid; [1] boric acid [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]	11	<0.4 mg/kg	5.719	<2.288 mg/kg	<0.000229 %		<LOD
5	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		<0.1 mg/kg	1.855	<0.185 mg/kg	<0.0000185 %		<LOD
6	chromium in Cr(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		39 mg/kg	1.462	47.881 mg/kg	0.00479 %	✓	
7	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
8	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		25 mg/kg	3.929	82.51 mg/kg	0.00825 %	✓	
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	50 mg/kg	1.56	65.512 mg/kg	0.0042 %	✓	
10	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.09 mg/kg	1.353	0.102 mg/kg	0.0000102 %	✓	
11	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.2 mg/kg	1.5	1.512 mg/kg	0.000151 %	✓	
12	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		44 mg/kg	5.358	198.043 mg/kg	0.0198 %	✓	
13	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.25 mg/kg	2.554	<0.638 mg/kg	<0.0000638 %		<LOD
14	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		72 mg/kg	2.774	167.78 mg/kg	0.0168 %	✓	
15	TPH (C6 to C40) petroleum group			TPH		15 mg/kg		12.6 mg/kg	0.00126 %	✓	

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
21	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
22	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
39	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
40	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
41	monohydric phenols			P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
								Total:	0.0688 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the concentration of: 10000 mg/kg (1%) because: The soil had no liquid phase or liquid film meaning that the soil will not be flammable with TPH below 10,000 mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00126%)

WAC results for sample: 25/11/5971-2060356-

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

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

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

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand Header		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.24	3	-
2	LOI (loss on ignition)	%	2.9	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.05	1	-
5	Mineral oil (C10 to C40)	mg/kg	16	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<1	100	-
7	pH	pH	7.8	-	-
8	ANC (acid neutralisation capacity)	mol/kg	0.014	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0054	0.5	2
10	barium	mg/kg	0.063	20	100
11	cadmium	mg/kg	<0.0011	0.04	1
12	chromium	mg/kg	<0.005	0.5	10
13	copper	mg/kg	0.065	2	50
14	mercury	mg/kg	<0.0005	0.01	0.2
15	molybdenum	mg/kg	<0.002	0.5	10
16	nickel	mg/kg	0.0058	0.4	10
17	lead	mg/kg	0.011	0.5	10
18	antimony	mg/kg	<0.005	0.06	0.7
19	selenium	mg/kg	<0.005	0.1	0.5
20	zinc	mg/kg	0.039	4	50
21	chloride	mg/kg	99	800	15000
22	fluoride	mg/kg	<1	10	150
23	sulphate	mg/kg	75	1000	20000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	55	500	800
26	TDS (total dissolved solids)	mg/kg	1300	4000	60000

Key

User supplied data

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Classification of sample: 25/11/5972-2060357-

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

Sample details

Sample name:		LoW Code:	
25/11/5972-2060357-		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
15% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#		Determinand / EU CLP index number / EC Number / CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide } 051-005-00-X / 215-175-0 / 1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2		arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex } 033-005-00-1		10	mg/kg	1.895	16.103	mg/kg	0.00161 %	✓	
3		barium { barium diboron tetraoxide } 056-005-00-3 / 237-222-4 / 13701-59-2		97	mg/kg	1.623	133.855	mg/kg	0.0134 %	✓	
4		boron { boric acid; [1] boric acid [2] } 005-007-00-2 / 233-139-2 [1] 234-343-4 [2] / 10043-35-3 [1] 11113-50-1 [2]	11	<0.4	mg/kg	5.719	<2.288	mg/kg	<0.000229 %		<LOD
5		cadmium { cadmium sulfate } 048-009-00-9 / 233-331-6 / 10124-36-4		0.2	mg/kg	1.855	0.315	mg/kg	0.0000315 %	✓	
6		chromium in Cr(III) compounds { chromium(III) oxide } 215-160-9 / 1308-38-9		60	mg/kg	1.462	74.539	mg/kg	0.00745 %	✓	
7		chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex } 024-017-00-8		<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
8		copper { copper sulphate pentahydrate } 029-023-00-4 / 231-847-6 / 7758-99-8		21	mg/kg	3.929	70.134	mg/kg	0.00701 %	✓	
9		lead { lead chromate } 082-004-00-2 / 231-846-0 / 7758-97-6	1	24	mg/kg	1.56	31.82	mg/kg	0.00204 %	✓	
10		mercury { mercury dichloride } 080-010-00-X / 231-299-8 / 7487-94-7		0.05	mg/kg	1.353	0.0575	mg/kg	0.00000575 %	✓	
11		molybdenum { molybdenum(VI) oxide } 042-001-00-9 / 215-204-7 / 1313-27-5		1.6	mg/kg	1.5	2.04	mg/kg	0.000204 %	✓	
12		nickel { nickel dibromate } 028-053-00-5 / 238-596-1 / 14550-87-9		59	mg/kg	5.358	268.72	mg/kg	0.0269 %	✓	
13		selenium { nickel selenate } 028-031-00-5 / 239-125-2 / 15060-62-5		<0.25	mg/kg	2.554	<0.638	mg/kg	<0.0000638 %		<LOD
14		zinc { zinc chromate } 024-007-00-3 / 236-878-9 / 13530-65-9		72	mg/kg	2.774	169.778	mg/kg	0.017 %	✓	
15		TPH (C6 to C40) petroleum group / TPH		11	mg/kg		9.35	mg/kg	0.000935 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
21		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23	●	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	●	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	●	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	●	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	●	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	●	fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	●	pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	●	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
39		sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
40	●	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
41	●	monohydric phenols			P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
											Total:	0.0765 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the concentration of: 10000 mg/kg (1%) because: The soil had no liquid phase or liquid film meaning that the soil will not be flammable with TPH below 10,000 mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00093%)

WAC results for sample: 25/11/5972-2060357-

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

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

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

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand Header		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	<0.2	3	-
2	LOI (loss on ignition)	%	1.9	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.05	1	-
5	Mineral oil (C10 to C40)	mg/kg	15	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<1	100	-
7	pH	pH	7.7	-	-
8	ANC (acid neutralisation capacity)	mol/kg	0.021	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.002	0.5	2
10	barium	mg/kg	0.27	20	100
11	cadmium	mg/kg	<0.0011	0.04	1
12	chromium	mg/kg	<0.005	0.5	10
13	copper	mg/kg	0.055	2	50
14	mercury	mg/kg	<0.0005	0.01	0.2
15	molybdenum	mg/kg	<0.002	0.5	10
16	nickel	mg/kg	0.0068	0.4	10
17	lead	mg/kg	0.006	0.5	10
18	antimony	mg/kg	<0.005	0.06	0.7
19	selenium	mg/kg	<0.005	0.1	0.5
20	zinc	mg/kg	0.041	4	50
21	chloride	mg/kg	120	800	15000
22	fluoride	mg/kg	1.1	10	150
23	sulphate	mg/kg	57	1000	20000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	320	4000	60000

Key

User supplied data

Classification of sample: 25/11/5973-2060358-

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

Sample details

Sample name:		LoW Code:	
25/11/5973-2060358-		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
17% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				6 mg/kg	1.895	9.435 mg/kg	0.000943 %	✓	
3	barium { barium diboron tetraoxide }	056-005-00-3	237-222-4	13701-59-2		36 mg/kg	1.623	48.509 mg/kg	0.00485 %	✓	
4	boron { boric acid; [1] boric acid [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]	11	<0.4 mg/kg	5.719	<2.288 mg/kg	<0.000229 %		<LOD
5	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		<0.1 mg/kg	1.855	<0.185 mg/kg	<0.0000185 %		<LOD
6	chromium in Cr(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		23 mg/kg	1.462	27.901 mg/kg	0.00279 %	✓	
7	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
8	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		6.9 mg/kg	3.929	22.502 mg/kg	0.00225 %	✓	
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	22 mg/kg	1.56	28.482 mg/kg	0.00183 %	✓	
10	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<LOD
11	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.3 mg/kg	1.5	1.619 mg/kg	0.000162 %	✓	
12	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		15 mg/kg	5.358	66.711 mg/kg	0.00667 %	✓	
13	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.25 mg/kg	2.554	<0.638 mg/kg	<0.0000638 %		<LOD
14	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		28 mg/kg	2.774	64.471 mg/kg	0.00645 %	✓	
15	TPH (C6 to C40) petroleum group			TPH		64.9 mg/kg		53.867 mg/kg	0.00539 %	✓	

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
21	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
22	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
39	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
40	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
41	monohydric phenols			P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
								Total:	0.0313 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the concentration of: 10000 mg/kg (1%) because: The soil had no liquid phase or liquid film meaning that the soil will not be flammable with TPH below 10,000 mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00539%)

WAC results for sample: 25/11/5973-2060358-

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

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

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

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand Header		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.29	3	-
2	LOI (loss on ignition)	%	2.1	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.05	1	-
5	Mineral oil (C10 to C40)	mg/kg	53	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<1	100	-
7	pH	pH	7.4	-	-
8	ANC (acid neutralisation capacity)	mol/kg	0.024	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.006	0.5	2
10	barium	mg/kg	<0.05	20	100
11	cadmium	mg/kg	<0.0011	0.04	1
12	chromium	mg/kg	0.017	0.5	10
13	copper	mg/kg	0.041	2	50
14	mercury	mg/kg	<0.0005	0.01	0.2
15	molybdenum	mg/kg	<0.002	0.5	10
16	nickel	mg/kg	0.006	0.4	10
17	lead	mg/kg	0.025	0.5	10
18	antimony	mg/kg	<0.005	0.06	0.7
19	selenium	mg/kg	<0.005	0.1	0.5
20	zinc	mg/kg	0.071	4	50
21	chloride	mg/kg	11	800	15000
22	fluoride	mg/kg	<1	10	150
23	sulphate	mg/kg	<10	1000	20000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	550	4000	60000

Key

User supplied data

Classification of sample: 25/11/5974-2060359-

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

Sample details

Sample name:		LoW Code:	
25/11/5974-2060359-		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
7.2% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.2% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				4.6	mg/kg	1.895	8.087	mg/kg	0.000809 %	✓	
3	barium { barium diboron tetraoxide }	056-005-00-3	237-222-4	13701-59-2		29	mg/kg	1.623	43.691	mg/kg	0.00437 %	✓	
4	boron { boric acid; [1] boric acid [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]	11	<0.4	mg/kg	5.719	<2.288	mg/kg	<0.000229 %		<LOD
5	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		<0.1	mg/kg	1.855	<0.185	mg/kg	<0.0000185 %		<LOD
6	chromium in Cr(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		16	mg/kg	1.462	21.701	mg/kg	0.00217 %	✓	
7	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
8	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		9.4	mg/kg	3.929	34.274	mg/kg	0.00343 %	✓	
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	11	mg/kg	1.56	15.923	mg/kg	0.00102 %	✓	
10	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05	mg/kg	1.353	<0.0677	mg/kg	<0.00000677 %		<LOD
11	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.1	mg/kg	1.5	1.531	mg/kg	0.000153 %	✓	
12	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		26	mg/kg	5.358	129.285	mg/kg	0.0129 %	✓	
13	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.25	mg/kg	2.554	<0.638	mg/kg	<0.0000638 %		<LOD
14	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		27	mg/kg	2.774	69.509	mg/kg	0.00695 %	✓	
15	TPH (C6 to C40) petroleum group			TPH		91	mg/kg		84.448	mg/kg	0.00844 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
21		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
39		sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
40		coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
41		monohydric phenols			P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
											Total:	0.0403 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the concentration of: 10000 mg/kg (1%) because: The soil had no liquid phase or liquid film meaning that the soil will not be flammable with TPH below 10,000 mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00844%)

WAC results for sample: 25/11/5974-2060359-

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

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

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

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand Header		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.5	3	-
2	LOI (loss on ignition)	%	3.1	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.05	1	-
5	Mineral oil (C10 to C40)	mg/kg	30	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<1	100	-
7	pH	pH	8.3	-	-
8	ANC (acid neutralisation capacity)	mol/kg	0.019	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0032	0.5	2
10	barium	mg/kg	<0.05	20	100
11	cadmium	mg/kg	<0.0011	0.04	1
12	chromium	mg/kg	<0.005	0.5	10
13	copper	mg/kg	0.044	2	50
14	mercury	mg/kg	<0.0005	0.01	0.2
15	molybdenum	mg/kg	0.022	0.5	10
16	nickel	mg/kg	0.009	0.4	10
17	lead	mg/kg	0.0091	0.5	10
18	antimony	mg/kg	<0.005	0.06	0.7
19	selenium	mg/kg	<0.005	0.1	0.5
20	zinc	mg/kg	0.03	4	50
21	chloride	mg/kg	21	800	15000
22	fluoride	mg/kg	1.7	10	150
23	sulphate	mg/kg	18	1000	20000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	560	4000	60000

Key

User supplied data

Classification of sample: 25/11/5975-2060360-

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

Sample details

Sample name:
25/11/5975-2060360-
Moisture content:
7.5%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.5% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				8.5 mg/kg	1.895	14.896 mg/kg	0.00149 %	✓	
3	barium { barium diboron tetraoxide }	056-005-00-3	237-222-4	13701-59-2		43 mg/kg	1.623	64.574 mg/kg	0.00646 %	✓	
4	boron { boric acid; [1] boric acid [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]	11	<0.4 mg/kg	5.719	<2.288 mg/kg	<0.000229 %		<LOD
5	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.13 mg/kg	1.855	0.223 mg/kg	0.0000223 %	✓	
6	chromium in Cr(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		23 mg/kg	1.462	31.095 mg/kg	0.00311 %	✓	
7	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
8	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		17 mg/kg	3.929	61.784 mg/kg	0.00618 %	✓	
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	24 mg/kg	1.56	34.628 mg/kg	0.00222 %	✓	
10	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.07 mg/kg	1.353	0.0876 mg/kg	0.00000876 %	✓	
11	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.8 mg/kg	1.5	2.498 mg/kg	0.00025 %	✓	
12	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		39 mg/kg	5.358	193.301 mg/kg	0.0193 %	✓	
13	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.25 mg/kg	2.554	<0.638 mg/kg	<0.0000638 %		<LOD
14	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		50 mg/kg	2.774	128.304 mg/kg	0.0128 %	✓	
15	TPH (C6 to C40) petroleum group			TPH		23.5 mg/kg		21.738 mg/kg	0.00217 %	✓	

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
21	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
22	naphthalene	601-052-00-2	202-049-5	91-20-3		0.17 mg/kg		0.157 mg/kg	0.0000157 %	✓	
23	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	phenanthrene		201-581-5	85-01-8		0.27 mg/kg		0.25 mg/kg	0.000025 %	✓	
27	anthracene		204-371-1	120-12-7		0.15 mg/kg		0.139 mg/kg	0.0000139 %	✓	
28	fluoranthene		205-912-4	206-44-0		0.45 mg/kg		0.416 mg/kg	0.0000416 %	✓	
29	pyrene		204-927-3	129-00-0		0.45 mg/kg		0.416 mg/kg	0.0000416 %	✓	
30	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.33 mg/kg		0.305 mg/kg	0.0000305 %	✓	
31	chrysene	601-048-00-0	205-923-4	218-01-9		0.32 mg/kg		0.296 mg/kg	0.0000296 %	✓	
32	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.41 mg/kg		0.379 mg/kg	0.0000379 %	✓	
33	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.27 mg/kg		0.25 mg/kg	0.000025 %	✓	
34	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.36 mg/kg		0.333 mg/kg	0.0000333 %	✓	
35	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
39	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		1.9 mg/kg		1.758 mg/kg	0.000176 %	✓	
40	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
41	monohydric phenols			P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
								Total:	0.0545 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the concentration of: 10000 mg/kg (1%) because: The soil had no liquid phase or liquid film meaning that the soil will not be flammable with TPH below 10,000 mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00217%)

