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Queensland
Government

GEOTECHNICAL
BOREHOLE LOG

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

BOREHOLE No **CRR903**

Sheet 1 of 3

REFERENCE No **H13111**

| | | | | | |
|------------|--|--------------|-------|-------------------------------------|------------|
| PROJECT | Cross River Rail (CRR) Project - Additional Geotechnical Investigation | | | | |
| LOCATION | Rocklea Station (North) | | | COORDINATES 501384.8 E; 6953207.6 N | |
| PROJECT No | FG6470 | SURFACE RL | 8.65m | PLUNGE | 90° |
| | | | | DATE STARTED | 05/07/2018 |
| | | | | GRID DATUM | MGA94 |
| JOB No | | HEIGHT DATUM | AHD | BEARING | ° |
| | | | | DATE COMPLETED | 06/07/2018 |
| | | | | DRILLER | Geodrill |

| DEPTH (m) | R.L. (m) | AUGER CASING | WASHBORING | CORE DRILLING | RQD (%) | CORE REC % | SAMPLE | MATERIAL DESCRIPTION | LITHOLOGY | USCS WEATHERING | INTACT STRENGTH | | | | | DEFECT SPACING | | | | | ADDITIONAL DATA AND TEST RESULTS | SAMPLES TESTS | | | |
|-----------|----------|--------------|------------|---------------|---------|------------|--------|--|-----------|-----------------|-----------------|----|---|---|---|----------------|----|----|----|---|----------------------------------|---------------|---|---|--|
| | | | | | | | | | | | EH | VH | H | M | J | VL | EL | EC | VC | C | | | M | W | VW |
| | 8.05 | | | | | | | Clayey GRAVEL and COBBLES (Fill) Brown, dark brown, and grey, moist, dense to very dense. Cobbles are subangular, 60-80mm diameter. | (GC) | | | | | | | | | | | | | | | | |
| 1 | | | | | | | A | Silty CLAY (Alluvium) Pale grey and brown, moist, firm to stiff. High plasticity. | | | | | | | | | | | | | | | | | BULK |
| | | | | | | | B | From 0.8m: Becoming grey to pale grey mottled orange and red. | | | | | | | | | | | | | | | | | U50 |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | Su(PP)=50 kPa |
| | | | | | | | C | | | | | | | | | | | | | | | | | | 2.50m-2.95m: CU Triaxial Test |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | MC=34.9% DD= 1.39 t/m3 WD= 1.88 t/m3 |
| | | | | | | | D | 3.5m: Soft | | | | | | | | | | | | | | | | | Su(PP)=90 kPa |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | 1, 1, 2 N=3 |
| | | | | | | | E | 4.5m: Very stiff | (CH) | | | | | | | | | | | | | | | | MC=27.3% Oedometer WD= 1.96 t/m3 |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | Su(PP)=200 kPa |
| | | | | | | | F | 6.0m: Firm | | | | | | | | | | | | | | | | | 1, 3, 4 N=7 LL=87% PI= 65% MC=29.7% LS= 20% <75µm= 90% |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | G | | | | | | | | | | | | | | | | | | 2, 3, 4 N=7 |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0.15 | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | H | Sandy CLAY (Alluvium) Pale grey mottled pale orange, moist, very stiff. Fine to medium grained sand. Low plasticity. Interbedded with Clayey SAND and Clay. | CL | | | | | | | | | | | | | | | | 4, 6, 10 N=16 |
| | -1.35 | | | | | | | | | | | | | | | | | | | | | | | | SPT |

Continued on next sheet

| | | |
|--|-----------|-------------|
| REMARKS: Rjbw - Woogaroo Subgroup. 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 **CRR903**

