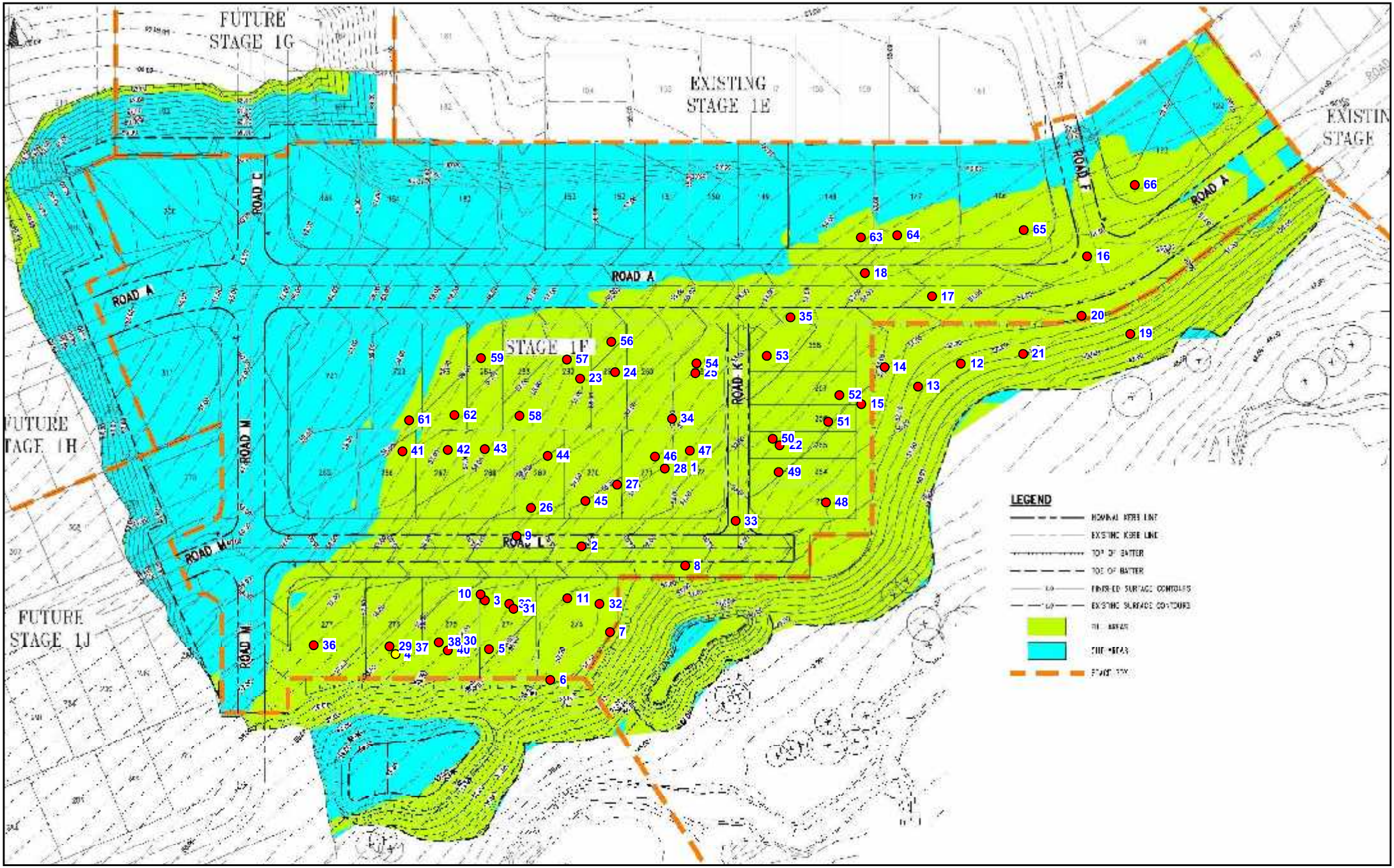

MORRISON GEOTECHNIC PTY LTD
ABN: 51 009 878 899

Unit 1/ 35 Limestone St, Darra 4076
Email: brisbanelab@morrisongeo.com.au
Ph: 3279 0900
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Engineers: D.Riley, J. Daly
D.Dragun, & S.Wynne
Geologists: L.Bexley & R.Howchin
Laboratory: M.Morrison