WAC results for sample: 25/11/5975-2060360-

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

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

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

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand Header		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.8	3	-
2	LOI (loss on ignition)	%	1.7	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.05	1	-
5	Mineral oil (C10 to C40)	mg/kg	17	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	3.2	100	-
7	pH	pH	8.3	-	-
8	ANC (acid neutralisation capacity)	mol/kg	0.02	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.002	0.5	2
10	barium	mg/kg	0.067	20	100
11	cadmium	mg/kg	<0.0011	0.04	1
12	chromium	mg/kg	<0.005	0.5	10
13	copper	mg/kg	0.036	2	50
14	mercury	mg/kg	<0.0005	0.01	0.2
15	molybdenum	mg/kg	0.024	0.5	10
16	nickel	mg/kg	<0.005	0.4	10
17	lead	mg/kg	0.0057	0.5	10
18	antimony	mg/kg	<0.005	0.06	0.7
19	selenium	mg/kg	<0.005	0.1	0.5
20	zinc	mg/kg	<0.025	4	50
21	chloride	mg/kg	<10	800	15000
22	fluoride	mg/kg	1.4	10	150
23	sulphate	mg/kg	79	1000	20000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	570	4000	60000

Key

User supplied data

RECEIVED: 04/03/2026

Classification of sample: 25/11/5976-2060361-

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

Sample details

Sample name:
25/11/5976-2060361-
Moisture content:
10%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				5.9	mg/kg	1.895	10.06	mg/kg	0.00101 %	✓	
3	barium { barium diboron tetraoxide }	056-005-00-3	237-222-4	13701-59-2		65	mg/kg	1.623	94.973	mg/kg	0.0095 %	✓	
4	boron { boric acid; [1] boric acid [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]	11	<0.4	mg/kg	5.719	<2.288	mg/kg	<0.000229 %		<LOD
5	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.18	mg/kg	1.855	0.3	mg/kg	0.00003 %	✓	
6	chromium in Cr(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		40	mg/kg	1.462	52.616	mg/kg	0.00526 %	✓	
7	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
8	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		12	mg/kg	3.929	42.434	mg/kg	0.00424 %	✓	
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	19	mg/kg	1.56	26.673	mg/kg	0.00171 %	✓	
10	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05	mg/kg	1.353	<0.0677	mg/kg	<0.00000677 %		<LOD
11	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.1	mg/kg	1.5	1.485	mg/kg	0.000149 %	✓	
12	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		37	mg/kg	5.358	178.432	mg/kg	0.0178 %	✓	
13	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.25	mg/kg	2.554	<0.638	mg/kg	<0.0000638 %		<LOD
14	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		40	mg/kg	2.774	99.869	mg/kg	0.00999 %	✓	
15	TPH (C6 to C40) petroleum group			TPH		47.1	mg/kg		42.39	mg/kg	0.00424 %	✓	

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
21	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
22	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
39	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
40	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
41	monohydric phenols			P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
								Total:	0.054 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the concentration of: 10000 mg/kg (1%) because: The soil had no liquid phase or liquid film meaning that the soil will not be flammable with TPH below 10,000 mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00424%)

WAC results for sample: 25/11/5976-2060361-

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

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

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

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand Header		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.78	3	-
2	LOI (loss on ignition)	%	2.3	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.05	1	-
5	Mineral oil (C10 to C40)	mg/kg	30	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<1	100	-
7	pH	pH	8.3	-	-
8	ANC (acid neutralisation capacity)	mol/kg	0.017	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.011	0.5	2
10	barium	mg/kg	0.07	20	100
11	cadmium	mg/kg	<0.0011	0.04	1
12	chromium	mg/kg	0.015	0.5	10
13	copper	mg/kg	0.048	2	50
14	mercury	mg/kg	<0.0005	0.01	0.2
15	molybdenum	mg/kg	0.0034	0.5	10
16	nickel	mg/kg	0.016	0.4	10
17	lead	mg/kg	0.024	0.5	10
18	antimony	mg/kg	<0.005	0.06	0.7
19	selenium	mg/kg	<0.005	0.1	0.5
20	zinc	mg/kg	0.048	4	50
21	chloride	mg/kg	<10	800	15000
22	fluoride	mg/kg	1.7	10	150
23	sulphate	mg/kg	<10	1000	20000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	460	4000	60000

Key

User supplied data

RECEIVED: 04/03/2026

Classification of sample: 25/11/5977-2060362-

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

Sample details

Sample name:	LoW Code:	
25/11/5977-2060362-	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: **2.6%** (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 2.6% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				3.2 mg/kg	1.895	5.905 mg/kg	0.00059 %	✓	
3	barium { barium diboron tetraoxide }	056-005-00-3	237-222-4	13701-59-2		5.6 mg/kg	1.623	8.855 mg/kg	0.000886 %	✓	
4	boron { boric acid; [1] boric acid [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]	11	<0.4 mg/kg	5.719	<2.288 mg/kg	<0.000229 %		<LOD
5	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.13 mg/kg	1.855	0.235 mg/kg	0.0000235 %	✓	
6	chromium in Cr(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		2.8 mg/kg	1.462	3.986 mg/kg	0.000399 %	✓	
7	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
8	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		2.4 mg/kg	3.929	9.185 mg/kg	0.000918 %	✓	
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	88 mg/kg	1.56	133.695 mg/kg	0.00857 %	✓	
10	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<LOD
11	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<0.5 mg/kg	1.5	<0.75 mg/kg	<0.000075 %		<LOD
12	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		10 mg/kg	5.358	52.19 mg/kg	0.00522 %	✓	
13	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.25 mg/kg	2.554	<0.638 mg/kg	<0.0000638 %		<LOD
14	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		12 mg/kg	2.774	32.424 mg/kg	0.00324 %	✓	
15	TPH (C6 to C40) petroleum group			TPH		11.1 mg/kg		10.811 mg/kg	0.00108 %	✓	

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
21	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
22	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
39	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
40	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
41	monohydric phenols			P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
								Total:	0.0209 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the concentration of: 10000 mg/kg (1%)
because: The soil had no liquid phase or liquid film meaning that the soil will not be flammable with TPH below 10,000 mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00108%)

WAC results for sample: 25/11/5977-2060362-

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

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand Header		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	6.6	3	-
2	LOI (loss on ignition)	%	0.44	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.05	1	-
5	Mineral oil (C10 to C40)	mg/kg	10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<1	100	-
7	pH	pH	8.9	-	-
8	ANC (acid neutralisation capacity)	mol/kg	0.015	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.002	0.5	2
10	barium	mg/kg	<0.05	20	100
11	cadmium	mg/kg	<0.0011	0.04	1
12	chromium	mg/kg	<0.005	0.5	10
13	copper	mg/kg	0.03	2	50
14	mercury	mg/kg	<0.0005	0.01	0.2
15	molybdenum	mg/kg	0.0032	0.5	10
16	nickel	mg/kg	<0.005	0.4	10
17	lead	mg/kg	0.01	0.5	10
18	antimony	mg/kg	<0.005	0.06	0.7
19	selenium	mg/kg	<0.005	0.1	0.5
20	zinc	mg/kg	<0.025	4	50
21	chloride	mg/kg	<10	800	15000
22	fluoride	mg/kg	<1	10	150
23	sulphate	mg/kg	<10	1000	20000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	350	4000	60000

Key

(yellow)	User supplied data
(cyan)	Inert WAC criteria fail

Appendix A: Classifier defined and non EU CLP determinands

chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from ECHA's C&L inventory database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 30 Apr 2020
Hazard Statements: Acute Tox. 4; H302 , Skin Sens. 1; H317 , Eye Irrit. 2; H319

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Unknown Oil

Hazard statements taken from WM3 1st Edition 2015
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

EU CLP index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2; H351 hazard statement sourced from:: IARC Group 2B (77) 2000

salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

EU CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from:: WM3, Table C12.2

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

- **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

EU CLP index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans;

POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Additional Hazard Statement(s): Carc. 1A; H350
Reason for additional Hazards Statement(s):
29 Sep 2015 - Carc. 1A; H350 hazard statement sourced from:: IARC Group 1 (23, Sup 7, 100C) 2012

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

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.
Data source: http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en
Data source date: 16 Jun 2014
Hazard Statements: STOT SE 2; H371

- **monohydric phenols** (CAS Number: P1186)

Description/Comments: Combined hazards statements from harmonised entries in CLP for phenol, cresols and xylenols (604-001-00-2, 604-004-00-9, 604-006-00-X)
Data source: CLP combined data
Data source date: 26 Mar 2019
Hazard Statements: Muta. 2; H341 , Acute Tox. 3; H331 , Acute Tox. 3; H311 , Acute Tox. 3; H301 , STOT RE 2; H373 , Skin Corr. 1B; H314 , Skin Corr. 1B; H314 >= 3 % , Skin Irrit. 2; H315 1 <= conc. < 3 % , Eye Irrit. 2; H319 1 <= conc. < 3 % , Aquatic Chronic 2; H411

Appendix B: Rationale for selection of metal species

antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings (edit as required)

arsenic {arsenic acid and its salts with the exception of those specified elsewhere in this Annex}

Worst case CLP species based on hazard statements/molecular weight and conversion factor for arsenic acid H_3AsO_4. (edit as required)

barium {barium diboron tetraoxide}

There was no Chromium VI detected in the sample.

boron {boric acid; [1] boric acid [2]}

Reasonable worst case CLP species based on hazard statements/molecular weight and assuming water is or has been present. (edit as required)

cadmium {cadmium sulfate}

Worst case CLP species based on hazard statements/molecular weight. (edit as required)

chromium in Cr(III) compounds {chromium(III) oxide}

There was no Chromium VI detected in the sample.

chromium in Cr(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case species based on hazard statements/molecular weight (edit as required)

copper {copper sulphate pentahydrate}

Worst case CLP species based on hazard statements/molecular weight. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Reasonable worst case CLP species based on hazard statements/molecular weight and assuming no evidence for the use of explosives. (edit as required)

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel dibromate}

Worst case CLP species based on hazard statements/molecular weight. (edit as required)

selenium {nickel selenate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

sulfur {sulfur}

Elemental sulfur

Appendix C: Version

HazWasteOnline Classification Engine: EU WM3 1st Edition v1.1.NI using the EU LoW
HazWasteOnline Classification Engine Version: 2025.345.6921.12504 (11 Dec 2025)
HazWasteOnline Database: 2025.345.6921.12504 (11 Dec 2025)

This classification utilises the following guidance and legislation:
WM3 v1.1.NI - Waste Classification - 1st Edition v1.1.NI - Jan 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
17th ATP - Regulation (EU) 2021/849 of 11 March 2021
18th ATP - Regulation (EU) 2022/692 of 16 February 2022
POPs Amendment 2022 - Regulation (EU) 2022/2400 of 23 November 2022
19th ATP - Regulation (EU) 2023/1434 of 25 April 2023
20th ATP - Regulation (EU) 2023/1435 of 2 May 2023
21st ATP - Regulation (EU) 2024/197 of 19 October 2023
22nd ATP - Regulation (EU) 2024/2564 of 19th June 2024
23rd ATP - Regulation (EU) 2025/1222 of 2nd April 2025

GENESIS PLANNING CONSULTANTS

APPENDIX 11.1

WINTERING BIRD SURVEY REPORT

Document Status

Issue date	13/03/2025
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Prepared by	Mia Heigh BSc Assistant Ecologist
Reviewed by	Dominic Tilley BSc PhD Ecologist
Authorised by	Bernadette O'Connell Director

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JBA is committed to championing sustainability and has made The Ten Principles of the UN Global Compact part of its culture and operations. We have a Group-wide objective to be a Net Zero carbon emissions business.

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Contract

JBA Project Manager	Conor O'Neill
Address	Second Floor, Lincoln House, Lincoln Lane, Arran Quay, Dublin, D07 Y75P
JBA Project Code	2025s0046

This report describes work commissioned by Martin Burke, on behalf of Genesis Planning Consultants, by an instruction date 14/01/2025. The Client's representative for the contract was Martin Burke of Genesis Planning Consultants. Mia Heigh and Dominic Tilley JBA Consulting carried out this work.

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1 Introduction

1.1 Background

Genesis Planning Consultants have commissioned JBA Consulting to undertake wintering bird surveys of a site in Newcastle, Co. Limerick. The surveys are to inform a proposed Large Residential Development (LDR) comprising of approximately 200 units in a variety of house types. The development will include hard and soft landscaping, internal roads and footpaths and all ancillary features.

1.2 Legislation

The Wildlife Act 1976 and Wildlife (Amendment) Act 2023 (*Wildlife Act* 1976) is a cornerstone of Ireland's efforts to preserve its natural heritage and biodiversity and is the principal legislation in Ireland for the protection and conservation of wildlife. The Act provides for the protection of wild fauna and flora, ensuring that species are safeguarded from threats such as habitat destruction and illegal hunting. The Act lists species of fauna and flora that are protected, including all bird species, certain mammals, reptiles, amphibians, and plants. It aims to conserve a representative sample of important ecosystems, maintaining biodiversity and ecological balance.

The EU Birds Directive (Directive 2009/147/EC), originally adopted in 1979 as Directive 79/409/EEC and amended in 2009 (European Commission 2009), aims to protect all wild bird species naturally occurring in the EU by conserving their habitats and regulating activities that threaten them. It sets out provisions for the conservation and management of bird species.

In Ireland, the Directive is transposed through the European Communities (Birds and Natural Habitats) Regulations 2011 (*S.I. No. 477/2011*). These regulations consolidate previous laws and address compliance issues identified by the Court of Justice of the EU. They ensure the protection of bird habitats and the designation of SPAs as part of the Natura 2000 network.

2 Methodology

2.1 Study Area

The study area is located in the suburb of Newcastle, Co. Limerick, along the Monaleen Rd. The site is comprised of agricultural land, with an access road splitting the site into northern and southern sections. The site is in an overall urban area, with the Dublin Road forming part of the northern boundary, the Monaleen Road and housing to the east, the Castletroy Golf Course sharing a treeline to the south and some Greenland separating from housing to the west.

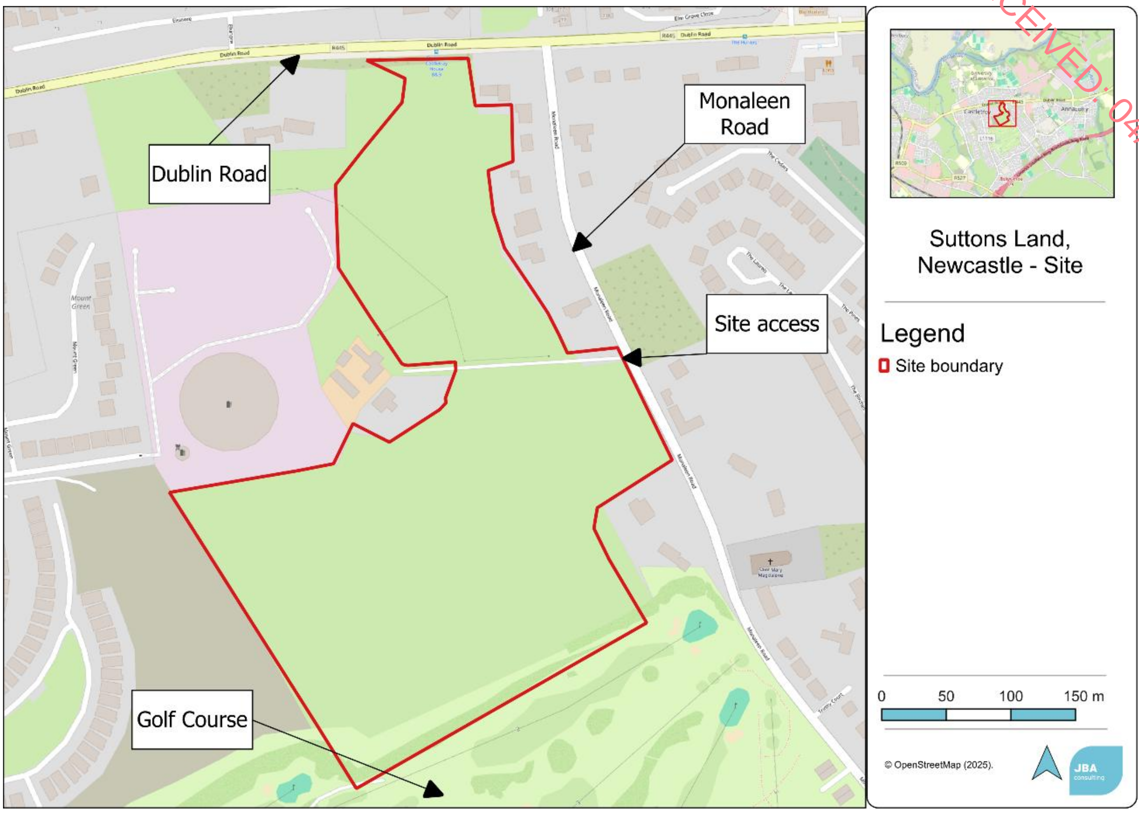

Figure 2-1: Site location map.

