FINAL 27/09/2018

Queensland Government

# GEOTECHNICAL BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/8-2014

BOREHOLE No **CRR927**

Sheet 1 of 3

REFERENCE No **H13046**

PROJECT Cross River Rail (CRR) Project - Additional Geotechnical Investigation

LOCATION QR Mayne Yard — COORDINATES 503840.8 E; 6965108.4 N

PROJECT No FG6470 — SURFACE RL 4.41m — PLUNGE 90° — DATE STARTED 17/05/2018 — GRID DATUM MGA94

JOB No — HEIGHT DATUM AHD — BEARING ° — DATE COMPLETED 21/05/2018 — DRILLER Geodrill

| DEPTH (m) | R.L. (m) | SAMPLE | MATERIAL DESCRIPTION | USCS WEATHERING | ADDITIONAL DATA AND TEST RESULTS | SAMPLES TESTS |
|---|---|---|---|---|---|---|
| 0 | | | Gravelly SAND with Silt (Fill)<br>Pale grey, dry, medium dense, fine to coarse , angular to sub-angular. Some silt. Trace of cobbles. | | 0.00m: NDD to 2.35m | |
| 0.5 | | | at 0.5m: becoming dark grey, moist | (GP-GM) | | |
| 2 | | A | at 2.0m Becoming very loose | | 1, hw, 1<br>N=1 | SPT |
| 3 | 1.41 | | | | | |
| | 1.21 | | GRAVEL (Fill)<br>Brown red, dry, dense, fine to medium, sub-angular. Some cobbles and brick fragments. | (GP) | | |
| 4 | | B | CLAY (Alluvium)<br>Dark grey trace pale brown mottling, moist, very soft to firm, high plasticity. | | 3, 3, 2<br>N=5<br>LL=67% PI= 37%<br>MC=37.4% LS= 14%<br><75µm= 95% | SPT |
| 5 | | C | | | LL=74% PI= 48%<br>MC=67.5% LS= 20%<br>DD= 0.86 t/m3<br>WD= 1.44 t/m3 | U50 |
| 6 | | | | (CH) | | |
| 6.5 | | D | at 6.5m: becoming dark grey | | hw, hw, hw<br>N<1 | SPT |
| 8 | -3.79 | E | Sandy CLAY (Alluvium)<br>Dark grey, moist, very soft to soft, high plasticity. Fine grained sand. Interbedded fine grained, well graded, loose to medium dense Clayey SAND layers. | | 8.00m-8.50m: UU Triaxial Test<br>MC=54.9%<br>DD= 1.08 t/m3<br>WD= 1.67 t/m3 | U50 |
| 9 | | | | (CH) | | |
| 9.5 | | F | at 9.5m: shell fragments and wood fragments throughout, stiff. | | 2, 5, 7<br>N=12 | SPT |
| | -5.59 | | | | | |

Continued on next sheet

REMARKS: Rif - Brisbane Tuff. Standpipe piezometer installed.