LEGEND
● Field Density Test Locations

Map Description :	**EARTHWORKS FIELD DENSITY TESTING - Level 1 Inspection**
Client :	ALLROADS PTY LTD
Project :	**FLAGSTONE CITY - STAGE 1F**
Project No :	DL17/211
Drawing No :	DL17/211 - 01
Scale :	Not to Scale

APPENDIX B

Laboratory Test Results/ Reports

MORRISON GEOTECHNIC

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 1**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**25/06/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	230255	230256	230257	
Test Number :	1	2	3	
Sampling Method :	-	-	-	
Date Sampled :	07/06/2017	07/06/2017	07/06/2017	
Date Tested :	07/06/2017	07/06/2017	07/06/2017	
Material Type :	**General Fill**	**General Fill**	**General Fill**	
Material Source :	**On Site**	**On Site**	**On Site**	
Lot Number :	-	-	-	
Sample Location :	E 34120.700 N 73332.490 RL 52.216	E 34089.000 N 73315.800 RL 53.060	E 34059.500 N 73305.780 RL 54.190	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	8.0	9.9	8.4	
Hilf MDR Number :	230255	230256	230257	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	87	103.5	81	
Field Wet Density (t/m³) :	2.138	2.095	2.059	
Optimum Moisture Content (%) :	9.2	9.6	10.4	
Moisture Variation :	1.2	-0.3	2.0	
Peak Converted Wet Density (t/m³) :	2.083	2.153	2.098	
Hilf Density Ratio (%) :	**102.5**	**97.5**	**98.0**	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 2**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**25/06/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	230346	230347	230348	230349
Test Number :	4	5	6	7
Sampling Method :	-	-	-	-
Date Sampled :	08/06/2017	08/06/2017	08/06/2017	08/06/2017
Date Tested :	08/06/2017	08/06/2017	08/06/2017	08/06/2017
Material Type :	**General Fill**	**General Fill**	**General Fill**	**General Fill**
Material Source :	**On Site**	**On Site**	**On Site**	**On Site**
Lot Number :	-	-	-	-
Sample Location :	E 34032.000 N 73295.561 RL 55.050	E 34058.100 N 73292.140 RL 53.690	E 34073.500 N 73280.500 RL 52.116	E 34092.502 N 73290.644 RL 51.742
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	9.0	9.9	7.7	11.1
Hilf MDR Number :	230346	230347	230348	230349
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	83.5	83.5	75	95
Field Wet Density (t/m³) :	2.021	1.987	2.018	2.020
Optimum Moisture Content (%) :	10.8	11.8	10.2	11.7
Moisture Variation :	1.9	2.0	2.7	0.6
Peak Converted Wet Density (t/m³) :	2.027	2.000	1.989	2.031
Hilf Density Ratio (%) :	**99.5**	**99.5**	**101.5**	**99.5**
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 3**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**25/06/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	230557	230558	230559	230560
Test Number :	8	9	10	11
Sampling Method :	-	-	-	-
Date Sampled :	16/06/2017	16/06/2017	16/06/2017	16/06/2017
Date Tested :	16/06/2017	16/06/2017	16/06/2017	16/06/2017
Material Type :	**General Fill**	**General Fill**	**General Fill**	**General Fill**
Material Source :	**On Site**	**On Site**	**On Site**	**On Site**
Lot Number :	-	-	-	-
Sample Location :	E 34116.697 N 73305.157 RL 51.834	E 34071.546 N 73321.966 RL 54.470	E 34058.614 N 73307.699 RL 54.536	E 34082.426 N 73302.163 RL 53.206
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	5	2	9	11
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	2.512	3.167	2.510	2.513
Field Moisture Content (%) :	8.7	9.8	9.5	9.9
Hilf MDR Number :	230557	230558	230559	230560
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	76.5	83	96	92.5
Field Wet Density (t/m³) :	2.201	2.173	2.113	2.143
Optimum Moisture Content (%) :	11.4	11.8	9.9	10.7
Moisture Variation :	2.8	2.0	0.4	0.8
Peak Converted Wet Density (t/m³) :	2.124*	2.173*	2.215*	2.232*
Hilf Density Ratio (%) :	**103.5**	**100.0**	**95.5**	**96.0**
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