2.2 Wintering Bird Survey

Transect surveys across the site were carried out following a pre-defined route. This involves the surveyor continually walking and recording all contacts either side of the track walked (Bibby *et al.* 1992, 2000). These were supplemented by point counts at pre-defined positions to observe for habitat use. Three transect were carried out in order to get a broader idea of the use of the area. The transect broadly followed the perimeter of the site, stopping at each pre defined observation point (Figure 2-2)

Bird counts were carried out following the 'look-see' methods, where a trained observer surveys the whole area of a site and records of the number of birds of each species that can be seen at the same time.

The look-see method relies on a prior knowledge of habitat preferences of the birds. A desktop survey and local knowledge of the area is used to identify potentially suitable habitat for the species of interest. A programme of site visits is then arranged at the appropriate time and using appropriate methodology to count any birds present. Count effort is maintained constantly over time to avoid the introduction of bias.

The main target species include gulls, waders and waterbirds, and raptors. Garden and farmland birds were recorded to compile a list of species present in the area.

Data was recorded on field maps and digitised in the office.

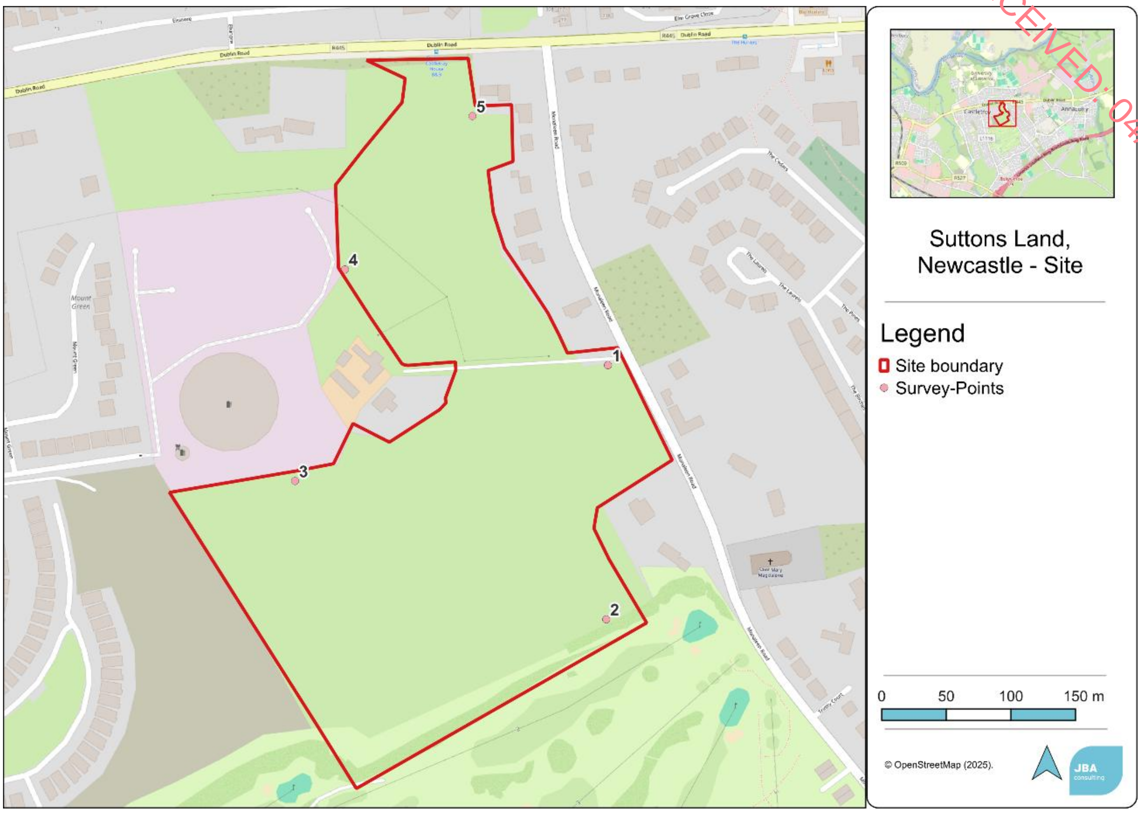

Figure 2-2: Observation points across the site.

2.3 Data Processing

For each survey, records of species, number of individual birds, behaviour, weather conditions, location and surveyor were recorded.

Total number of birds, species, and total number of birds per species were categorized.

2.4 Sampling Dates

The wintering bird surveys were undertaken on 21 January 2025, 10 February 2025, and 4 March 2025. The conditions were generally mild with temperatures ranging from 6° to 13°C, with some windy conditions (Table 2-1). Visibility was overall good allowing for surveys to go ahead.

Table 2-1: Bird survey dates and weather conditions.

Date	Weather	Surveyor
21/01/2025	6°-8°C Dry, slight easterly breeze	Mia Heigh and Dominic Tilley
10/02/2025	9°-10°C Dry and mild	Mia Heigh and Olly Lynch-Milner

Date	Weather	Surveyor
04/03/2025	10°-12°C Dry, cold breeze, sunny	Mia Heigh and Oily Lynch-Milner

2.5 Bird Categories and Nomenclature

Species names follow accepted terminology as defined by the British Ornithological Union that adopted the International Ornithological Congress (IOC) World Bird Lists taxonomy. Birds are categorised based on natural occurrence, which is to say species recorded in an apparently wild state since 1950, which occur regularly and naturally within the EU, vagrant species recorded in an apparently wild state since 1950 but do not occur regularly or predictably in the EU, species recorded in apparently wild state prior to 1950 or introduced bird species.

Species were then cross checked against the Birds of Conservation Concern Ireland, and the EU Birds Directive Annex listings.

2.6 Species Records

During surveys, bird species were identified by sight and/or by sound. All identified birds were recorded, and classified as ‘Waders’, or ‘Terrestrial’. Terrestrial birds include all passerines, corvids and non-wetland and marine bird species.

3 Results

3.1 Species Recorded

Across the three surveys carried out a total of 19 different species were recorded, including one species of wader, Snipe (Table 3-1). Woodpigeon, Robin, Blackbird and Rook were the most frequently recorded species. The most numerous species recorded were Linnet and Chaffinch, small flocks of approximately 15 birds.

Table 3.1 list date and species recorded, with Birds of Conservation Concern in Ireland (BoCCI) status, IUCN status (LC Least Concern, NT Near Threatened) and any relevant Annex listings.

No Annex I bird species were recorded using the site, and only one species is listed as Near Threatened on the IUCN Redlist. All other species are listed as Least Concern, although this is an overall assessment and there may be some localised variations.

No gulls or raptors were recorded using the site. Only diurnal surveys were carried out and therefore no Owl assessment was possible.

Five species of Amber or Red list birds (Gilbert et al., 2021) were recorded as utilising the site. These species are discussed in more detail in Section 3.2.

Table 3-1: Bird species recorded during surveys.

Date	Species	Scientific name	BoCCi(Season)	IUCN Red List	Annex Listing
21/01/2025	Snipe	*Gallinago gallinago*	Red (B/W)	LC	No
	Woodpigeon	*Columba palumbus*	Green (B)	LC	No
	Rook	*Corvus frugilegus*	Green (B)	LC	No
	Hooded Crow	*Corvus cornix*	Green (B)	LC	No
	Chaffinch	*Fringilla coelebs*	Green (B)	LC	No
	Bullfinch	*Pyrrhula pyrrhula*	Green (B)	LC	No
	Greenfinch	*Chloris chloris*	Amber (B)	LC	No
	Linnet	*Linaria cannabina*	Amber (B)	LC	No
	Goldfinch	*Carduelis carduelis*	Green (B)	LC	No
	Pied Wagtail	*Motacilla alba*	Green (B)	LC	No
	Robin	*Erithacus rubecula*	Green (B)	LC	No
	Blue Tit	*Cyanistes caeruleus*	Green (B)	LC	No
	Starling	*Sturnus vulgaris*	Amber (B)	LC	No
	Wren	*Troglodytes troglodytes*	Green (B)	LC	No
	Blackbird	*Turdus merula*	Green (B)	LC	No
10/02/2025	Woodpigeon	*Columba palumbus*	Green (B)	LC	No
	Magpie	*Pica pica*	Green (B)	LC	No
	Rook	*Corvus frugilegus*	Green (B)	LC	No
	Hooded Crow	*Corvus cornix*	Green (B)	LC	No
	Robin	*Erithacus rubecula*	Green (B)	LC	No
	Blue Tit	*Cyanistes caeruleus*	Green (B)	LC	No

Date	Species	Scientific name	BoCCi(Season)	IUCN Red List	Annex Listing
	Great Tit	*Parus major*	Green (B)	LC	No
	Song Thrush	*Turdus philomelos*	Green (B)	LC	No
	Redwing	*Turdus iliacus*	Red (W)	NT	No
	Blackbird	*Turdus merula*	Green (B)	LC	No
04/03/2025	Snipe	*Gallinago gallinago*	Red (B/W)	LC	No
	Woodpigeon	*Columba palumbus*	Green (B)	LC	No
	Rook	*Corvus frugilegus*	Green (B)	LC	No
	Robin	*Erithacus rubecula*	Green (B)	LC	No
	Great Tit	*Parus major*	Green (B)	LC	No
	Wren	*Troglodytes troglodytes*	Green (B)	LC	No
	Blackbird	*Turdus merula*	Green (B)	LC	No

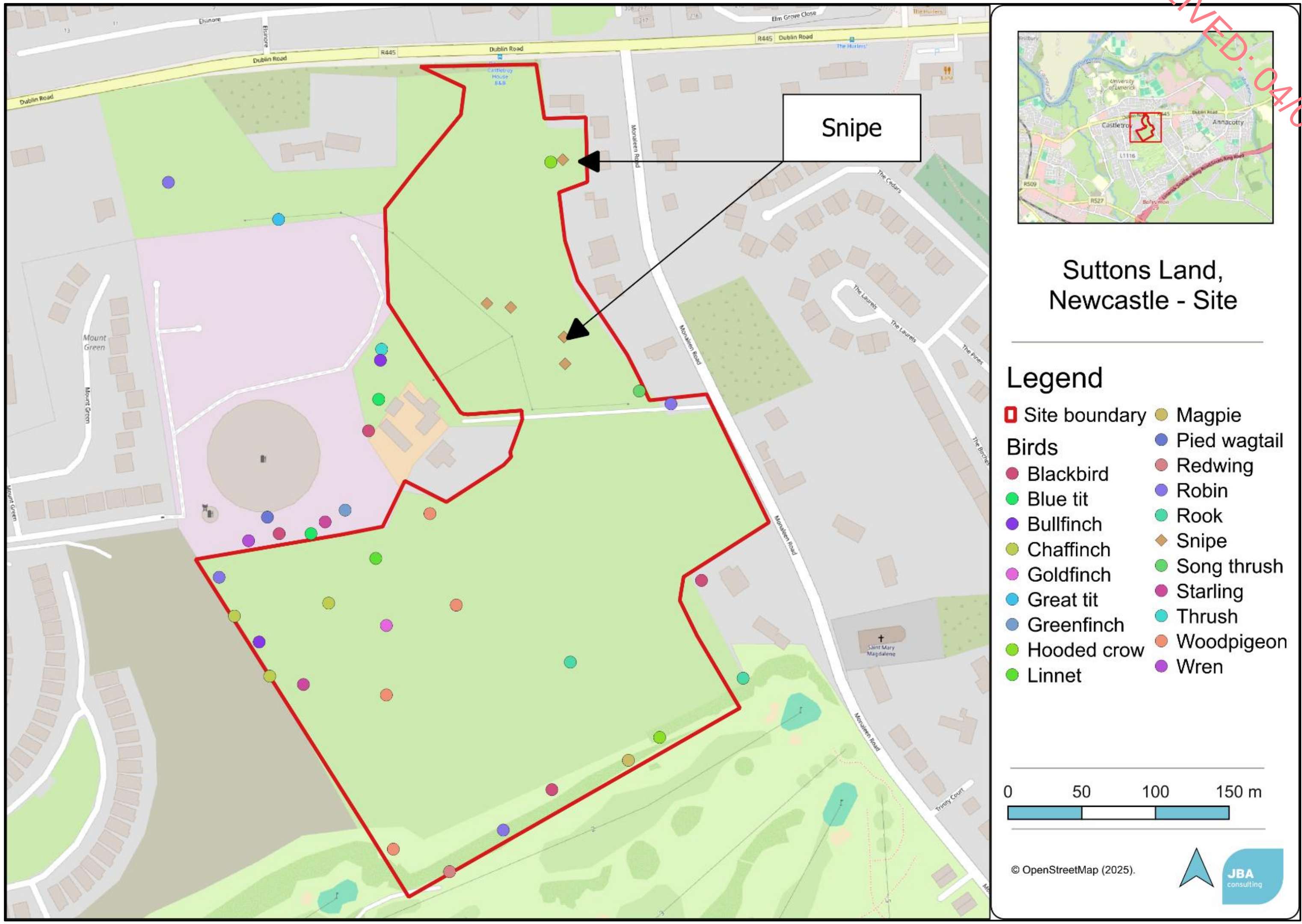

Figure 3-1: Bird distribution across the site.

3.2 Birds of Conservation Concern in Ireland

3.2.1 Snipe

Common Snipe *Gallinago gallinago,* is a small, well-camouflaged wading bird with a distinctive long, straight beak. They are found in a variety of wetland habitats. They breed in bogs, marshes, wet meadows and tundra. During the winter, they are joined by migrants from northern Europe, Iceland, and the Faroes, dispersing to lowland and upland habitats (Petersen *et al.* 2023).

They favour areas with wet, soft ground where they can easily probe for food. Snipe primarily feed on small invertebrates, including worms and insect larvae.

Snipe are a species of least concern at an European level, but are red listed in Ireland (Gilbert *et al.* 2021) due to the decline in breeding and wintering populations.

Although no threshold numbers are available for Snipe due to the difficulty of monitoring them (Burke *et al.* 2018), the low numbers of individuals recorded (3 during the same survey) suggests that this site is of low importance for wintering Snipe. The site does not support suitable habitat for breeding Snipe and therefore they are not expected to be recorded (Hoodless *et al.* 2007).

Figure 3-2: Snipe were observed only in this area of the site.

3.2.2 Starling

Starling *Sturnus vulgaris* is a medium sized passerine bird known for its iridescent plumage and distinctive vocal mimicry. They are highly social birds, often seen in large flocks, especially during the winter months. Starlings are found in a variety of habitats, including urban areas, farmlands and woodlands. They breed in cavities, such as tree holes of man-made structures, and are known for their adaptability to different environments (Cabe 2020).

During winter, starlings from northern and eastern Europe migrate to milder regions, joining resident populations. They are often observed preforming aerial displays known as murmuration, where thousands of birds move in synchrony. Starlings primarily feed on insects, fruit, and seeds, foraging on the ground or in trees.

Although Starlings are a species of least concern, they are amber-listed in Ireland due to significant declines in their breeding populations (Gilbert *et al.* 2021).