Sheet 2 of 3

REFERENCE No **H13111**

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

LOCATION **Rocklea Station (North)**

COORDINATES **501384.8 E; 6953207.6 N**

PROJECT No **FG6470**

SURFACE RL **8.65m**

PLUNGE **90°**

DATE STARTED **05/07/2018**

GRID DATUM **MGA94**

JOB No

HEIGHT DATUM **AHD**

BEARING °

DATE COMPLETED **06/07/2018**

DRILLER **Geodrill**

| DEPTH (m) | R.L. (m) | AUGER CASING WASHBORING CORE DRILLING | RQD (%) CORE REC % | SAMPLE | MATERIAL DESCRIPTION | LITHOLOGY | USCS WEATHERING | INTACT STRENGTH | DEFECT SPACING | ADDITIONAL DATA AND TEST RESULTS | SAMPLES TESTS |
|-----------|----------|--|-----------------------------|--------|---|-----------|-------------------------------------|--------------------|-------------------------------------|--|--------------------------------------|
| | | | | | | | EH VH H M J VL EL | | EC VC C M W VW EW | | |
| 11 | -3.35 | | | I | Sandy CLAY (Alluvium) Cont'd. | | CL | | | 6, 13, 12 N=25 LL=30% Pl= 18% MC=15.9% LS= 5% <75µm= 39% | SPT |
| 12 | | | | J | Gravelly Clayey SAND (Alluvium) Pale grey mottled orange, moist, dense. Fine to medium gravel, subrounded to subangular. From 12.0m: Increase in gravel fraction. Fine to medium grained, subangular to subrounded. | | (SC) | | | 12, 15, 23 N=38 MC=13.3% <75µm= 33% | SPT |
| 13 | | | | K | 13.5m: Medium dense | | | | | 4, 5, 7 N=12 | SPT |
| 14 | -5.85 | | | L | SANDSTONE (Rjbw) XW: Recovered as brown, moist, hard, Sandy CLAY. Fine to medium grained Sand. Medium plasticity. | | XW | | | 30/140mm | SPT |
| 15 | | | | M | SANDSTONE (Rjbw) SW: Grey, fine to medium grained, thickly bedded, medium strength. - BP: 0°-20° (15-20/m), Pl/Sm, OP/ CD, Coal/Carb Vr or Ct. | | SW | | | 30/20mm | SPT |
| 16 | -7.75 | | (84) | | | | | | | | |
| 17 | | | 100 (90) | | | | | | | 17.23m-17.53m: Conglomerate / Coarse sandstone bed. Clasts are rounded, <20mm. | D (16.75m) A (16.76m) |
| 18 | | | | | | | | | | 18.20m-18.46m: Coarse grained sandstone, dark grey spotted. | (18.37m) D (18.50m) A (18.51m) |
| 19 | -11.35 | | | | From 19.0m: BP frequency increasing to ~20-30/m. | | | | | 19.78m-19.89m: Sandstone / Conglomerate band. Rounded clasts <20mm. | D (19.65m) A (19.66m) |

Continued on next sheet

REMARKS: Rjbw - Woogaroo Subgroup. Standpipe piezometer installed.

LOGGED BY

REVIEWED BY

ND

S. Foley



GEOTECHNICAL
BOREHOLE LOG

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

BOREHOLE No **CRR903**

Sheet 3 of 3

REFERENCE No **H13111**

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

LOCATION Rocklea Station (North) COORDINATES 501384.8 E; 6953207.6 N

PROJECT No FG6470 SURFACE RL 8.65m PLUNGE 90° DATE STARTED 05/07/2018 GRID DATUM MGA94

JOB No HEIGHT DATUM AHD BEARING ° DATE COMPLETED 06/07/2018 DRILLER Geodrill

| DEPTH (m) | R.L. (m) | AUGER CASING WASHBORING CORE DRILLING | RQD () % CORE REC % | SAMPLE | MATERIAL DESCRIPTION | LITHOLOGY | USCS WEATHERING | INTACT STRENGTH | | | | | | | | | | DEFECT SPACING | | ADDITIONAL DATA AND TEST RESULTS | SAMPLES TESTS |
|-----------|-------------|--|-----------------------------------|--------|---------------------------------|---|--------------------|--------------------|----|---|---|---|----|----|----|----|---|-------------------|---|--|------------------|
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | EH | VH | H | M | L | VL | EL | EC | VC | C | M | W | | |
| 21 | | | 100 () | | SANDSTONE (Rjbw) SW: Cont'd. |< | | | | | | | | | | | | | | | |

| | | |
|---|-----------|-------------|
| REMARKS: <u>Rjbw - Woogaroo Subgroup. Standpipe piezometer installed.</u> | LOGGED BY | REVIEWED BY |
| | ND | S. Foley |