* - denotes adjusted for oversize

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 4**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**25/06/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	230570	230571	230572	230573
Test Number :	12	13	14	15
Sampling Method :	-	-	-	-
Date Sampled :	19/06/2017	19/06/2017	19/06/2017	19/06/2017
Date Tested :	19/06/2017	19/06/2017	19/06/2017	19/06/2017
Material Type :	**General Fill**	**General Fill**	**General Fill**	**General Fill**
Material Source :	**On Site**	**On Site**	**On Site**	**On Site**
Lot Number :	-	-	-	-
Sample Location :	E 34203.324 N 73346.851 RL 50.329	E 34190.298 N 73342.692 RL 50.261	E 34182.039 N 73349.785 RL 50.997	E 34173.707 N 73340.763 RL 50.981
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	12.3	12.6	12.1	11.9
Hilf MDR Number :	230570	230571	230572	230573
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	103	90.5	100	86
Field Wet Density (t/m³) :	2.151	2.031	2.167	2.082
Optimum Moisture Content (%) :	11.9	13.9	12.1	13.8
Moisture Variation :	-0.3	1.3	0.0	1.9
Peak Converted Wet Density (t/m³) :	2.192	2.118	2.198	2.134
Hilf Density Ratio (%) :	**98.0**	**96.0**	**98.5**	**97.5**
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 5**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**25/06/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	230603	230604	230605	
Test Number :	16	17	18	
Sampling Method :	-	-	-	
Date Sampled :	20/06/2017	20/06/2017	20/06/2017	
Date Tested :	20/06/2017	20/06/2017	20/06/2017	
Material Type :	**General Fill**	**General Fill**	**General Fill**	
Material Source :	**On Site**	**On Site**	**On Site**	
Lot Number :	-	-	-	
Sample Location :	E 34243.747 N 73370.007 RL 50.680	E 34198.775 N 73366.916 RL 51.651	E 34181.417 N 73376.736 RL 52.413	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	3	3	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	2.596	2.594	-	
Field Moisture Content (%) :	7.5	7.6	8.4	
Hilf MDR Number :	230603	230604	230605	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	63	70	76.5	
Field Wet Density (t/m³) :	2.130	2.202	2.204	
Optimum Moisture Content (%) :	11.9	10.8	11.0	
Moisture Variation :	4.4	3.3	2.6	
Peak Converted Wet Density (t/m³) :	2.146*	2.168*	2.117	
Hilf Density Ratio (%) :	99.0	101.5	104.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 6**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**05/07/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	230709	230710	230711	230712
Test Number :	19	20	21	22
Sampling Method :	-	-	-	-
Date Sampled :	22/06/2017	22/06/2017	22/06/2017	22/06/2017
Date Tested :	22/06/2017	22/06/2017	22/06/2017	22/06/2017
Material Type :	**General Fill**	**General Fill**	**General Fill**	**General Fill**
Material Source :	**On Site**	**On Site**	**On Site**	**On Site**
Lot Number :	-	-	-	-
Sample Location :	E 34251.723 N 73346.352 RL 49.728	E 34239.176 N 73353.853 RL 50.585	E 34221.054 N 73346.326 RL 50.437	E 34148.998 N 73333.530 RL 52.234
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	10.8	10.0	10.5	9.4
Hilf MDR Number :	230709	230710	230711	230712
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	85	85.5	88	85
Field Wet Density (t/m³) :	2.063	2.101	2.082	2.079
Optimum Moisture Content (%) :	12.7	11.7	11.9	11.1
Moisture Variation :	1.9	1.8	1.4	1.7
Peak Converted Wet Density (t/m³) :	2.134	2.152	2.143	2.131
Hilf Density Ratio (%) :	96.5	97.5	97.0	97.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 7**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**12/07/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	231050	231051	231052	
Test Number :	23	24	25	
Sampling Method :	-	-	-	
Date Sampled :	28/06/2017	28/06/2017	28/06/2017	
Date Tested :	28/06/2017	28/06/2017	28/06/2017	
Material Type :	**General Fill**	**General Fill**	**General Fill**	
Material Source :	**On Site**	**On Site**	**On Site**	