Starling murmurations often hold thousands of birds (Goodenough *et al.* 2017); the low numbers of individuals recorded on site indicates that this site is of low importance for this species.

3.2.3 Linnet

Linnet *Linaria cannabina* is a small finch with striking plumage, especially in males, which display a red breast and forehead during the breeding season. They are commonly found in open countryside, including farmland, heathland, and coastal areas. Linnets prefer habitats with plenty of shrubs and hedgerows, which provide both nesting sites and food sources.

During the breeding season, Linnets build their nests in dense bushes or hedges. They primarily feed on seed, particularly from plants like dandelions, thistles and other wildflowers or from cereal crops (Moorcroft *et al.* 2002). In winter Linnet tend to flock forming mixed species flocks (Arizaga *et al.* 2022).

Although Linnets are a species of least concern, they are amber listed in Ireland due to declines in their breeding populations and loss of habitat.

The low numbers of individuals recorded suggests that this site is of low importance for Linnet.

Figure 3-3: Linnet were observed feeding around these tall swards within the site.

3.2.4 Greenfinch

Greenfinch *Chloris chloris* is a robust finch known for its vibrant green and yellow plumage, which is especially striking in males. These birds are commonly found in gardens, parks, farmland, and woodland edges. Greenfinches are highly adaptable and can thrive in both rural and urban environments.

Greenfinches build their nests in dense shrubs and trees, often using a variety of plant material. They feed on seeds, particularly from plants like dandelions, thistles, and sunflowers. In winter, Greenfinches often form flocks, sometimes mixing with other finch species, to forage for food (Siriwardena *et al.* 2007).

Greenfinches are a species of least concern, but they are amber-listed in Ireland due to declines in their populations, partly due to disease outbreaks such as trichomonosis (Lawson *et al.* 2012).

3.2.5 Redwing

Redwing *Turdus iliacus* is a small thrush known for its distinctive red flanks and creamy eyebrow stripe. These birds are winter visitors to Ireland, arriving from Iceland, Scandinavia, and Russia. Redwing are often found in open countryside, woodlands, and gardens, where they forage for food.

During the winter months, Redwing form flocks, sometimes mixing with other thrush species such as Fieldfare and Blackbird. Their diet consists of berries, fruit and invertebrates. Hedgerows and berry-laden shrubs are particularly important for their winter diet (Debussche and Isenmann 1985).

Redwing are a species of least concern, but they are red-listed in Ireland due to significant declines in their wintering populations.

Figure 3-4: High amount of localised activity by birds across this treeline - outside of site boundary.

4 Discussion

4.1 Results Discussion

The wintering bird surveys conducted at the Newcastle, Co. Limerick site recorded a total of 19 distinct bird species across three visits. The majority of the species observed were typical farmland and garden birds, many of which are classified as green under Birds of Conservation Concern in Ireland. The frequent presence of species such as Woodpigeon, Blackbird, and Robin reflects the usual avifauna associated with semi-rural and suburban habitats in Ireland.

While five species of conservation concern were documented during the surveys, including two red-listed species, Snipe and Redwing, and three amber-listed species Starling, Linnet, and Greenfinch, the recorded number of individual birds was not considered to be significant in relation to the overall populations of these species both within Ireland and internationally. Snipe, the only wader species recorded, was noted in low numbers, with a single individual recorded on the first visit and three individuals recorded on the third visit. This suggests that the site does not provide critical foraging or roosting habitat for this species but may be used opportunistically.

Similarly, Redwing, a winter visitor from northern Europe, was recorded in small numbers, indicating its use of the site for occasional foraging rather than as a principal wintering ground. Flock sizes observed were consistent with those typically found in fragmented or low-quality habitats (Chen and Wang 2024). Linnet, an amber-listed finch species, were noted in small flocks, with approximately 15 individuals counted during the surveys. Although these species are of conservation concern, the numbers recorded are not considered to represent regionally or nationally significant populations.

Starling, another amber-listed species, was observed during the surveys in small numbers and did not exhibit any notable roosting or foraging behaviour that would suggest the site is particularly important for this species.

4.2 Result Significance

While the surveyed bird species are recognised as being of conservation concern, the actual number of individuals recorded during the surveys is relatively low. This low count suggests that the surveyed site does not play a critical role in supporting large or significant populations of these species within Ireland and on an international level.

In Ireland, bird populations are monitored through various surveys and indices, such as the Countryside Bird Survey (CBS) and the Common Bird Index (CBI) (BirdWatch Ireland 2025). These surveys track population trends and provide insights into the health and status of bird species across different habitats. When a site records only a few individuals of species that are of conservation concern, it indicates that the site may not be a key habitat for these birds. Instead, these birds might be using the site opportunistically or temporarily, rather than relying on it as a primary habitat for breeding, foraging, or roosting (Lewis *et al.* 2019).

For conservation efforts, areas that support larger, stable populations of birds of conservation concern are prioritized. These areas are more likely to contribute to the long-term survival and recovery of these species. Conversely, sites with low numbers of these birds are considered less critical for immediate conservation actions, as they do not significantly impact the overall population trends of the species.

4.3 Summary

While the presence of red and amber-listed species underscores the site's potential role as supplementary habitat for certain birds, the relatively low numbers observed, and the lack of significant activity indicate that the site does not constitute a critical wintering area for these species. The site primarily supports common terrestrial bird species associated with agricultural and suburban landscapes, with only limited use by species of conservation concern.

Any future development proposals for the site should consider the presence of birds of conservation concern and aim to retain or enhance existing features such as hedgerows and treelines, which provide valuable foraging and roosting habitats for a range of species. Additionally, careful landscaping and landscape management should prioritize the use of native plant species, which provide essential resources for wildlife. Managing these areas to support biodiversity, such as maintaining varied vegetation structures and ensuring continuous food supply, will help create a thriving habitat for birds and other wildlife.

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APPENDIX 15
GEOPHYSICAL SURVEY & TEST TRENCHING

Geophysical Survey Report
Newcastle, Limerick, Co. Limerick

License No.: 25R0200
RMP/SMR: N/A

ITM (centroid): 562000, 657250

Ger Dowling, PhD MIAI
July 2025

Summary

This report details the results of an archaeo-geophysical survey (Licence No.: 25R0200) of lands at Newcastle townland, Limerick, Co. Limerick. The investigation was conducted as part of a pre-planning archaeological assessment.

The investigation, comprising high resolution magnetometry (fluxgate gradiometer) survey, was implemented over an area of approximately 9.5 hectares. Several anomalies of archaeological potential were recorded by the survey, including what may be a series of curving ditches and small enclosures. However, an archaeological interpretation for these anomalies is tentative. Evidence for possible former land division and field drainage was also recorded, in addition to buried pipes for modern services.

Survey details

Site Name: Newcastle
Townland: Newcastle
County: Limerick

Parish: Kilmurry
Barony: Clanwilliam

RMP/SMR No.: N/A
ITM (centroid): 562000, 657250

Land use: Pasture
Geology: Basalt, trachyte, syenite and tuff
Soils: Coarse loamy drift with siliceous stones (Cooga Series)

Detection License No.: 25R0200
Planning Reference No.: N/A

Survey Type & Instrument: Fluxgate Gradiometer – Five-channel magnetometer
Sample/Transverse Interval: 0.10m/0.50m

Area Surveyed: *c.*9.5 ha
Survey Date: 28 June 2025

License Holder: Ger Dowling
Report Author: Ger Dowling
Report Date: 01 July 2025

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Abbreviations

GPS	Global Positioning System
ITM	Irish Transverse Mercator
LI	Limerick
nT	nanoTesla (unit of magnetic measurement)
OS	Ordnance Survey
QGIS	Quantum Geographical Information Systems
SMR	Sites and Monument Record
RMP	Record of Monument and Places

Coordinate System

All GPS coordinates given in this report are in Irish Transverse Mercator (ITM)

1 Introduction

This report details the results of archaeo-geophysical survey (Licence No.: 25R0200) of lands at Newcastle townland, Limerick, Co. Limerick. The survey, comprising high resolution magnetometry (fluxgate gradiometer) survey, was implemented over an area of approximately 9.5 hectares. The survey was carried out as part of a pre-planning archaeological assessment.

The site has not previously been subjected to geophysical survey and the investigation sought to identify and map any subsurface archaeology that may be present.

2 Site Location

The survey is located in the townland of Newcastle, Co. Limerick (Figure 1). The site, which lies on the eastern side of Limerick city, is in the Civil Parish of Kilmurry and the Barony of Clanwilliam.[1]

[1] An Caisleán Nua/Newcastle | logainm.ie: accessed on 29 April 2025.

3 Survey Background

The investigation was undertaken as part of a pre-planning archaeological assessment.

4 Archaeological Background

4.1 Recorded/Known Archaeology

There are no recorded archaeological monuments in the survey area (Figure 2). The nearest recorded monument is Kilmurry church (LI005-026001) and graveyard (LI005-026002) about 300m to the east.[2] The remains of a fortified house (LI005-025) and bawn (LI005-025001) also lie some 600m to the west.[3]

The target lands are shown as farmland on historic mapping (Figures 3 & 4). The first-edition six-inch Ordnance Survey Map (surveyed 1840–41; published 1844) show part of former Newcastle racecourse extending across the southern section of the target lands. The racetrack appears to have been removed by the time the first-edition 25-inch Ordnance Survey Map (1888–1913) was compiled and it displays no visible surface trace today.

4.2 Previous Investigations

No recorded archaeological investigations have previously been conducted at the survey area.[4]

[2] Historic Environment Viewer (arcgis.com): accessed on 29 April 2025.
[3] Ibid.
[4] https://excavations.ie/: accessed on 29 April 2025.

5 Survey Location and Aims

The investigation, comprising high resolution magnetometry, focused two neighbouring fields of pasture that encompass a combined area of approximately 9.5 ha (Plates 1 & 2; Figure 5).

The survey area is located directly east and south of the Newcastle reservoir, which occupies the summit of a low rise, defined on all side by gently sloping terrain (Pl. 3). Immediately east of the reservoir is a derelict farm complex, which is accessed by a paved laneway that bisects the survey area north to south. The northern part of the target land is traversed by several overhead electricity cables, while a number of small, overgrown areas in the southern field appear to contain connectors, etc., for water pipes and other buried services.

Bounding the site on the north and west are residential houses, with Castletroy Golf club to the south. The Dublin Road (R445) and the Monaleen Road flank the site on the north and south. The wider landscape is predominantly urban in character, comprising the northeast suburbs of Limerick city.

The underlying bedrock of the locality comprises an intrusive band of igneous geology (basalt, trachyte, syenite and tuff) with surrounding undifferentiated (Visean) limestones.[5] The local soils are dominated by coarse loamy drift with siliceous stones (Cooga Series).[6]

The geophysical investigation aimed to:

- identify any geophysical anomalies of potential archaeological origin within the specified survey area
- accurately locate these anomalies and present the findings in map form
- describe the anomalies and discuss their likely provenance in a written report
- incorporate the above in a report to the Client

[5] Geological Survey of Ireland Spatial Resources, Public Data Viewer Series: https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228 [accessed on 29 April 2025].

[6] Irish National Soils Map, 1:250,000k, V1b (2014): http://gis.teagasc.ie/soils/map.php [accessed on 29 April 2025].

6 Survey Methodology and Instrumentation

The survey involved high-resolution magnetic gradiometry survey (Table 1). This technique measures changes in the magnetic properties of the soil and is widely used in modern investigations due to its ability to detect a broad range of sub-surface archaeological remains, including ditches and pits, and industrial features associated with metalworking and pottery production.

The magnetic survey was conducted using a seven-channel fluxgate gradiometer system, combining a Sensys MAGNETO MXPDA and Sensys FGM650 probes, with cm-precision GPS (Trimble R12 antenna and TSC5 controller) georeferenced to Irish Transverse Mercator and Ordnance Datum. Mounted on a cart, the system records magnetometer and GPS data simultaneously into a single data file. The data capture strategy involved logging readings every 0.10m intervals along transects spaced 0.5m apart, with a maximum traverse width of 3.5m. The sampling strategy produces a high-resolution dataset, giving clarity to any archaeological features detected.

The highly accurate positioning of the survey data provides strong confidence when integrating the geophysical results with other datasets such as aerial imagery in GIS, and also ensures repeatability should further investigation of anomalies (e.g., test excavation) be required.

Table 2. Geophysical survey details

Technique	Instrumentation	Sensor spacing	Sample rate	Survey Area	Number of recorded data
Magnetic Gradiometry	Seven-channel fluxgate gradiometer array	0.5m	100 Hz	*c*.9.5 ha	2,096,531

7 Data Management, Processing and Interpretation

Gradiometry data was logged to a laptop computer and archived daily to an external hard drive. The collated data was processed using the following methodology:

- Real-time positioning of magnetometer data based on GPS measurements;
- Track correction (compensation) of collated magnetometer data; and
- Export of georeferenced greyscale images at optimum visual range

The processed data was imported into QGIS for final image production (Figures 6–8). Final geophysical datasets have been formatted as raster data models/GeoTiffs (projected to ITM, EPSG:2157) to enable subsequent geospatial analysis. Fieldwork, data processing and reporting adhered to the most up-to-date guidelines for conducting archaeo-geophysical surveys.[7] All geophysical raster datasets will be digitally archived to best practice.[8]

[7] Schmidt A., Linford P., Linford N., David, A., Gaffney C., Sarris A., and Fassbinder J. 2016. *EAC Guidelines for the Use of Geophysics in Archaeology*: *Questions to Ask and Points to Consider*. EAC Guidelines 2. [Online] Available from:
https://f64366e3-8f7d-4b63-9edf5000e2bef85b.filesusr.com/ugd/881a59_fdb1636e95f64813a65178895aea87cf.pdf

[8] Niven, K. 2012. *Raster Images: A Guide to Good Practice*. Archaeology Data Service/Digital Antiquity, Guides to Good Practice. [Online] Available from: http://guides.archaeologydataservice.ac.uk/g2gp/RasterImg_Toc; & Schmidt, A. and Ernenwein, E. 2012. *Guide to Good Practice: Geophysical Data in Archaeology*. Oxford: Oxbow.

8 General Considerations and Complicating Factors

8.1 Access and Ground Conditions

The survey area comprises two larges tract of gentle undulating pasture, separated by a modern laneway. Several small overgrown areas in the southern field and electricity posts in the northern field could not be surveyed. There were no other obstacles to the investigation.

8.2 Modern Interference

Multiple small-scale, 'ferrous-type', dipolar (positive–negative) responses are evident in the results from the gradiometry survey. These are a common occurrence in magnetic data and in most cases represent modern metal debris and other magnetised material (e.g., fired brick) within the topsoil. It ought to be noted, however, that given the presence of igneous bedrock (see Section 8.5 below), many of the 'ferrous-type' (and possibly 'pit-type') responses recorded by the investigation may represent naturally occurring volcanic stones/pebbles in the topsoils.

Areas of ferrous disturbance deriving from survey in the area of buried services and in proximity to field fences were recorded by the investigation.

8.3 Former Land Use

Several possible former land divisions were mapped by the survey; these are not recorded on historic mapping and the possibility that they represent field drains and/or buried services cannot be dismissed on present evidence. A series of possible field drains were also mapped in the northern field, near to the derelict farm complex.

8.4 Area of Increased Response

A broad, amorphous area of increased response registered by the survey in the northwest corner of the southern field, next to the reservoir, likely reflects the presence of imported modern material/dumping and/or ground disturbance. This may be associated with the construction/maintenance of the reservoir.

8.5 Geology

The effects of volcanic (basalt) geology registered very clearly in the survey results. This has given rise to large-scale, high intensity, bipolar magnetic responses and multiple 'pit-type' and other discrete anomalies that become more pronounced as the terrain rises to the west. These igneous responses can have the effect of 'masking' or 'hiding' any weaker anomalies of archaeological potential that may be present.