| LOGGED BY | REVIEWED BY |
|---|---|
| ND | S.Foley |

Queensland Government

# GEOTECHNICAL BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/8-2014

BOREHOLE No **CRR927**

Sheet 2 of 3

REFERENCE No **H13046**

PROJECT Cross River Rail (CRR) Project - Additional Geotechnical Investigation

LOCATION QR Mayne Yard

COORDINATES 503840.8 E; 6965108.4 N

PROJECT No FG6470 | SURFACE RL 4.41m | PLUNGE 90° | DATE STARTED 17/05/2018 | GRID DATUM MGA94

JOB No | HEIGHT DATUM AHD | BEARING ° | DATE COMPLETED 21/05/2018 | DRILLER Geodrill

| DEPTH (m) | R.L. (m) | AUGER / CASING / WASH BORING / CORE DRILLING | RQD ( ) % CORE REC % | SAMPLE | MATERIAL DESCRIPTION | LITHOLOGY | USCS WEATHERING | INTACT STRENGTH (EH VH H M L VL EL) | DEFECT SPACING (EC VC C M W VW EW) | ADDITIONAL DATA AND TEST RESULTS | SAMPLES TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Sandy CLAY (Alluvium) Cont'd | | (CH) | | | | |
| 11 | -6.59 | | | G | CLAY (Alluvium) Dark grey, moist, very soft to soft, high plasticity. | | | | | hw, hw, hw N<1 | SPT |
| 12 | | | | | | | | | | | |
| 13 | | | | H | | | (CH) | | | MC=66.1% DD= 0.92 t/m3 WD= 1.53 t/m3 | U50 |
| 14 | -9.85 | | | I | 14.00-14.26m: Clayey SAND | | | | | MC=29.2% DD= 1.41 t/m3 WD= 1.83 t/m3 | U50 |
| 15 | | | | | Sandy CLAY (Alluvium) Dark grey, moist, very soft to soft, high plasticity. Fine grained sand. | | | | | | |
| 16 | | | | J | at 15.5m: Stiff | | (CH) | | | 5, 7, 3 N=10 | SPT |
| 17 | | | | | | | | | | | |
| 18 | -13.59 | | | K | CLAY (Alluvium) Dark grey, moist, very soft to soft, high plasticity. | | | | | hw, hw, hw N<1 LL=83% PI= 55% MC=58.5% LS= 26% | SPT |
| 19 | -15.09 | | | | | | (CH) | | | | |
| | -15.59 | | | L | Sandy CLAY (Alluvium) (Q) | | | | | 19.50m: No sample recovery in U50 | U50 |

Continued on next sheet

REMARKS: Rif - Brisbane Tuff. Standpipe piezometer installed.

| LOGGED BY | REVIEWED BY |
|---|---|
| ND | S.Foley |

Queensland Government

# GEOTECHNICAL BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/8-2014

BOREHOLE No **CRR927**

Sheet 3 of 3

REFERENCE No **H13046**

PROJECT Cross River Rail (CRR) Project - Additional Geotechnical Investigation

LOCATION QR Mayne Yard — COORDINATES 503840.8 E; 6965108.4 N

PROJECT No FG6470 — SURFACE RL 4.41m — PLUNGE 90° — DATE STARTED 17/05/2018 — GRID DATUM MGA94

JOB No — HEIGHT DATUM AHD — BEARING ° — DATE COMPLETED 21/05/2018 — DRILLER Geodrill

| DEPTH (m) | R.L. (m) | AUGER / CASING / WASH BORING / CORE DRILLING | RQD ( ) % CORE REC % | SAMPLE | MATERIAL DESCRIPTION | LITHOLOGY | USCS WEATHERING | INTACT STRENGTH (EH VH H M L VL EL) | DEFECT SPACING (EC VC C M W VW EW) | ADDITIONAL DATA AND TEST RESULTS | SAMPLES TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | -16.59 | | | | Sandy CLAY (Alluvium) (Q) Cont'd<br>Dark grey, moist, very soft to soft, high plasticity. Fine grained sand. | | (CH) | | | | |
| | -17.59 | | | | Clayey GRAVEL (Alluvium)<br>White, dark grey, pale grey, pale red, medium dense, coarse, sub-angular to sub-rounded. Medium to high plasticity clay. Some quartz. | | (GC) | | | | |
| 22 | | | | | Sandy CLAY trace Gravel (Residual)<br>Pale brown, mottled pale grey and pale red, moist, very stiff, medium to high plasticity. Fine to coarse, sub-angular to sub-rounded sand. Trace fine to medium, sub-angular gravel. | | | | | | |
| 23 | | | | | | | (CH) | | | | |
| 24 | | | | M | | | | | | 8, 11, 13<br>N=24 | SPT |
| 25 | -21.09 | | | | | | | | | | |
| 26 | | | | N | TUFF (Rif)<br>XW: Recovered as CLAY, pale grey mottled pale brown, moist, hard, medium plasticity. Trace fine to coarse grained, sub-angular sand. Trace fine, sub-angular gravel. | | (CI) | | | 22, 30/80mm | SPT |
| 27 | -22.59 | | (61) | | TUFF (Rif)<br>HW: Pale green and grey, fine grained matrix with fine to coarse sub-angular gravel clasts, low strength. Some iron staining.<br>Js 10°-20°, (2/m) Un-Pl/Sm, OP, Cn | | | L | C | 5/0mm<br>hb | |
| 28 | | | 100<br>(87) | | | | HW | | | | |
| 29 | -24.84 | | 100 | | | | MW<br>HW | M<br>M | M | Is(50)=0.53 MPa<br>Is(50)=0.86 MPa | D (28.90m)<br>A (28.91m) |
| | -25.59 | | (68)<br>100 | | TUFF (Rif)<br>MW: Pale grey and pale green, fine grained, fine to coarse sub-angular clasts, high strength, massive. | | MW<br>HW<br>MW | H | C | Is(50)=0.42 MPa<br>Is(50)=0.48 MPa<br>UCS=21.30 MPa<br>E=2.33 GPa | D (29.35m)<br>A (29.36m)<br>(29.40m) |