Lot Number :	-	-	-	
Sample Location :	E 34097.179 N 73362.157 RL 55.363	E 34107.180 N 73362.158 RL 55.000	E 34129.358 N 73357.771 RL 53.702	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	10.7	11.5	8.5	
Hilf MDR Number :	231050	231051	231052	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	98	104	98.5	
Field Wet Density (t/m³) :	2.108	2.049	2.086	
Optimum Moisture Content (%) :	10.9	11.0	8.6	
Moisture Variation :	0.2	-0.5	0.1	
Peak Converted Wet Density (t/m³) :	2.129	2.108	2.084	
Hilf Density Ratio (%) :	98.0	97.0	100.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 8**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**12/07/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	231175	231176	231177	
Test Number :	26	27	28	
Sampling Method :	-	-	-	
Date Sampled :	30/06/2017	30/06/2017	30/06/2017	
Date Tested :	30/06/2017	30/06/2017	30/06/2017	
Material Type :	**General Fill**	**General Fill**	**General Fill**	
Material Source :	**On Site**	**On Site**	**On Site**	
Lot Number :	-	-	-	
Sample Location :	E 34077.455 N 73329.534 RL 55.417	E 34102.074 N 73331.732 RL 54.401	E 34116.279 N 73333.562 RL 54.033	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	9.4	9.8	10.5	
Hilf MDR Number :	231175	231176	231177	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	97.5	96	84	
Field Wet Density (t/m³) :	2.097	2.098	2.104	
Optimum Moisture Content (%) :	9.6	10.2	12.5	
Moisture Variation :	0.2	0.5	2.0	
Peak Converted Wet Density (t/m³) :	2.090	2.110	2.095	
Hilf Density Ratio (%) :	**100.5**	**99.5**	**100.5**	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 9**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**13/07/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	231238	231239	231240	231241
Test Number :	29	30	31	32
Sampling Method :	-	-	-	-
Date Sampled :	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Date Tested :	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Material Type :	**General Fill**	**General Fill**	**General Fill**	**General Fill**
Material Source :	**On Site**	**On Site**	**On Site**	**On Site**
Lot Number :	-	-	-	-
Sample Location :	E 34030.719 N 73297.973 RL 55.322	E 34049.751 N 73296.399 RL 54.457	E 34067.378 N 73302.895 RL 54.065	E 34091.593 N 73299.965 RL 53.257
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	8.9	7.8	8.6	7.5
Hilf MDR Number :	231238	231239	231240	231241
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	99	78.5	95	77
Field Wet Density (t/m³) :	2.097	2.102	2.127	2.140
Optimum Moisture Content (%) :	9.0	9.9	9.0	9.8
Moisture Variation :	0.1	2.2	0.5	2.3
Peak Converted Wet Density (t/m³) :	2.166	2.172	2.137	2.117
Hilf Density Ratio (%) :	**97.0**	**97.0**	**99.5**	**101.0**
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 10**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**17/07/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	231369	231370	231371	
Test Number :	33	34	35	
Sampling Method :	-	-	-	
Date Sampled :	05/07/2017	05/07/2017	05/07/2017	
Date Tested :	05/07/2017	05/07/2017	05/07/2017	
Material Type :	**General Fill**	**General Fill**	**General Fill**	
Material Source :	**On Site**	**On Site**	**On Site**	
Lot Number :	-	-	-	
Sample Location :	E 33913.776 N 72582.255 RL 50.791	E 33881.927 N 73533.073 RL 55.620	E 33883.801 N 73553.461 RL 53.821	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	16	16	15	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	2.326	2.111	2.107	
Field Moisture Content (%) :	8.1	7.8	9.4	
Hilf MDR Number :	231369	231370	231371	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	74.5	74.5	84	
Field Wet Density (t/m³) :	2.097	2.072	2.141	
Optimum Moisture Content (%) :	10.9	10.5	11.2	
Moisture Variation :	2.8	2.7	1.9	
Peak Converted Wet Density (t/m³) :	2.183*	2.136*	2.157*	
Hilf Density Ratio (%) :	**96.0**	**97.0**	**99.5**	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