9 Survey Results

Table 3. Area 1: survey results

Area	Newcastle		
ITM (centroid)	562000, 657250		
Area surveyed	*c*.9.5 ha		
Figure Numbers	6–8		
Anomaly number	***Form/nature of anomaly***	***Possible sources(s) of anomaly***	***Interpretative discussion***
1	Strongly enhanced, discontinuous, arcuate positive band	Possible archaeology/ natural	Possible curving 'ditch-type' feature (length of chord *c*.95m N–S). May extend beyond the survey area to the S. Interpretation as archaeology is highly tentative. Anomaly may instead reflect a naturally-occurring igneous seam. Lies about 20m E of [2] at nearest point.
2	Enhanced, diffuse curving positive band	Possible archaeology/ natural	Possible curving 'ditch-type' feature (length of chord *c*.35m N–S). located about 20m W of [1]. Interpretation of [2] as archaeology is speculative, as anomaly may also represent a band of igneous bedrock. ***Marked as a positive trend on Figure 7***
3	Slender, curvilinear positive anomaly	Possible archaeology/ natural	Possible small, oval enclosure (approximately 13m N–S by 10m E–W), seemingly represented by slender, 'ditch-type' anomaly. Appears to connect to a second, curving 'ditch-type' response on N. Tentative interpretation. Natural (i.e., geological) origin also possible.
4	Cluster of strongly enhanced discontinuous, arcuate anomalies	Possible archaeology/ natural	Possible footprint of two, possibly three, circular enclosures, each measuring about 25m in diameter. Several fainter anomalies (marked as trends on Figure 7) may represent associated features, though this is speculative. Magnetic signature is diffuse and possibility that anomalies collectively reflect underlying igneous bedrock cannot be dismissed.
	Several 'pit-type' responses	Possible archaeology/ modern/natural	Possible isolated pits/deposits. Some may contain burnt/fired material in their fill. Archaeological interpretation is tentative. Responses may have a modern (i.e., ferrous/agricultural) origin and/or reflect 'noise' from natural soil variation or igneous

			geology.
	Several, diffuse, positive and negative linears	Possible agricultural/ modern/natural	Possible relict field boundaries and/or field drains/pipes (services). Natural (i.e., geological) origin also possible. Not depicted on historic mapping.
	Multiple, overlapping, narrow negative linears	Possible agricultural	Possible field drains.
	Positive tends	Possible archaeology/ agricultural/natural	Possible ditches/drains.
	Negative trend	Possible archaeology/ agricultural	Possible 'ditch-type' feature mapped in SW corner of southern field.
	Multiple 'ferrous-type' responses	Modern	Ferrous debris and other weakly magnetised material. Some responses likely represent naturally occurring volcanic stones/pebbles.
	Area of increased response	Modern	Likely represents imported material/dumping and/or ground disturbance.
	Multiple, high-intensity linears	Modern	Buried pipes for services (water, etc.). Some associated with the reservoir.
	Amorphous areas of high intensity (bipolar) responses and multiple 'pit-type' anomalies	Natural	Igneous bedrock.
	Areas of magnetic disturbance	Modern	Disturbance from modern pipes and adjacent field fences.

10 Conclusion

Near-surface igneous geology and the presence of multiple buried modern pipes and modern ground disturbance/s have impacted the geophysical survey results from Newcastle. Nevertheless, the investigation has mapped a number of anomalies of potential archaeological interest, though their interpretation as archaeology is highly cautious given the background geology. Two, seemingly curving anomalies [1 & 2] identified in the southern field may represent 'ditch' features, but they could equally reflect layers or seams of igneous rock. A natural (i.e., geological) origin for the other possible curving and 'enclosure-type' anomalies [3 & 4] mapped by investigation in the same field is also possible, though an archaeological origin for some or all of these anomalies cannot be ruled out on present evidence. A number of 'pit-type' responses mapped by the survey may represent small pits/deposits of archaeological potential; this too is uncertain, however, and the recorded anomalies could, for instance, relate to modern, agricultural, activity and/or reflect natural soil variation/geology.

Evidence for past agriculture was detected and includes several possible former field boundaries and a series of possible field drains. Modern activity is widespread and comprises multiple buried pipe for services, alongside an area of probable disturbed ground near the reservoir.

10.1 *Statement of Indemnity*

The geophysical properties of sub-surface features must contrast sufficiently with the surrounding soils/background variation to enable them to be detected and mapped using geophysical methods. As such, the clarity and definition of buried features can vary considerably, with some having well-defined signatures while others are only barely visible, or not discernible, in geophysical imagery. A lack of geophysical anomalies cannot be taken to imply the absence of archaeological features.

The interpretations presented here are invariably provisional and further work (e.g., test trenching) is required to fully assess the nature and archaeological potential of the anomalies identified by the present investigation.

11 Figures

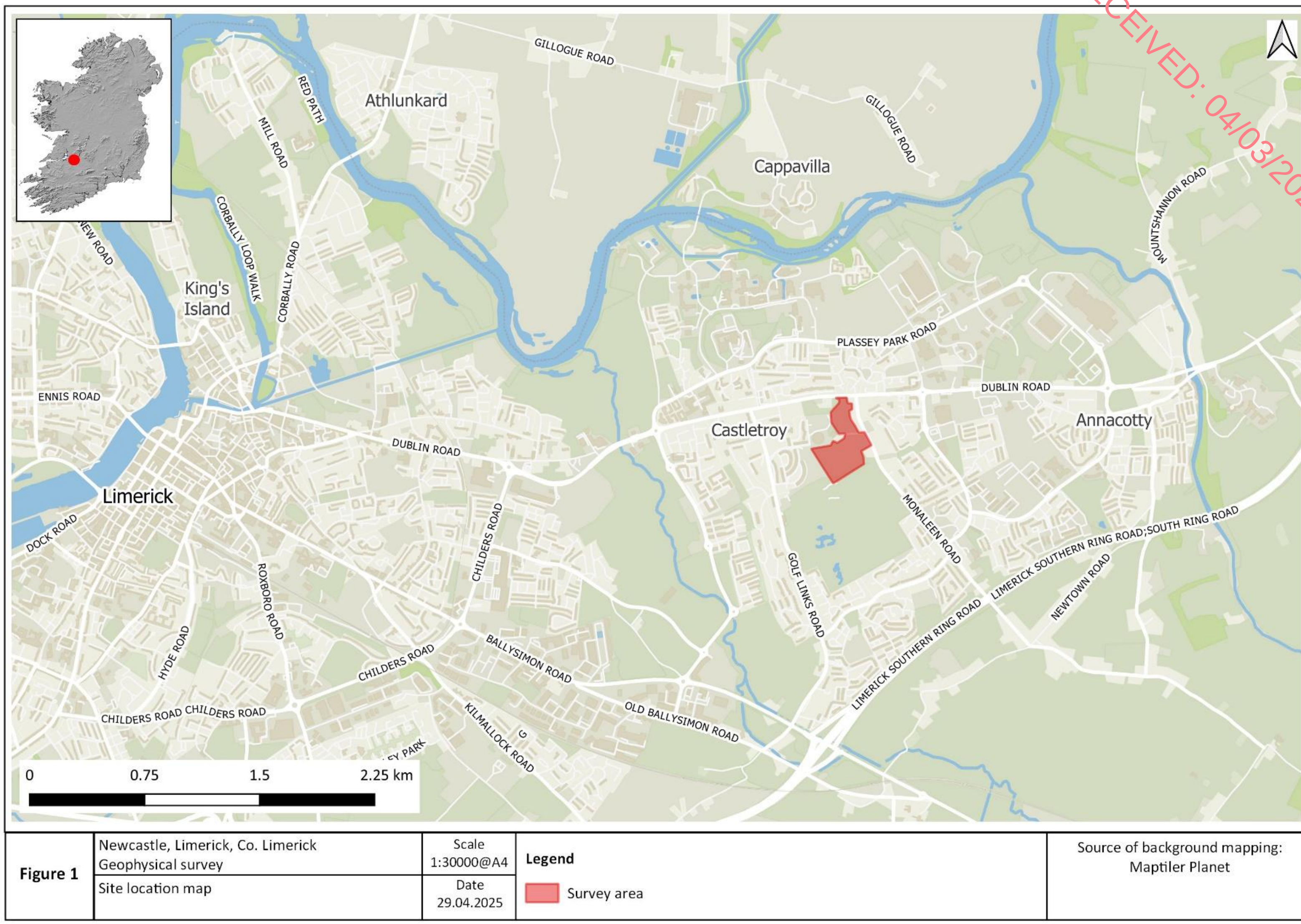

Figure 1. Site location map, showing survey area highlighted in red.

Figure 2	Newcastle, Limerick, Co. Limerick Geophysical survey	Scale 1:6000@A4	**Legend**	Source of background mapping: Google Satellite, June 2024 (Image © 2025 Maxar Technologies)
	Recorded archaeological sites in the vicinity of the survey area	Date 29.04.2025	Survey area · Recorded monument · SMR zone	

Figure 2. Location of recorded archaeological sites in the vicinity of the survey area.

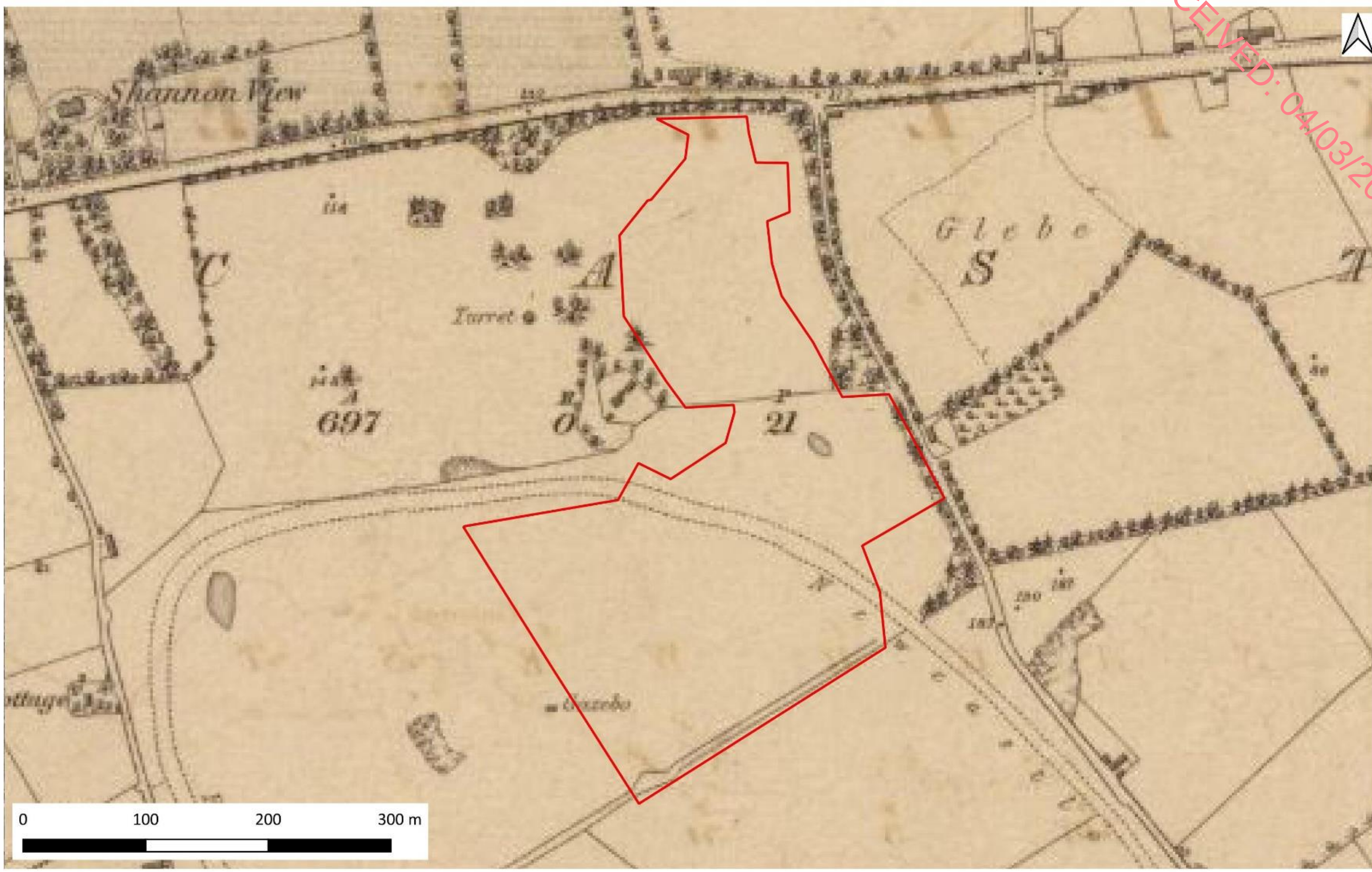

Figure 3	Newcastle, Limerick, Co. Limerick Geophysical survey	Scale 1:4000@A4	**Legend** Survey area	Source of background mapping: National Library of Scotland (https://maps.nls.uk/)
	Survey area overlaid on the first-edition six-inch OS Map (surveyed 1840–41; published 1844)	Date 29.04.2025		

Figure 3. The survey area overlaid on the first-edition six-inch Ordnance Survey Map (surveyed 1840–41; published 1844).

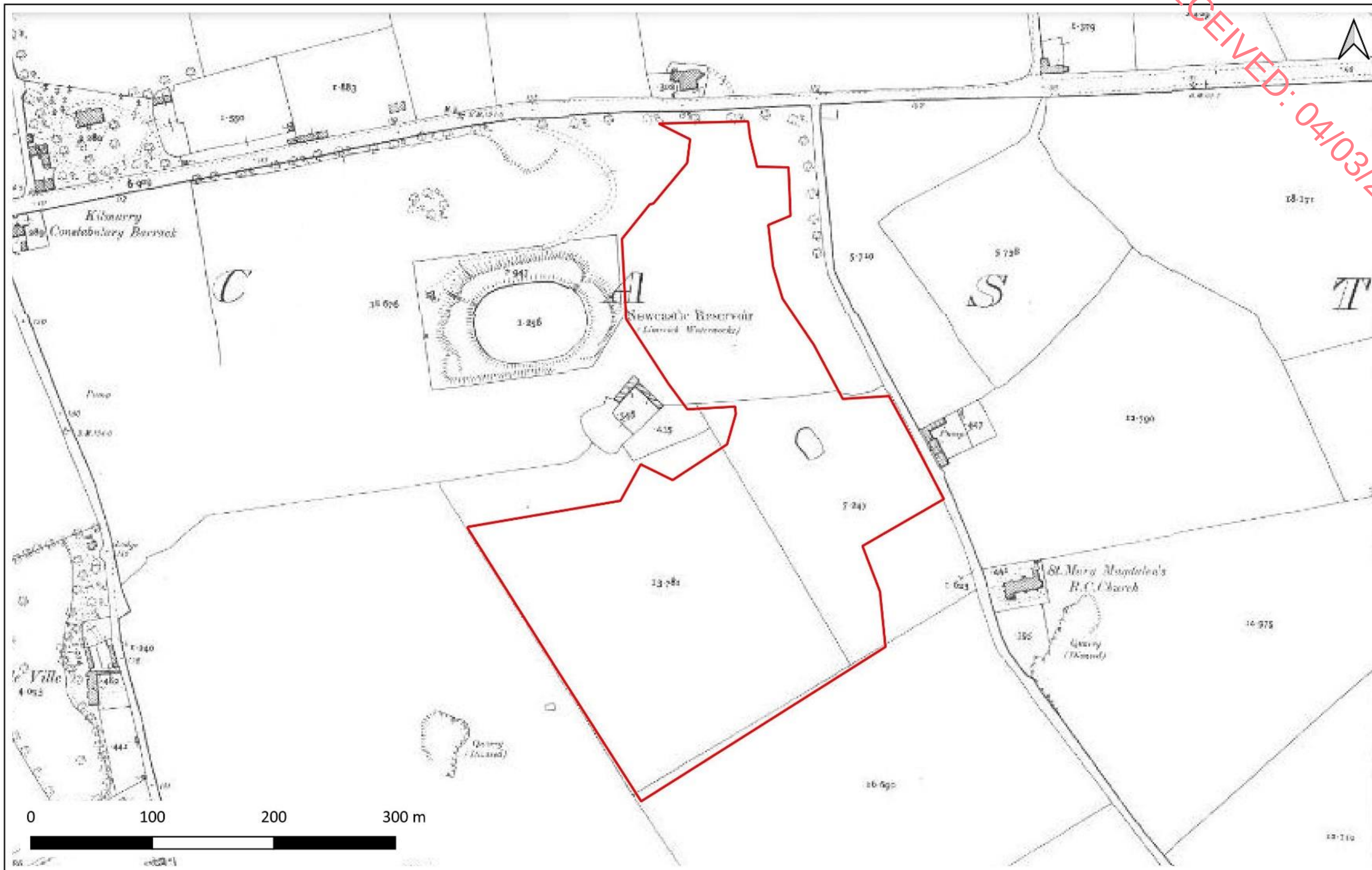

Figure 4	Newcastle, Limerick, Co. Limerick Geophysical survey	Scale 1:4000@A4	**Legend** Survey area	Source of background mapping: Archaeological Survey of Ireland (https://heritagedata.maps.arcgis.com)
	Survey area overlaid on the first-edition 25-inch OS Map (1888–1913)	Date 29.04.2025		

Figure 4. The survey area overlaid on the first-edition 25-inch Ordnance Survey Map (1888–1913).