Borehole completed at 30.00m

REMARKS: Rif - Brisbane Tuff. Standpipe piezometer installed.

| LOGGED BY | REVIEWED BY |
|---|---|
| ND | S.Foley |

# Detailed Discontinuity Description Log

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*This form is intended for the detailed description of discontinuities and defects as measured in outcrop by line mapping, or as they occur downhole in drilled rock core. The descriptions and abbreviations used shall be in accordance with Australian Standard AS1726-1993 Geotechnical site investigations and TMR Geotechnical Terms and Symbols Form F:GEOT017/8.*

| | | | | | |
|---|---|---|---|---|---|
| **Project Name** | **Cross River Rail - Stage 2** | **Project No.** | **FG6470** | | |
| **Site ID / Borehole No.** | **CRR927** | **Surface RL** | **4.411** | | |
| **Geologist** | **Nick Dewar** | **Date** | **21/05/2018** | | |
| | | **Page** | **1** | **of** | **1** |

| Traverse Chainage; or Down hole depth (rock core) | Type LP / BP / FP / J etc. | Dip ° / Dip Direction °; or Angle ° from horizontal (rock core) | Planarity Stp / Un / Pl | Roughness Ro / Sm / Sl | Roughness Class I to IX | Aperture CD / OP / FL / Tl | Infilling Cn / St / Vr / Ct [1] | Zones [1] SZ / CZ / HFZ / AZ | Other |
|---|---|---|---|---|---|---|---|---|---|
| 27.04 | J | 10 | Un | Sm | V | OP | Cn | | |
| 27.13 | J | 20 | Un | Sm | V | OP | Cn | | |
| 27.21 | J | 20 | Un | Sm | V | OP | Cn | | |
| 27.35 | J | 0 | Pl | Sm | VIII | OP | Cn | | |
| 27.59 | J | 0 | Pl | Sm | VIII | OP | Cn | | |
| 27.62 | J | 80 | Un | Sm | V | OP | Cn | | 27.62-27.71 |
| 27.71 | J | 5 | Un | Sm | V | OP | Cn | | |
| 27.78 | J | 0 | Pl | Sm | VIII | OP | Cn | | |
| 28.01 | J | 10 | Un | Sm | V | OP | Cn | | |
| 28.45 | J | 0 | Pl | Sm | VIII | OP | Cn | | |
| 28.50 | J | 15 | Un | Sm | V | OP | Cn | | |
| 28.71 | J | 0 | Pl | Sm | VIII | OP | Cn | | |
| 29.25 | J | 10 | Un | Sm | V | OP | Cn | | |
| 29.66 | J | 5 | Stp | Sm | II | OP | Cn | | |
| 29.66 | J | 80 | Un | | | CD | Cn | | 29.66-29.73m |
| 29.73 | J | 20 | Un | Sm | V | OP | Cn | | |
| 29.80 | J | 40 | Un | Sm | V | OP | Cn | | |
| 29.80 | J | 80 | Un | | | CD | Cn | | 29.8-29.87m |
| | | | | | | | | | |
| | | | | | | | | | |
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*Note:* 1. Describe zones and coatings in terms of composition and thickness (mm)