* - denotes adjusted for oversize

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 11**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**19/07/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	231526	231527	231528	231529
Test Number :	36	37	38	39
Sampling Method :	-	-	-	-
Date Sampled :	10/07/2017	10/07/2017	10/07/2017	10/07/2017
Date Tested :	10/07/2017	10/07/2017	10/07/2017	10/07/2017
Material Type :	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**
Material Source :	**On Site**	**On Site**	**On Site**	**On Site**
Lot Number :	277	276	275	274
Sample Location :	Lot 277 6m From South Boundary 6m From East Boundary Final Level	Lot 276 5m From South Boundary 4m From East Boundary Final Level	Lot 275 8m From South Boundary 5m From West Boundary Final Level	Lot 274 6m From North Boundary 6m From East Boundary Final Level
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	7.0	8.5	9.4	8.5
Hilf MDR Number :	231526	231527	231528	231529
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	62.5	92	76.5	75
Field Wet Density (t/m³) :	2.092	2.106	2.087	2.194
Optimum Moisture Content (%) :	11.2	9.2	12.3	11.3
Moisture Variation :	4.2	0.8	2.8	2.8
Peak Converted Wet Density (t/m³) :	2.145	2.102	2.144	2.176
Hilf Density Ratio (%) :	97.5	100.0	97.5	101.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 12**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**19/07/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	231530	231531	231532	231533
Test Number :	40	41	42	43
Sampling Method :	-	-	-	-
Date Sampled :	10/07/2017	10/07/2017	10/07/2017	10/07/2017
Date Tested :	10/07/2017	10/07/2017	10/07/2017	10/07/2017
Material Type :	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**
Material Source :	**On Site**	**On Site**	**On Site**	**On Site**
Lot Number :	273	266	267	268
Sample Location :	Lot 273 6m From South Boundary 8m From West Boundary Final Level	Lot 266 4m From North Boundary 3m From East Boundary Final Level	Lot 267 7m From South Boundary 5m From West Boundary Final Level	Lot 268 6m From North Boundary 3m From West Boundary Final Level
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	8.1	10.5	10.5	8.2
Hilf MDR Number :	231530	231531	231532	231533
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	94	99.5	98.5	73.5
Field Wet Density (t/m³) :	2.178	2.087	2.103	2.048
Optimum Moisture Content (%) :	8.6	10.5	10.6	11.1
Moisture Variation :	0.6	0.0	0.1	3.0
Peak Converted Wet Density (t/m³) :	2.131	2.155	2.182	2.056
Hilf Density Ratio (%) :	**102.0**	**97.0**	**96.5**	**99.5**
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 13**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**19/07/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	231534	231535	231536	231537
Test Number :	44	45	46	47
Sampling Method :	-	-	-	-
Date Sampled :	10/07/2017	10/07/2017	10/07/2017	10/07/2017
Date Tested :	10/07/2017	10/07/2017	10/07/2017	10/07/2017
Material Type :	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**
Material Source :	**On Site**	**On Site**	**On Site**	**On Site**
Lot Number :	269	270	271	272
Sample Location :	Lot 269 5m From North Boundary 4m From East Boundary Final Level	Lot 270 6m From South Boundary 5m From West Boundary Final Level	Lot 271 6m From North Boundary 5m From East Boundary Final Level	Lot 272 5m From North Boundary 4m From West Boundary Final Level
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	8.8	7.9	7.8	7.5
Hilf MDR Number :	231534	231535	231536	231537
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	80	78.5	80	63.5
Field Wet Density (t/m³) :	2.125	2.062	2.105	2.071
Optimum Moisture Content (%) :	11.0	10.0	9.8	11.8
Moisture Variation :	2.2	2.2	2.0	4.3
Peak Converted Wet Density (t/m³) :	2.157	2.119	2.111	2.144
Hilf Density Ratio (%) :	**98.5**	**97.5**	**99.5**	**96.5**
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 14**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**19/07/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	231538	231539	231540	231541
Test Number :	48	49	50	51
Sampling Method :	-	-	-	-
Date Sampled :	10/07/2017	10/07/2017	10/07/2017	10/07/2017
Date Tested :	10/07/2017	10/07/2017	10/07/2017	10/07/2017
Material Type :	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**
Material Source :	**On Site**	**On Site**	**On Site**	**On Site**
Lot Number :	253	254	255	256