Figure 4	Newcastle, Limerick, Co. Limerick Geophysical survey	Scale 1:4000@A4	**Legend**	Source of background mapping: Google Satellite, June 2024 (Image © 2025 Maxar Technologies)
	Survey area	Date 29.04.2025	Survey area	

Figure 5. Survey area.

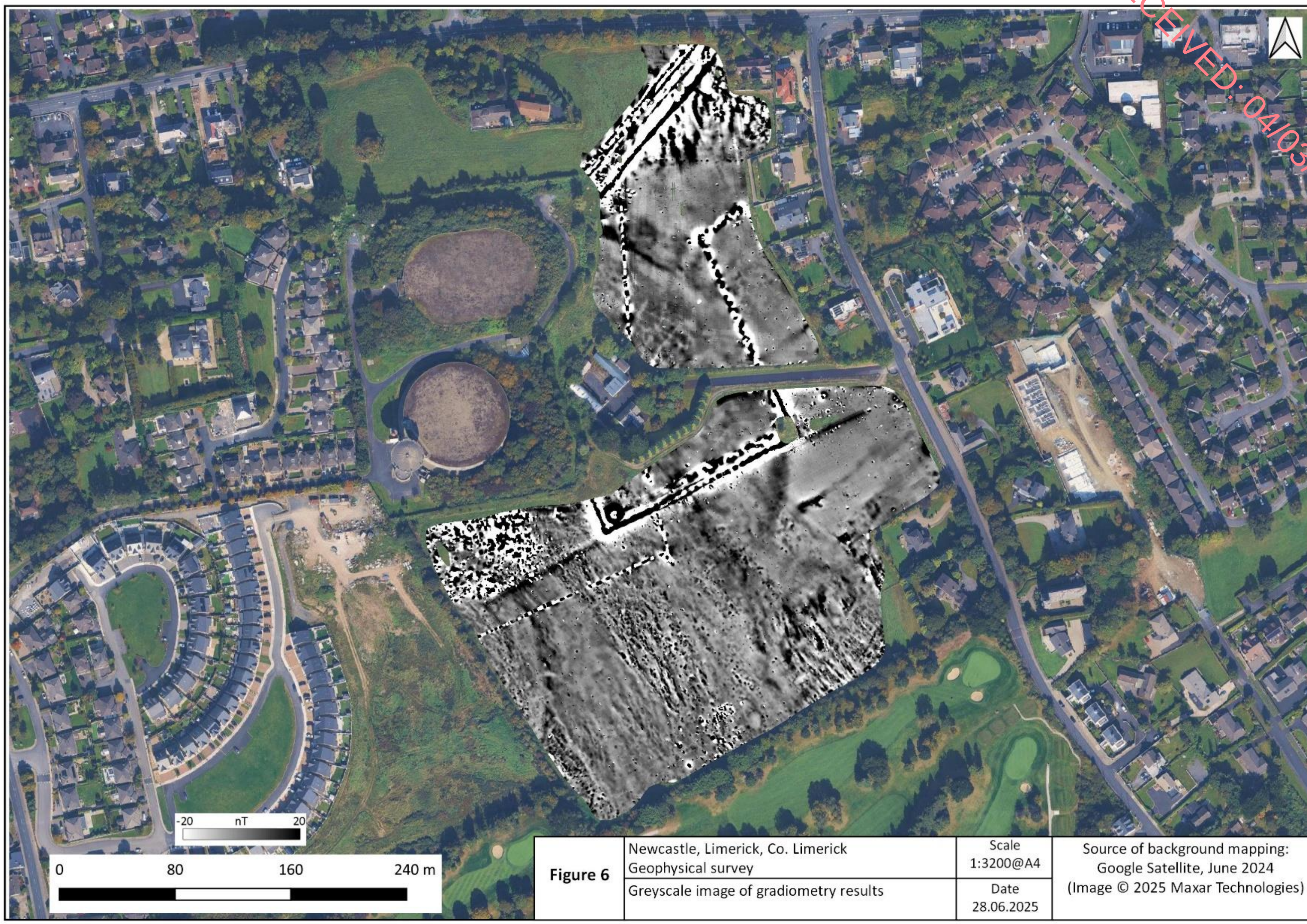

Figure 6. Greyscale image of gradiometry results.

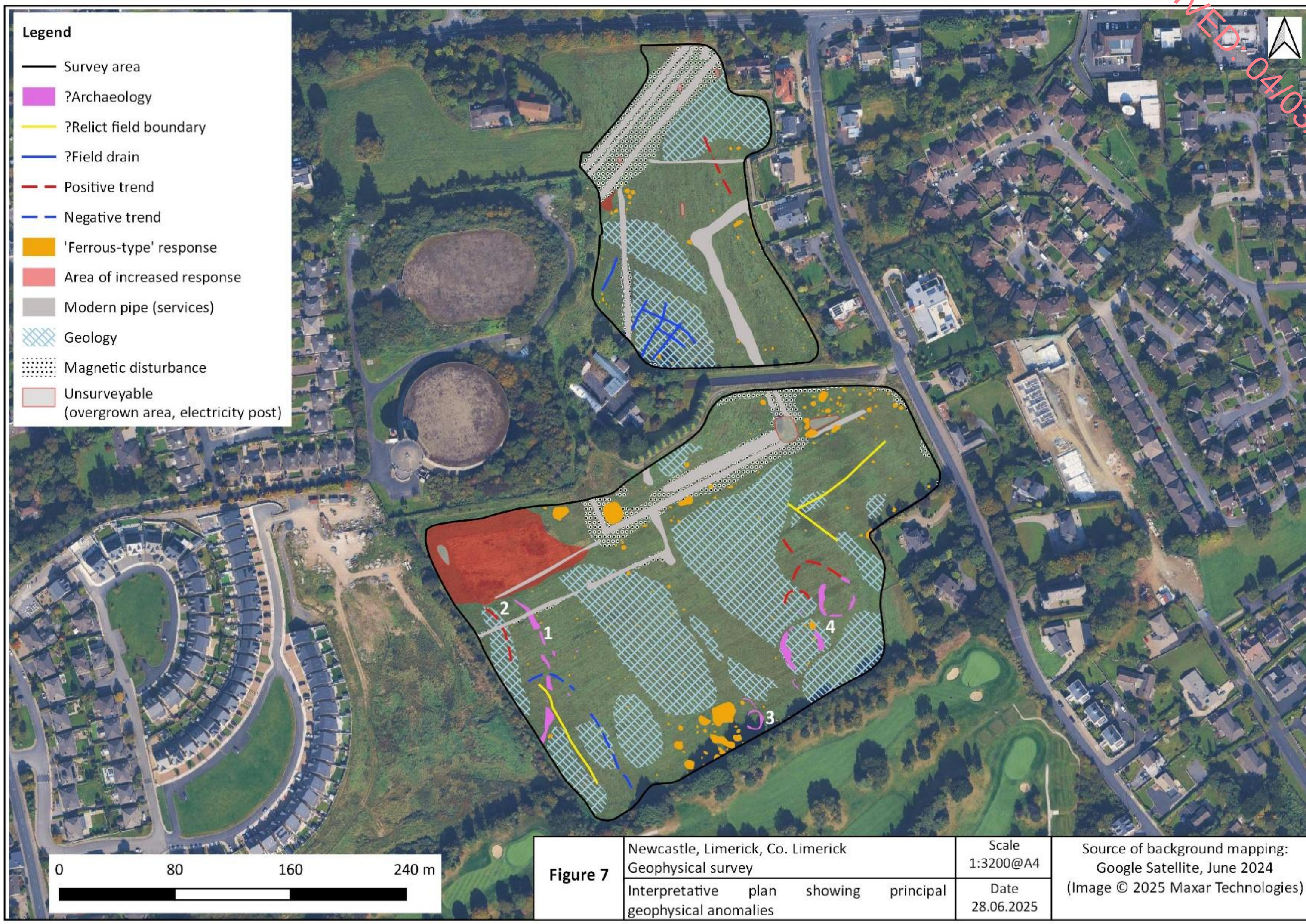

Figure 7. Interpretative plan showing principal geophysical anomalies.

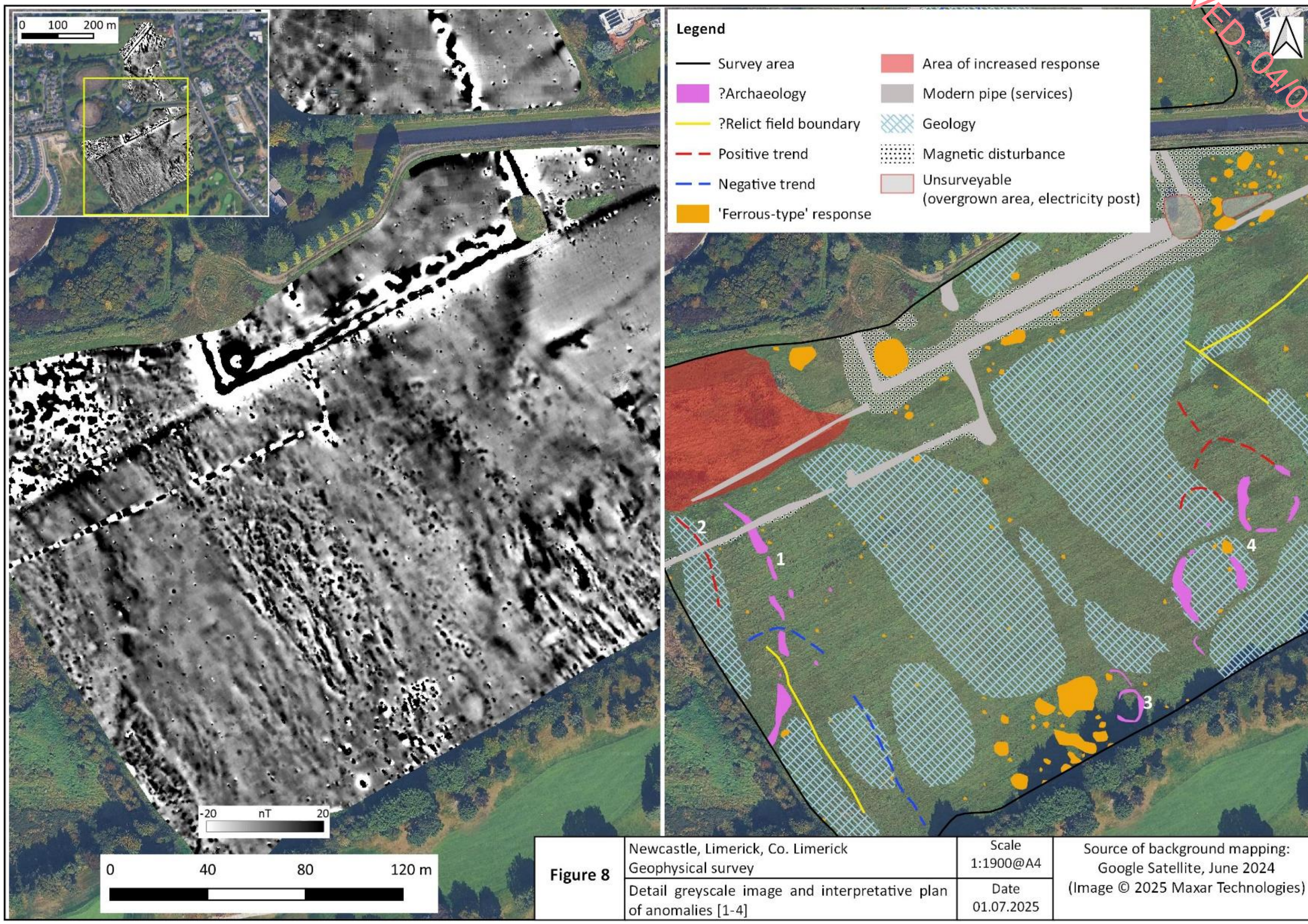

Figure 8. Detail greyscale image and interpretative of anomalies [1-4].

12 Plates

Plate 1. Southern field, looking southwest.

Plate 2. Northern field, viewed from the south.

Plate 3. Newcastle water reservoir, looking north from the southern field of the survey area.

Archaeological impact assessment and test trenching at Newcastle townland, Castletroy, Limerick

Excavation Licence No.: 25E0954

Report Status: Final

Rose M. Cleary
Burncourt,
Cahir,
Co. Tipperary

Planning Authority: Limerick City and County Council

Planning Ref: Pre-Planning Limerick City and County Council

Developer: Columbia Estates Management (IE) Ltd.,

6, Hartstonge St.

Limerick City

Proposed Development type: Residential

Table of Contents

1. Introduction

This report presents the results of test trenching on a proposed residential development in Newcastle townland, Castletroy, Limerick. The work was commissioned by the developers, Columbia Estates Management (IE) Ltd. as part of an Environmental Impact Assessment Report (EIAR) scheduled for submission to Limerick City and County Council with a planning application for a large-scale housing development. The site is located on the east side of Limerick City in the suburb of Castletroy (Figs 1–3).

The proposed development comprises *c.* 500 residential units including ancillary works within a *c.* 12 hectare site (Fig. 4). The development will be on a phased basis with six discrete stages, each subject to separate planning applications.

There are no recorded archaeological sites within the landbank. Archaeological sites within the hinterland of the development include a castle (LI005-025), the site of a medieval church (LI005-026-001) and graveyard (LI005-026-001) in Kilmurry townland and the site of a Fulacht Fia (LI 006-088) to the east and in Newcastle townland. A ringfort (LI005-035) is recorded to the south-west in Kilbane townland. There are four Protected Structures close to the development landbank and six within the wider catchment area.

2. The Receiving Environment

The development is within the suburb of Castletroy, Limerick City and the built environment is largely housing estates, shopping centres, schools, hotel, leisure and sports facilities and restaurants/public houses (Figs 1–3). Castletroy Golf Course is immediately to the south and the site is bounded on the on the north side by the Dublin Rd. (R445). Ribbon development housing separates the site from the Monaleen Road on the east side and there are housing estates further east. Both the Dublin Road and Monaleen Road were in place in the mid-nineteenth century and are recorded by on First (*c.* 1839) and Second (*c.* 1904) Editions Ordnance Survey maps (Figs 4–5). A racecourse was recorded on the First Edition Ordnance Survey map traversing the development site from the south-east to the north-west and was removed by the time the Second Edition Ordnance Survey was undertaken.