FINAL 27/09/2018

Queensland Government

# STANDPIPE PIEZOMETER INSTALLATION LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/8-2014

BOREHOLE No **CRR927**

Sheet 1 of 3

PIEZOMETER No **CRR927**

PROJECT Cross River Rail (CRR) Project - Additional Geotechnical Investigation

LOCATION QR Mayne Yard COORDINATES 503840.8 E; 6965108.4 N

PROJECT No FG6470 SURFACE RL 4.41m PLUNGE 90° DATE STARTED 17/05/2018 GRID DATUM MGA94

JOB No HEIGHT DATUM AHD BEARING ° DATE COMPLETED 21/05/2018 DRILLER Geodrill

| DEPTH (m) | R.L. (m) | LITHOLOGY | MATERIAL DESCRIPTION |
|---|---|---|---|
| 0 | | | Gravelly SAND with Silt (Fill)<br>Pale grey, dry, medium dense, fine to coarse , angular to sub-angular. Some silt. Trace of cobbles.<br>at 0.5m: becoming dark grey, moist |
| 1 | | | |
| 2 | | | at 2.0m Becoming very loose |
| 3 | 1.41 | | |
| | 1.21 | | GRAVEL (Fill)<br>Brown red, dry, dense, fine to medium, sub-angular. Some cobbles and brick fragments. |
| | | | CLAY (Alluvium)<br>Dark grey trace pale brown mottling, moist, very soft to firm, high plasticity. |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| | | | at 6.5m: becoming dark grey |
| 7 | | | |
| 8 | -3.79 | | |
| | | | Sandy CLAY (Alluvium)<br>Dark grey, moist, very soft to soft, high plasticity. Fine grained sand. Interbedded fine grained, well graded, loose to medium dense Clayey SAND layers. |
| 9 | | | |
| | | | at 9.5m: shell fragments and wood fragments throughout, stiff. |
| | -5.59 | | |

## Standpipe Piezometer Construction Details

| Depth (m) /RL (AHD) | 50mm PVC Class No. 18 Stick Up = 0.00m | Backfill Details |
|---|---|---|
| | | Grout: Bentonite / Cement Mix |
| 6.00m / -1.59 AHD | | |
| | | Bentonite Pellet Seal |
| 7.00m / -2.59 AHD | | |

Continued on next sheet

REMARKS: Rif - Brisbane Tuff. Standpipe piezometer installed.

| LOGGED BY | REVIEWED BY |
|---|---|
| ND | S.Foley |

Queensland Government

# STANDPIPE PIEZOMETER INSTALLATION LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/8-2014

BOREHOLE No **CRR927**

Sheet 2 of 3

PIEZOMETER No **CRR927**

PROJECT Cross River Rail (CRR) Project - Additional Geotechnical Investigation

LOCATION QR Mayne Yard — COORDINATES 503840.8 E; 6965108.4 N

PROJECT No FG6470 — SURFACE RL 4.41m — PLUNGE 90° — DATE STARTED 17/05/2018 — GRID DATUM MGA94

JOB No — HEIGHT DATUM AHD — BEARING ° — DATE COMPLETED 21/05/2018 — DRILLER Geodrill

| DEPTH (m) | R.L. (m) | LITHOLOGY | MATERIAL DESCRIPTION | Standpipe Piezometer Construction Details: Depth (m) /RL (AHD) — 50mm PVC Class No. 18 Stick Up = 0.00m — Backfill Details |
|---|---|---|---|---|
| | | | Sandy CLAY (Alluvium)<br>Cont'd | |
| 11 | -6.59 | | CLAY (Alluvium)<br>Dark grey, moist, very soft to soft, high plasticity. | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | 14.00-14.26m: Clayey SAND | |
| | -9.85 | | Sandy CLAY (Alluvium)<br>Dark grey, moist, very soft to soft, high plasticity.<br>Fine grained sand. | |
| 15 | | | | Filter: Washed / Graded Sand |
| | | | at 15.5m: Stiff | |
| 16 | | | | |
| 17 | | | | |
| 18 | -13.59 | | CLAY (Alluvium)<br>Dark grey, moist, very soft to soft, high plasticity. | |
| 19 | | | | |
| | -15.09 | | Sandy CLAY (Alluvium) (Q) | |
| | -15.59 | | | |

Continued on next sheet

REMARKS: Rif - Brisbane Tuff. Standpipe piezometer installed.