Sample Location :	Lot 253 3m From South Boundary 6m From East Boundary Final Level	Lot 254 2m From North Boundary 8m From West Boundary Final Level	Lot 255 3m From North Boundary 6m From East Boundary Final Level	Lot 256 3m From South Boundary 7m From East Boundary Final Level
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	6.5	6.7	7.3	6.2
Hilf MDR Number :	231538	231539	231540	231541
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	76.5	61.5	68.5	54.5
Field Wet Density (t/m³) :	2.111	2.170	2.162	2.098
Optimum Moisture Content (%) :	8.5	10.9	10.7	11.4
Moisture Variation :	2.1	4.2	3.4	5.2
Peak Converted Wet Density (t/m³) :	2.145	2.130	2.158	2.097
Hilf Density Ratio (%) :	98.5	102.0	100.0	100.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 15**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**19/07/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	231542	231543	231544	231545
Test Number :	52	53	54	55
Sampling Method :	-	-	-	-
Date Sampled :	10/07/2017	10/07/2017	10/07/2017	10/07/2017
Date Tested :	10/07/2017	10/07/2017	10/07/2017	10/07/2017
Material Type :	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**
Material Source :	**On Site**	**On Site**	**On Site**	**On Site**
Lot Number :	257	258	259	260
Sample Location :	Lot 257 1m From South Boundary 4m From East Boundary Final Level	Lot 258 4m From South Boundary 7m From West Boundary Final Level	Lot 259 6m From South Boundary 5m From West Boundary Final Level	Lot 260 7m From North Boundary 4m From East Boundary Final Level
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	6.2	8.2	8.4	9.2
Hilf MDR Number :	231542	231543	231544	231545
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	58.5	77.5	74.5	80
Field Wet Density (t/m³) :	2.113	2.122	2.112	2.146
Optimum Moisture Content (%) :	10.6	10.6	11.3	11.5
Moisture Variation :	4.4	2.4	3.0	2.3
Peak Converted Wet Density (t/m³) :	2.145	2.116	2.092	2.119
Hilf Density Ratio (%) :	98.5	100.5	101.0	101.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 16**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**19/07/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	231546	231547	231548	231549
Test Number :	56	57	58	59
Sampling Method :	-	-	-	-
Date Sampled :	10/07/2017	10/07/2017	10/07/2017	10/07/2017
Date Tested :	10/07/2017	10/07/2017	10/07/2017	10/07/2017
Material Type :	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**
Material Source :	**On Site**	**On Site**	**On Site**	**On Site**
Lot Number :	261	262	263	264
Sample Location :	Lot 261 6m From North Boundary 4m From East Boundary Final Level	Lot 262 7m From North Boundary 5m From West Boundary Final Level	Lot 263 6m From South Boundary 4m From West Boundary Final Level	Lot 264 4m From North Boundary 7m From West Boundary Final Level
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	9.0	7.9	7.7	6.5
Hilf MDR Number :	231546	231547	231548	231549
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	75	65.5	78	96.5
Field Wet Density (t/m³) :	2.127	2.096	2.213	2.027
Optimum Moisture Content (%) :	12.0	12.0	9.9	6.7
Moisture Variation :	3.1	4.1	2.2	0.2
Peak Converted Wet Density (t/m³) :	2.092	2.061	2.165	2.078
Hilf Density Ratio (%) :	**101.5**	**101.5**	**102.0**	**97.5**
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 18**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**19/07/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	231551			
Test Number :	61			
Sampling Method :	-			
Date Sampled :	10/07/2017			
Date Tested :	10/07/2017			
Material Type :	**Allotment Fill**			
Material Source :	**On Site**			
Lot Number :	720			
Sample Location :	Lot 720 2m From South Boundary 2m From East Boundary Final Level			
Test Depth (mm) :	150			
Layer Depth (mm) :	-			
Maximum Size (mm) :	19			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Oversize Density (t/m³) :	-			
Field Moisture Content (%) :	8.4			
Hilf MDR Number :	231551			
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1			
Compactive Effort :	Standard			
Field Density Method :	AS1289.5.8.1 & 5.7.1			
Moisture Method :	AS1289.2.1.1			
Moisture Ratio (%) :	77			
Field Wet Density (t/m³) :	1.959			
Optimum Moisture Content (%) :	10.9			
Moisture Variation :	2.6			
Peak Converted Wet Density (t/m³) :	2.057			
Hilf Density Ratio (%) :	95.0			
Minimum Specification :	95			
Moisture Specification :	-			
Site Selection :	-			
Soil Description :	-			
Remarks :	-			