Detailed Discontinuity Description Log

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. | | CRR903 | | | | Surface RL | 8.65 | | |
| Geologist | | N.DEWAR | | | | Date | 6/07/2018 | | |
| | | | | | | Page | 1 | of | 2 |
| 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 / PI | Roughness Ro / Sm / SI | Roughness Class I to IX | Aperture | Infilling | Zones ¹ | Other |
| | | | | | | CD / OP / FL / TI | Cn / St / Vr / Ct ¹ | SZ / CZ / HFZ / AZ | |
| 16.52 | FP/BP | 0-15° | UN | SM | | OP | Vr | | Carb |
| 16.63 | FP/BP | 0° | PI | SM | | OP | Vr | | Carb |
| 16.775 | FP/BP | 0° | PI | CD(no roughness) | | CD/DIS | Vr | | Carb |
| 16.785 | FP/BP | 5° | PI | CD(no roughness) | | CD | Vr | | Carb |
| 16.80 | FP/BP | 5° | PI | CD(no roughness) | | CD | Vr | | Carb |
| 16.98 | FP/BP | 0° | PI | CD(no roughness) | | CD | Vr | | Carb |
| 17.10 | FP/BP | 10° | UN | SM | | OP | Vr | | Carb/COAL |
| 17.12 | FP/BP | 10° | UN | | | CD | Ct | | Carb(7mm) |
| 17.17 | FP/BP | 20° | UN | | | CD | Ct | | Carb(1mm) |
| 17.18 | FP/BP | 20° | UN | | | CD | Vr | | Carb |
| 17.19 | FP/BP | 20° | PI | SM | | OP | Ct | | COAL(4mm) |
| 17.22 | FP/BP | 10° | UN | SM | | OP | Ct | COAL/Carb(4mm) | |
| 17.24 | FP/BP | 30° | UN | | | CD | Vr | | Carb |
| 17.30 | FP/BP | 10° | UN | | | CD | Vr | | Carb |
| 17.52 | FP/BP | 0° | UN | | | CD | Ct | | COAL(2mm) |
| 17.63 | FP/BP | 0° | PI | SM | | OP | Vr | | Carb |
| 18.15 | FP/BP | 0-20° | UN | SM | | OP | Vr | | COAL |
| 18.16 | FP/BP | 5° | UN | | | CD | Ct | Carb/COAL(1-2mm) | |
| 18.18 | FP/BP | 5° | UN | SM | | OP/TI | Vr | | Carb/COAL |
| 18.73 | FP/BP | 0° | UN | | | CD | Ct | | Carb |
| 18.74 | FP/BP | 5° | UN | | | CD | Vr | | Carb(4mm) |
| 18.745 | FP/BP | 5° | UN | | | CD | Vr | | Carb |
| 18.75 | FP/BP | 5° | UN | | | CD | Vr | | Carb |
| 19.04 | FP/BP | 0° | PI | SM | | OP | Ct | | COAL(1mm) |
| 19.07 | FP/BP | 0-5° | UN | | | CD | Vr | | Carb |
| 19.10 | FP/BP | 0° | UN | SM | | OP | Vr | | COAL |

Note: 1. Describe zones and coatings in terms of composition and thickness (mm)

F:GEOT 533/9 – 2014

Detailed Discontinuity Description Log

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.

[illegible]

Note: 1. Describe zones and coatings in terms of composition and thickness (mm)

F:GEOT 533/9 – 2014

Detailed Discontinuity Description Log



This form is intended for the detailed description of discontinuities and defects as measured in outcrop by



Queensland
Government

STANDPIPE PIEZOMETER
INSTALLATION LOG

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

BOREHOLE No **CRR903**

Sheet 1 of 3

PIEZOMETER No **CRR903**

| | | | | | |
|------------|--|--------------|-------|-------------------------------------|------------|
| PROJECT | Cross River Rail (CRR) Project - Additional Geotechnical Investigation | | | | |
| LOCATION | Rocklea Station (North) | | | COORDINATES 501384.8 E; 6953207.6 N | |
| PROJECT No | FG6470 | SURFACE RL | 8.65m | PLUNGE | 90° |
| | | | | DATE STARTED | 05/07/2018 |
| | | | | GRID DATUM | MGA94 |
| JOB No | | HEIGHT DATUM | AHD | BEARING | ° |
| | | | | DATE COMPLETED | 06/07/2018 |
| | | | | 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 |
| | 8.05 | | Clayey GRAVEL and COBBLES (Fill) Brown, dark brown, and grey, moist, dense to very dense. Cobbles are subangular, 60-80mm diameter. | | | |
| 1 | | | Silty CLAY (Alluvium) Pale grey and brown, moist, firm to stiff. High plasticity. From 0.8m: Becoming grey to pale grey mottled orange and red. | | | Grout: Cement / Bentonite mix |
| 2 | | | | 2.00m / 6.65 AHD | | |
| 3 | | | | 3.00m / 5.65 AHD | | Bentonite seal |
| 4 | | | 3.5m: Soft | | | |
| 5 | | | 4.5m: Very stiff | | | |
| 6 | | | 6.0m: Firm | | | |
| 7 | | | | | | |
| 8 | | | | | | |
| 9 | 0.15 | | Sandy CLAY (Alluvium) Pale grey mottled pale orange, moist, very stiff. Fine to medium grained sand. Low plasticity. Interbedded with Clayey SAND and Clay. | | | |
| -1.35 | | | | | | |