| LOGGED BY | REVIEWED BY |
|---|---|
| ND | S.Foley |

FINAL 27/09/2018

Queensland Government

# STANDPIPE PIEZOMETER INSTALLATION LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/8-2014

BOREHOLE No **CRR927**

Sheet 3 of 3

PIEZOMETER No **CRR927**

PROJECT Cross River Rail (CRR) Project - Additional Geotechnical Investigation

LOCATION QR Mayne Yard COORDINATES 503840.8 E; 6965108.4 N

PROJECT No FG6470 SURFACE RL 4.41m PLUNGE 90° DATE STARTED 17/05/2018 GRID DATUM MGA94

JOB No HEIGHT DATUM AHD BEARING ° DATE COMPLETED 21/05/2018 DRILLER Geodrill

| DEPTH (m) | R.L. (m) | LITHOLOGY | MATERIAL DESCRIPTION | Standpipe Piezometer Construction Details: Depth (m) /RL (AHD) | 50mm PVC Class No. 18 Stick Up = 0.00m | Backfill Details |
|---|---|---|---|---|---|---|
| 21 | | | Sandy CLAY (Alluvium) (Q) Cont'd Dark grey, moist, very soft to soft, high plasticity. Fine grained sand. | | | |
| | -16.59 | | | | | |
| | | | Clayey GRAVEL (Alluvium) White, dark grey, pale grey, pale red, medium dense, coarse, sub-angular to sub-rounded. Medium to high plasticity clay. Some quartz. | | | |
| | -17.59 | | | | | |
| 22 | | | Sandy CLAY trace Gravel (Residual) Pale brown, mottled pale grey and pale red, moist, very stiff, medium to high plasticity. Fine to coarse, sub-angular to sub-rounded sand. Trace fine to medium, sub-angular gravel. | | | |
| 23 | | | | | | |
| 24 | | | | | | |
| 25 | | | | | | |
| | -21.09 | | | | | |
| 26 | | | TUFF (Rif) XW: Recovered as CLAY, pale grey mottled pale brown, moist, hard, medium plasticity. Trace fine to coarse grained, sub-angular sand. Trace fine, sub-angular gravel. | | | |
| | -22.59 | | | 27.00m / -22.59 AHD | | Top of Slotted Pipe |
| 27 | | | TUFF (Rif) HW: Pale green and grey, fine grained matrix with fine to coarse sub-angular gravel clasts, low strength. Some iron staining. Js 10°-20°, (2/m) Un-Pl/Sm, OP, Cn | | | |
| 28 | | | | | | |
| 29 | | | | | | |
| | -24.84 | | | | | |
| | | | TUFF (Rif) MW: Pale grey and pale green, fine grained, fine to coarse sub-angular clasts, high strength, massive. | | | |
| | -25.59 | | | 30.00m / -25.59 AHD | | |

Borehole completed at 30.00m

REMARKS: Rif - Brisbane Tuff. Standpipe piezometer installed.

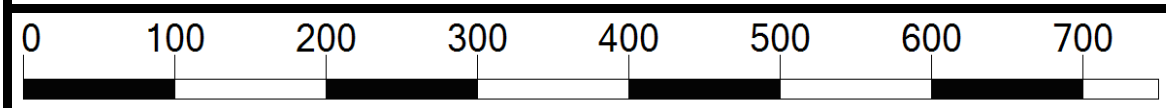
| LOGGED BY | REVIEWED BY |
|---|---|
| ND | S.Foley |

TMR STANDPIPE PIEZOMETER INSTALLATION LOG - CREATED WITH HOLEBASE SI

**CORE PHOTO LOG**
DEPARTMENT OF TRANSPORT AND MAIN ROADS
GEOTECHNICAL SECTION

Queensland Government

| | | | |
|---|---|---|---|
| Project Name | **Cross River Rail CRR 2018 – Geotechnical Investigation** | | |
| Project No. | FG6470 | Date | 17-21/5/18 |
| Borehole No. | CRR927 | Reference No. | H13046 |
| Location | QR Mayne yard | Start Depth (m) | 27.00 |
| Submitted By | J. Armstrong | Finish Depth (m) | 30.00 |


**SCALE (mm)**