A farm house and yard are located on the west (Fig. 7). A tarred access road leads to the farm house from the Monaleen Rd and is on the line of the access road shown on the First and Second editions of the Ordnance Survey maps. The house is recorded as ‘Chapel View’ on the Third Edition Ordnance Survey map (Fig. 8), presumably as the line of sight to the south-east is to the Church of St. Mary Magdelen. The present house appears relatively modern and may be a replacement of the original farmhouse or upgraded. The farm buildings include a hay barn and outbuildings. Newcastle Reservoir (Fig. 9) is situated on the crest of the slope on the west side of the site and housing is located west of the reservoir. The reservoir is enclosed on the east side by a high metal fence and scrub vegetation is visible inside the fence.

The development site slopes downwards to the north and east and the terrain in the central section and south-east is relatively level. Vegetation cover is largely low grass (Figs 10–17).

The development is *c.* 1km south of the River Shannon and east of the Groody River valley. The sub-surface geology is basalt. The soils immediate to the development are derived from fluvio-glacial drift predominately of sandstone origin with some shale and limestone (Finch and Ryan 1966).

The hinterland of the development area was originally a rural landscape and settlement nuclei such as Monaleen, Newcastle and Annacotty which have developed into a conurbation The Old Dublin Road (R445) to the north of the development led from Limerick City towards Annacotty to the east of the development; the M7 to the south of the development is a recent construct. New local road networks have been developed since the area was first mapped for the First Edition (1839) Ordnance Survey map (Fig. 5). The landscape was also largely rural when the Second Edition Ordnance Survey was compiled in *c.* 1904 (Fig. 6). A field recorded in 1839 east of the development (Fig. 5) as ‘Glebe’ was probably part of land attached to the medieval parish church of Kilmurry (RMP LI005-026-001) to the north-east. A Jewish cemetery now occupies this field (Fig. 8). The cemetery was purchased by the Lithuanian Jewish community in Limerick in 1902 and contains twelve headstones of which six are upstanding (Source: Limerick Life Archive).

4. Development Proposal

The current project is part of a large residential development scheduled in six phases (see Fig. 4). Ancillary site development works include access roads, footpaths, vehicle parking, landscaping, boundary treatments and site development works above and below ground. This will involve ground reduction and alteration to the existing ground levels.

5. Archaeological and Historical Background

There are five known archaeological sites within 1km of the development (Fig. 18). The closest site is the thirteenth century parish church of Kilmurry (LI005-026-001) which is *c.* 0.5km to the north-east. The church was dedicated to St. Mary Magdelen (Westropp 1904–05). The adjacent graveyard (LI005-026-002) was probably contemporary with the original church but continued in use until the twentieth century. The present Church of Ireland in Newcastle townland was built around 1810 on the site of the medieval parish church.

The castle (LI005-025) from which the townland (Newcastle; *Caisléan Nua*) takes its' name is located *c.* 0.7km to the west of the development and is classified as a fortified house. The castle was a Bourke castle in the late sixteenth century and passed to the Roches in the seventeenth century (Westropp 1906–07). The castle is a five-storey tower house which now stands to a height of 15m apart from the west wall which has fallen and was surrounded by a bawn wall. A ringfort (LI 005-035) was recorded on the Third Edition (1938) Ordnance Survey map as a large circular enclosure of 60m diameter, and was *c.* 0.8km south-west of the development site (Fig. 18). It was levelled during house construction. A second ringfort (LI006-092-006) dated to the eight century was excavated as part of the M7 archaeological works[1]. The site also included hut sites and earlier Bronze Age strata including a cremation burial. An enclosure (LI006-092-001) excavated on the M7 was 16m x 27m and included Early Medieval (400–900 AD) artefacts suggesting it may have been a ringfort.

The site of a Fulacht Fia (LI 006-088) is *c.* 1km to the east of the development in Newcastle townland (Fig. 18). This was uncovered during a test excavation in 2002 in advance of a housing development. Two possible Fulachta Fia (LI005-088-008 and

[1] Unpublished; recorded on the National Monuments database

010) were excavated in the Glantan housing complex to the south-west of the development in Kilbane townland (O’Callaghan 2006). A Fulacht Fia (LI-005-073) in Towlerton townland to the west of the development was discovered during monitoring of topsoil stripping associated with the construction of the Castletroy distributor road (Cummins 2004). South of the development, three Fulachta Fia (LI 006-087, 096 and 097) were recorded during motorway (M7) construction. These sites were previously unknown prior to topsoil stripping on the motorway.

6. Results of test excavation

The excavation

The aim of the pre-development test excavation is to determine if the site has any archaeological potential and if sub-surface archaeological features exist on the site. The cuttings were located (Fig. 19) within the development footprint and the strategy provided an indication of any archaeological material exists below the surface. The test trenches were guided by the results of the Geophysical Survey (see Appendix).

The excavation was carried out to an agreed specification with the Licensing Section of the Department of Housing, Heritage and Local Government (Licence No. 25E0954). The excavation was by means of test trenches and the location and size of the test trenches was subject to a Methods Statement approved by the National Monuments Division, Department of Housing, Heritage and Local Government. (Fig. 19).

Methodology

The test trenches were excavated using a 1.2m wide, bladed bucket of a mechanical excavator. The ground level was reduced in 0.10m lenses until sterile levels were reached. The upcast from test trenching was examined for archaeological finds and none were recovered.

The stratigraphy

The underlying geology of the area is volcanic in origin and identified as basalt[2]. The bedrock is covered by a layer of boulder clay of glacial origin. The modern soil level

[2] The bedrock is a mix of basalt, trachyte, syenite and tuffs

(sod and topsoil) developed above the boulder clay.

Results

Trenches 1–3 were located within in the south-east area of the development where anomalies were identified in the Geophysical Survey (see Appendix). The anomalies were represented as a cluster of strongly enhanced discontinuous arcs in the subsoil. The geophysical data interpretation suggested the possible footprint of two or possibly three circular enclosures, each measuring about 25m in diameter and several fainter anomalies representing associated features. The report also indicated that the anomalies may be due to the diffuse magnetic signature reflecting underlying igneous bedrock.

Trench 1

Length 100m (E/W) x 1.2m (N/S) (Figs 20–21). The terrain was level. Sod and topsoil cover was c. 0.15–0.20m deep over boulder clay mixed with varying-sized basaltic stones and some protruding basalt bedrock (Fig. 21).

Trench 2

Length 100m (E/W) x 1.2m (N/S) (Figs 22–23). The terrain was level. Sod and topsoil cover was *c.* 0.15–0.25m deep; being shallower at the east end over relatively stone-free stony yellow boulder.

Trench 3

Length 100m (E/W) x 1.2m (N/S) (Fig. 24). The terrain was level. Sod and topsoil cover was *c.* 0.20–0.30m over stony yellow boulder clay mixed with varying-sized shattered basalt fragments.

Trenches 1–3 did not expose any archaeological features and the identification of anomalies as the result of diffuse magnetic signature reflecting underlying igneous bedrock is most likely correct.

Trench 4

Length 100m (E/W) x 1.2m (N/S) (Fig. 25). The terrain was level and ground conditions were slightly wet. Geophysical survey data recorded ferrous-type responses which may indicate ferrous debris or weakly magnetised material or naturally-occurring volcanic stones/pebbles. Topsoil cover was *c.* 0.40m deep at the east end and 0.15–0.25m deep on west end. Fractured basalt bedrock was exposed under the topsoil midway along the trench. The trench was sterile of archaeological remains.

Trenches 5–6 were on the western boundary of the development site. The geophysical survey identified two curving 'ditch-type' features; that on the east side was identified as *c.* 95m (N/S) in length and the inner feature towards the boundary ditch was *c.* 35m in length. The identification of these linear bands as of archaeological origin is described as tentative and an alternative explanation is given as reflecting igneous bedrock. Excavation of both trenches confirmed that there were no archaeological features and the origin of the anomalies is due to the subsurface basalt bedrock.

Trench 5

Length 100m (N/S) x 1.2m (E/W) (Fig. 26). The terrain sloped downwards to the south. Topsoil cover was on average 0.25–0.30m deep. The subsoil (boulder clay) was relatively stone-free. The trench was sterile of archaeological remains.

Trench 6

Length 100m (N/S) x 1.2m (E/W) (Fig. 27–28). The trench was across ground that sloped downwards to the south. Topsoil cover was *c.* 0.15–0.20m deep. The anomalies detected in the geophysical survey were where basalt bedrock was just below the surface at a depth of *c.* 0.15m (Fig. 28). The trench was sterile of archaeological remains.

Trench 7

Length 35m (E/W) x 1.2m (N/S) (Figs 29–30). This trench was located in the north-west of the landbank and immediately south of the boundary with the reservoir. Geophysical survey date recorded an area of 'increased response' and suggested an area of probable disturbed ground. The trench was across level ground. Topsoil cover was on average 0.20m deep and overlay modern fill (Fig. 30) comprising tarmacadam fragments and grit. The trench was in previously disturbed ground and sterile of archaeological remains.

Trench 8

Length 35m (E/W) x 1.2m (N/S) (Fig. 31). The trench was across ground that sloped upwards towards the east. Geophysical survey data recorded a ferrous-type response which may indicate ferrous debris or weakly magnetised material or naturally-occurring volcanic stones/pebbles. Topsoil cover was on average 0.20m deep. The subsoil (boulder clay) included a basalt outcrop midway along the trench and fractured basaltic stones at the interface with boulder clay levels. The trench was sterile of archaeological remains.

Trench 9

Geophysical survey data recorded ferrous-type responses which may indicate ferrous debris or weakly magnetised material or naturally-occurring volcanic stones/pebbles. Length 100m (E/W) x 1.2m (E/W) (Figs 32–33). The trench sloped upwards towards the west. Topsoil cover was on average 0.35–0.40m deep. The subsoil (boulder clay) included some fractured basaltic stones. A 4m wide (North-South) spread of heat-shattered stones in a matrix of charcoal-rich soil was recorded *c.* 0.40m below the surface. This spread is archaeological in origin and the burnt spread is possibly part of a Fulacht Fia.

Trench 10

Length 80m (E/W) x 1.2m (N/S) (Fig. 34). The terrain sloped downwards towards the east. The geophysical survey recorded diffuse, positive and negative linear features at the location of Trench 10 which were interpreted as possible field drains. Sod and topsoil cover was c. 0.15–0.20m deep over boulder clay mixed with varying-sized basaltic stones. This trench was sterile of archaeological remains.

Trench 11

Length 80m (E/W) x 1.2m (N/S) (Fig. 35). The terrain was level. The geophysical survey recorded a positive trend and a ferrous-type response on the east side of the trench. Sod and topsoil cover was *c.* 0.30–0.40m deep over boulder clay mixed with varying-sized basaltic stones. This trench was sterile of archaeological remains.

Trench 12

This trench was scheduled to be excavated to the east of the reservoir. Limerick City and County Council operatives were on site at the reservoir and advised the proposed location of Trench 12 was within the main intake pipe for the reservoir and a distribution pipe. In order to prevent any damage to the pipes, the trench was not excavated.

7. Impact of Proposed Development on the Archaeological Landscape

Visual impact

The development site will have little visual impact on the surrounding archaeological landscape. There are five known archaeological sites within 1km of the development (see Fig. 18). The closest site, *c.* 0.5km to the north-east, is the parish church of

Kilmurry (LI005-026-001) and associated graveyard (LI005-026-002). The castle (LI005-025) is located *c.* 0.7km to the west of the development. A ringfort (LI 005-035) was *c.* 0.8km south-west of the development and ringfort (LI006-092-006) was excavated as part of the M7archaeological works; both now have surface expression. The site of a Fulacht Fia (LI 006-088) is *c.* 1km to the east of the development in Newcastle townland and has been excavated.

Archaeological Impact

The proposed development on is on a greenfield site. Ordnance Survey mapping (Figs 5–6; 8) did not record any archaeological sites and there are no visible surface indications of archaeological remains within the footprint of the development. The cuttings were located (Fig. 19) within the development footprint and guided by the results of the Geophysical Survey. This strategy provided an indication of any archaeological material exists below the surface. Anomalies detected by the geophysical survey were the result of sub-surface bedrock which caused 'ferrous type' responses.

Excavation of Trench 9 exposed a 4m wide spread of heat-shattered stones in a matrix of charcoal-rich which was *c.* 0.40m below the surface. The morphology of the spread suggests it may be part of a Bronze Age Fulacht Fia.

Fulachta fiadh are one of the most frequent monuments in Ireland and are commonly interpreted as ancient cooking-sites, which usually survive as small horseshoe-shaped mounds of charcoal-enriched soil packed with fragments of heat-shattered stones. They are usually located close to a water source. The cooking was within a rectangular pit, lined with wooden planks, wicker or stone slabs to form a trough which was filled with water. The water was probably boiled using hot stones taken from a nearby fire, which resulted in the heat-shattered stones being discarded to one side when the cooking was complete (O'Kelly 1954). The majority of available radiocarbon dates place these monuments in the Bronze Age (2300–800 BC). There are seven Fulachta Fia (LI-005-073; 006-088; LI005-088-008 and 010; LI 006-087, 096 and 097) in the environs of the development. These sites were previously unknown prior to topsoil stripping in advance of development on the M7, Glantan housing complex to the south-west of the development and the construction of the

Castletroy distributor road.

There may also be sub-surface archaeological remains which have no surface expression within the development landbank.

Impact Summary

There is no record of archaeological sites on the Ordnance Survey maps or traces of visible archaeological sites within the development footprint. Test excavation was guided by the development layout and geophysical survey data. All the anomalies detected by the geophysical survey appear to be the result of igneous bedrock. Test excavation uncovered a 4m wide spread of heat-shattered stones in a matrix of charcoal-rich *c.* 0.40m below the surface in Trench 9. The morphology of the spread suggests it may be part of a Bronze Age Fulacht Fia.

8. Mitigation Strategies

There were no visible archaeological features on the ground. The archaeological record including available aerial photographic coverage does not include any known archaeological sites or sites with a low surface expression. The geophysical survey detected a number of sub-surface anomalies which were largely caused by igneous bedrock. Test trenching in areas where anomalies were recorded indicated that the variations in the recorded geophysical data confirmed the anomalies were most-likely due to igneous bedrock and this interpretation was presented in the geophysical assessment. It was also noted in the geophysical survey report that large-scale, high intensity bipolar magnetic responses and multiple pit-type' and other discrete anomalies may mask any weaker anomalies of archaeological origin. It is therefore possible that unrecorded sub-surface archaeological deposits exist within the development landbank, albeit none were detected within the footprint of the test trenches (Trenches 1–8; 10–11). There is also a substantial landbank where test trenching was not undertaken and where archaeological deposits/features may not have registered in the geophysical survey data as they be masked by strong igneous responses.

Excavation of Trench 9 exposed a 4m wide spread of heat-shattered stones in a matrix of charcoal-rich *c.* 0.40m below the surface in Trench 9. The morphology of the spread suggests it was part of a Bronze Age Fulacht Fia. Mitigation measures to be considered are preservation *in situ* or further archaeological excavation and preservation by record. If the site is to be left *in situ*, a buffer/exclusion zone for construction of *c.* 20m should be created around the site.

Planning requirements by Limerick City and County Council may however, require further archaeological intervention such as archaeological monitoring during the construction groundworks stage.

9. Non-Technical Summary

The proposed development is for a residential development comprising *c.* 500 units to be constructed on a phased basis and all ancillary site development works (Fig. 4). The database of Archaeological Sites in County Limerick, Ordnance Survey (OS) mapping 6″ scale (First, Second and Third editions), OS 25″ scale and Aerial Photographs were consulted in advance of test excavation and a field inspection was carried in December 2024. There are no recorded archaeological sites within the landbank. The field inspection did not detect any hitherto unrecorded archaeological sites. A geophysical survey undertaken in June 2025 detected a number of anomalies which were tentatively identified as being potentially archaeological in origin with the proviso that underlying igneous bedrock could create a magnetic signature reflecting the bedrock. Test excavation confirmed that most of the anomalies were due to underlying basaltic bedrock. Excavation of Trench 9 exposed a 4m wide spread of heat-shattered stones in a matrix of charcoal-rich *c.* 0.40m below the surface. The morphology of the spread suggests it may be part of a Bronze Age Fulacht Fia.