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 19**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**11/08/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	232876	232877	232878	232879
Test Number :	62	63	64	65
Sampling Method :	-	-	-	-
Date Sampled :	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Date Tested :	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Material Type :	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**
Material Source :	**On Site**	**On Site**	**On Site**	**On Site**
Lot Number :	719	148	147	146
Sample Location :	Lot 719 4m From South Boundary 4m From East Boundary / Final Level Retest of Field Density No. 60 on the 10/07/17	Lot 148 3m From South Boundary 2m From East Boundary Final Level	Lot 147 3m From South Boundary 5m From West Boundary Final Level	Lot 146 3m From South Boundary 6m From East Boundary Final Level
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	15.2	22.9	17.9	12.3
Hilf MDR Number :	232876	232877	232878	232879
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	98	99	87	83.5
Field Wet Density (t/m³) :	2.065	2.166	2.007	2.013
Optimum Moisture Content (%) :	15.5	23.1	20.5	14.7
Moisture Variation :	0.3	0.2	2.4	2.4
Peak Converted Wet Density (t/m³) :	2.099	2.122	2.074	2.067
Hilf Density Ratio (%) :	**98.5**	**102.0**	**97.0**	**97.5**
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	**ALLROADS PTY LTD**	Report Number:	**DL17/211 - 20**
Address :	**P O BOX 4698, LOGANHOLME, QLD, 4129**	Report Date :	**11/08/2017**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**AR2199-SCA-001**
Project Number :	**DL17/211**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**FLAGSTONE CITY , STAGE 1F**	**Page 1 of 1**	

Sample Number :	232880			
Test Number :	66			
Sampling Method :	-			
Date Sampled :	03/08/2017			
Date Tested :	03/08/2017			
Material Type :	**Allotment Fill**			
Material Source :	**On Site**			
Lot Number :	123			
Sample Location :	Lot 123 2m From South Boundary 5m From West Boundary Final Level			
Test Depth (mm) :	150			
Layer Depth (mm) :	-			
Maximum Size (mm) :	19			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Oversize Density (t/m³) :	-			
Field Moisture Content (%) :	25.9			
Hilf MDR Number :	232880			
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1			
Compactive Effort :	Standard			
Field Density Method :	AS1289.5.8.1 & 5.7.1			
Moisture Method :	AS1289.2.1.1			
Moisture Ratio (%) :	99.5			
Field Wet Density (t/m³) :	2.134			
Optimum Moisture Content (%) :	26.0			
Moisture Variation :	0.1			
Peak Converted Wet Density (t/m³) :	2.107			
Hilf Density Ratio (%) :	**101.5**			
Minimum Specification :	95			
Moisture Specification :	-			
Site Selection :	-			
Soil Description :	-			
Remarks :	-			

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Important Information about Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.

ASFE
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