Continued on next sheet

| | | |
|--|-----------|-------------|
| REMARKS: Rjbw - Woogaroo Subgroup. 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 **CRR903**

Sheet 2 of 3

PIEZOMETER No **CRR903**

| | | | | | |
|------------|--|--------------|-------|-------------------------------------|------------|
| PROJECT | Cross River Rail (CRR) Project - Additional Geotechnical Investigation | | | | |
| LOCATION | Rocklea Station (North) | | | COORDINATES 501384.8 E; 6953207.6 N | |
| PROJECT No | FG6470 | SURFACE RL | 8.65m | PLUNGE | 90° |
| | | | | DATE STARTED | 05/07/2018 |
| | | | | GRID DATUM | MGA94 |
| JOB No | | HEIGHT DATUM | AHD | BEARING | ° |
| | | | | DATE COMPLETED | 06/07/2018 |
| | | | | 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 |
| 11 | | | Sandy CLAY (Alluvium) Cont'd. | | | |
| 12 | -3.35 | | Gravelly Clayey SAND (Alluvium) Pale grey mottled orange, moist, dense. Fine to medium gravel, subrounded to subangular. From 12.0m: Increase in gravel fraction. Fine to medium grained, subangular to subrounded. | | | |
| 13 | | | 13.5m: Medium dense | | | |
| 14 | | | | | | |
| 15 | -5.85 | | SANDSTONE (Rjbw) XW: Recovered as brown, moist, hard, Sandy CLAY. Fine to medium grained Sand. Medium plasticity. | | | Filter: Washed / Graded sand |
| 16 | | | | | | |
| 17 | -7.75 | | SANDSTONE (Rjbw) SW: Grey, fine to medium grained, thickly bedded, medium strength. - BP: 0°-20° (15-20/m), Pl/Sm, OP/CD, Coal/Carb Vr or Ct. | | | |
| 18 | | | | | | |
| 19 | | | From 19.0m: BP frequency increasing to ~20-30/m. | | | |
| | | | | 19.45m / -10.80 AHD | | Top of slotted pipe |
| -11.35 | | | | | | |

Continued on next sheet

REMARKS: Rjbw - Woogaroo Subgroup. Standpipe piezometer installed.

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REVIEWED BY

ND

S. Foley



Queensland
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STANDPIPE PIEZOMETER
INSTALLATION LOG

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

BOREHOLE No **CRR903**
Sheet 3 of 3
PIEZOMETER No **CRR903**

| | | | | | |
|------------|--|--------------|-------|-------------------------------------|------------|
| PROJECT | Cross River Rail (CRR) Project - Additional Geotechnical Investigation | | | | |
| LOCATION | Rocklea Station (North) | | | COORDINATES 501384.8 E; 6953207.6 N | |
| PROJECT No | FG6470 | SURFACE RL | 8.65m | PLUNGE | 90° |
| | | | | DATE STARTED | 05/07/2018 |
| JOB No | | HEIGHT DATUM | AHD | BEARING | ° |
| | | | | DATE COMPLETED | 06/07/2018 |
| | | | | 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 | | | SANDSTONE (Rjbw) SW: Cont'd. | | | |
| 22 | | | | | | |
| | -13.80 | | | 22.45m / -13.80 AHD | | |
| | | | Borehole completed at 22.45m | | | |
| 23 | | | | | | |
| 24 | | | | | | |
| 25 | | | | | | |
| 26 | | | | | | |
| 27 | | | | | | |
| 28 | | | | | | |
| 29 | | | | | | |

| | | |
|--|-----------|-------------|
| REMARKS: Rjbw - Woogaroo Subgroup. 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

| | | | |
|--------------|--|------------------|------------|
| Project Name | Cross River Rail CRR 2018 – Geotechnical Investigation | | |
| Project No. | FG6470 | Date | 05/07/2018 |
| Borehole No. | CRR903 | Reference No. | H13111 |
| Location | Rocklea Station | Start Depth (m) | 16.45 |
| Submitted By | J. Armstrong | Finish Depth (m) | 22.45 |