The Planning Department, Limerick City and County Council may require further archaeological intervention such as monitoring during construction works.

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28/10/2025

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Fig. 1: Site location (encircled in red)

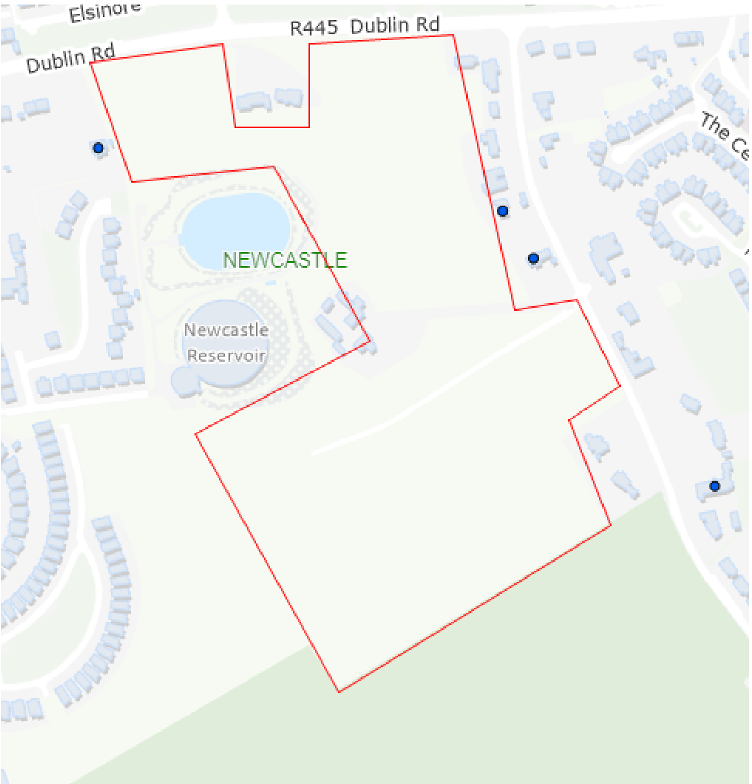

Fig. 2: Site location detail (development site outlined in red)

Fig. 3: Site Location (Outlined in red)

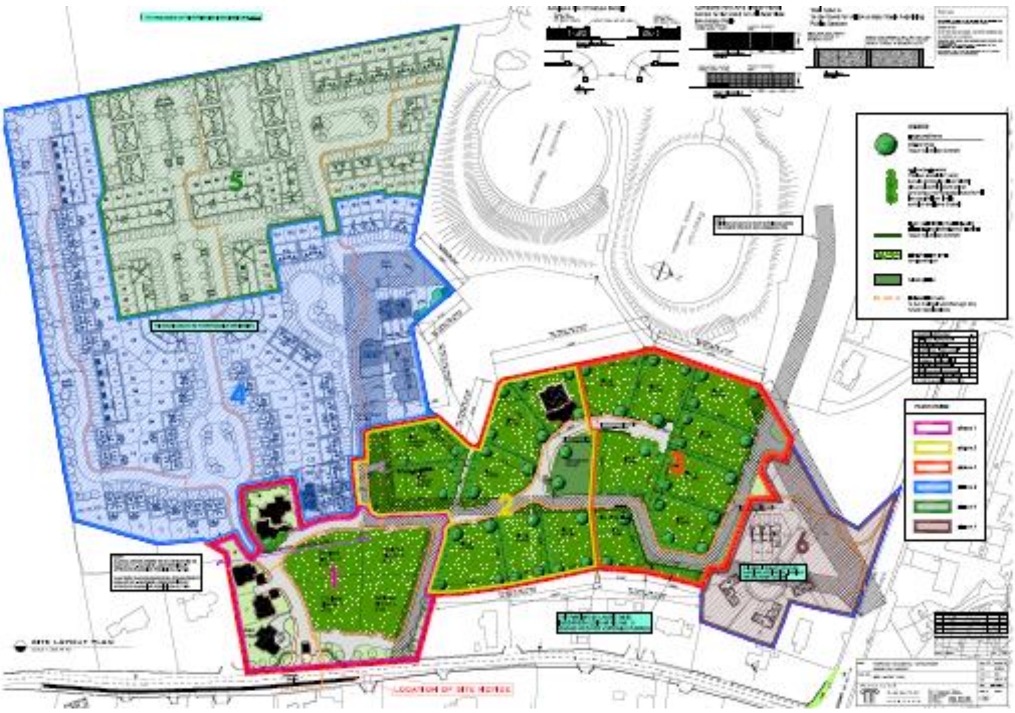

Fig. 4: Layout of the proposed development

Fig. 5: First Edition Ordnance Survey map (*c*. 1839); development site outlined in red

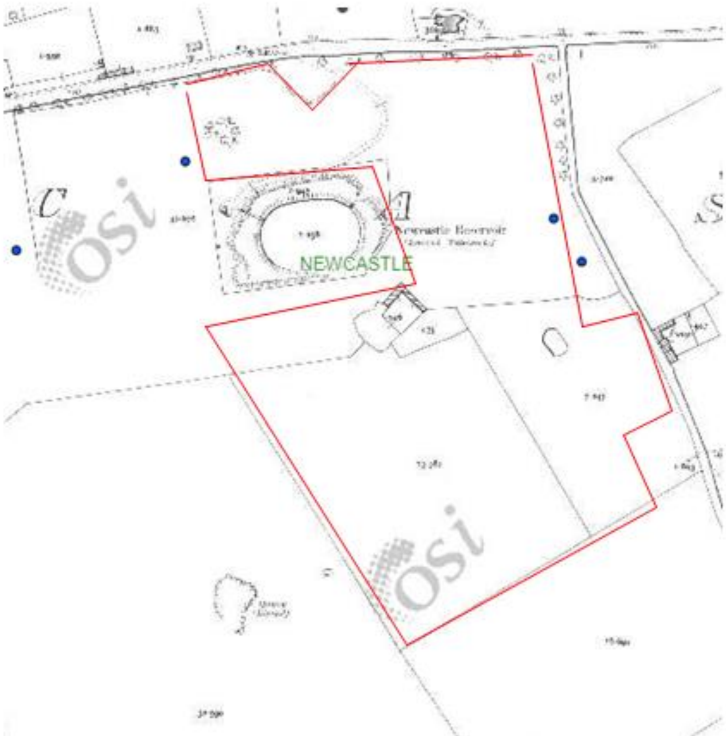

Fig. 6: Second Edition Ordnance Survey map (*c*. 1904); development site outlined in red

Fig. 7: Farm house and yard on west side of development

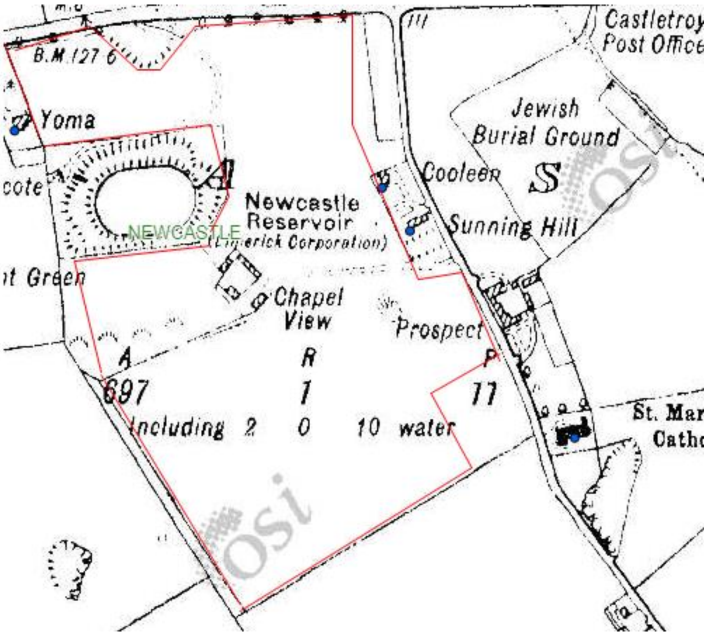

Fig. 8: Third Edition Ordnance Survey map (*c*. 1938); development site outlined in red

Fig. 9: Newcastle Reservoir (Looking North)

Fig. 10: South-East section of development site (Looking South-East)

Fig. 11: Southern section of development site (Looking North)

Fig. 12: Southern section of development site (Looking East)

Fig. 13: Central section of development site (Looking East)

Fig. 14: Central section of development site (Looking East from crest of hill)

Fig. 15: Looking South-West from North end of site

Fig. 16: Looking North towards Dublin Road from North end of site

Fig. 17: Looking North from Central area of site

Fig. 18: Archaeological sites in the environs of the development site (encircled)

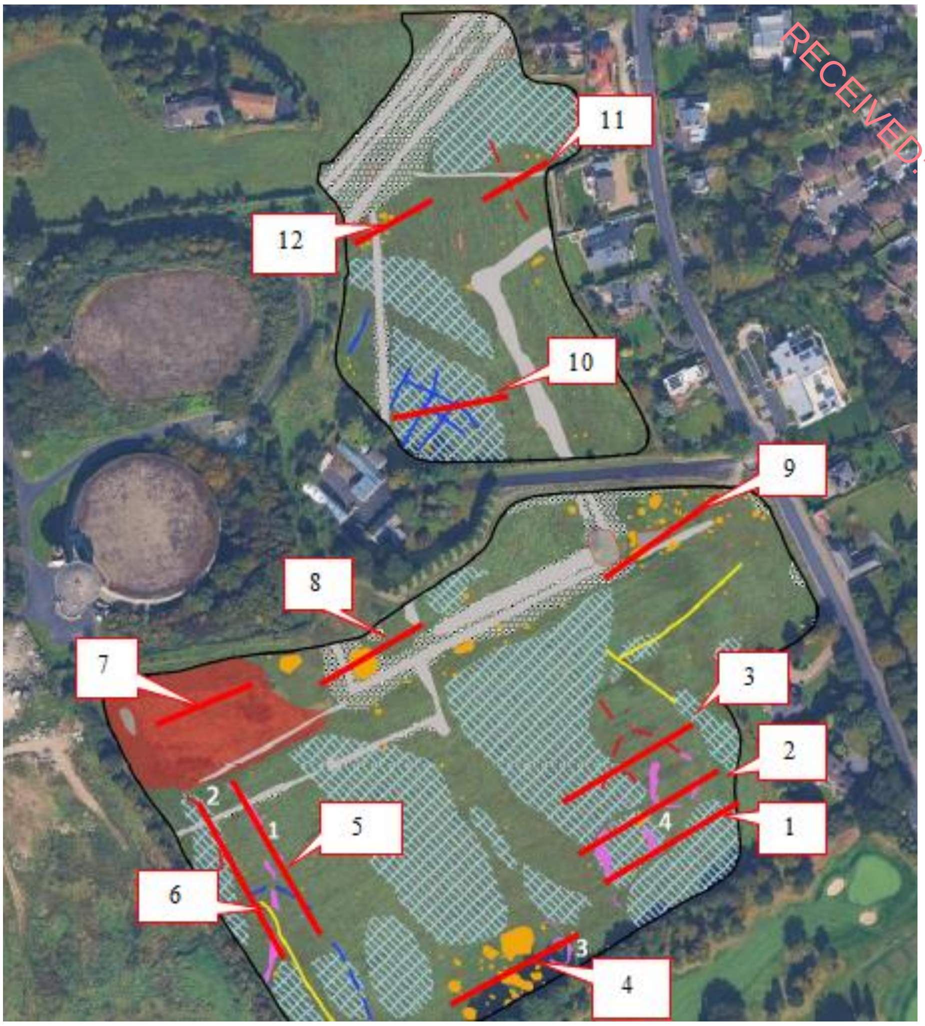

Fig. 19: Layout excavation test trenches; numbers in white were identified in the geophysical survey as possibly archaeological in origin.

Fig. 20: Trench 1 (Looking East)

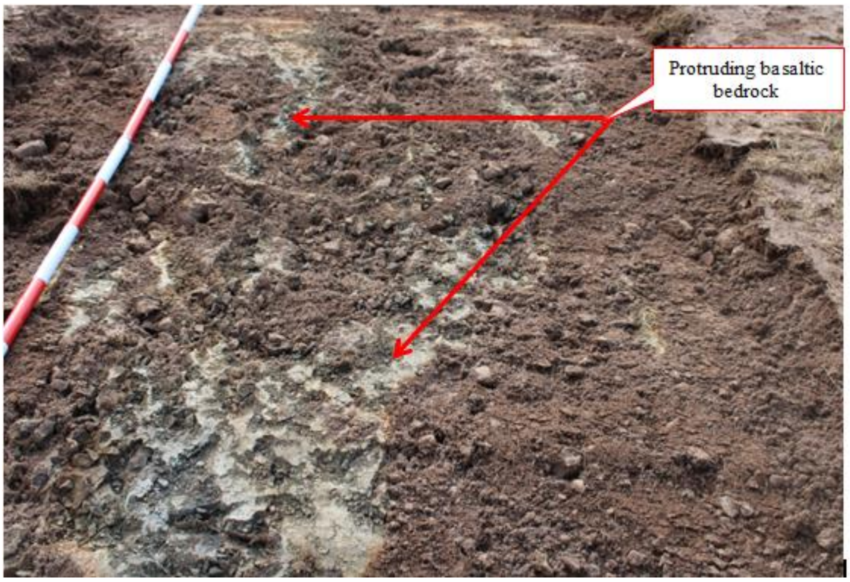

Fig. 21: Trench 1 – Protruding bedrock under sod

Fig. 22: Trench 2 (Looking East)

Fig. 23: Trench 2 – Protruding bedrock under sod

Fig. 24: Trench 3 (Looking East)

Fig. 25: Trench 4 (Looking East)

Fig. 26: Trench 5 (Looking North)

Fig. 27: Trench 6 (Looking South)

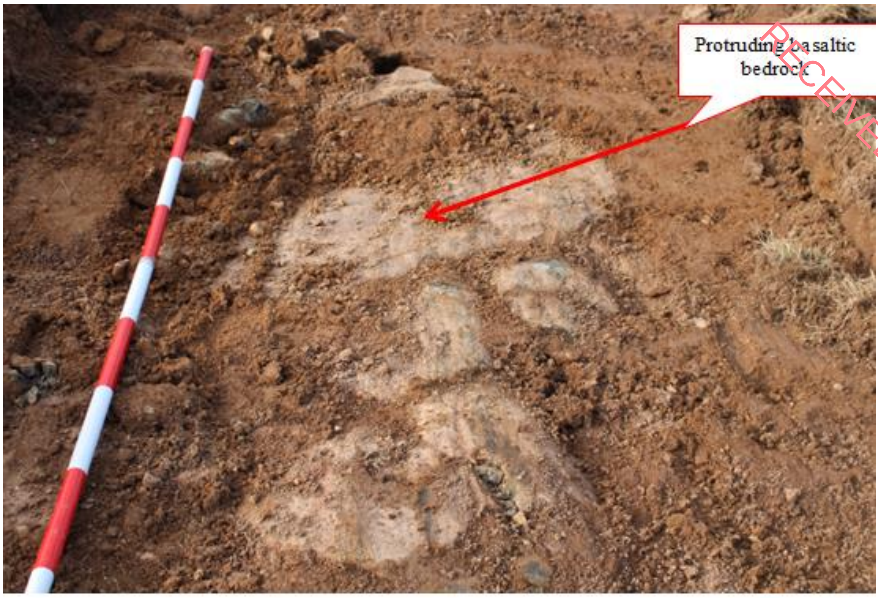

Fig. 28: Trench 6 – Protruding bedrock under sod

Fig. 29: Trench 7 (Looking East)

Fig. 30: Trench 7 Modern fill in trench

Fig. 31: Trench 8 (Looking East)

Fig. 32: Trench 9 (Looking West)

Fig. 33: Trench 9 – North-South Spread of burnt material

Fig. 34: Trench 10 (Looking West)

Fig. 35: Trench 11 (Looking East)