FINAL 02/11/2017

Queensland Government

# GEOTECHNICAL BOREHOLE LOG

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

BOREHOLE No **BH17**

Sheet 1 of 3

REFERENCE No **H12911**

PROJECT Boyne River Bridge Repalcement

LOCATION Abutment B, LHS

COORDINATES 323395.2 E; 7159808.3 N

PROJECT No FG6482 | SURFACE RL 126.95m | PLUNGE 90° | DATE STARTED 04/07/2017 | GRID DATUM MGA Z56

JOB No 249/435/375550 | HEIGHT DATUM AHD | BEARING ° | DATE COMPLETED 05/07/2017 | DRILLER NorthCoast Drilling

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | Sandy SILT (Alluvium)<br>Pale brown to brown, moist, stiff.<br>Fine grained sand. | | | | | | |
| 1 | | | | A | | | (ML) | | | 7, 7, 6<br>N=13 | SPT |
| 2 | 124.95 | | | B | Silty CLAY (Alluvium)<br>Pale brown to brown, moist, very stiff.<br>Low plasticity. | | | | | 6, 8, 8<br>N=16 | SPT |
| 3 | | | | C | 3.00m: Becoming dark brown, medium plasticity. | | (CL) | | | 9, 11, 11<br>N=22 | SPT |
| 4 | | | | D | | | | | | 11, 12, 11<br>N=23 | SPT |
| 5 | 121.95 | | | E | Silty SAND (Alluvium)<br>Pale brown to brown, moist, medium dense.<br>Fine grained sand. | | | | | 11, 13, 11<br>N=24 | SPT |
| 6 | | | | F | | | (SM) | | | 12, 13, 15<br>N=28 | SPT |
| 7 | 119.95 | | | G | Silty CLAY with Sand (Alluvium)<br>Pale brown to dark brown, moist, very stiff.<br>Low to medium plasticity. Fine grained sand. | | | | | 10, 12, 13<br>N=25 | SPT |
| 8 | | | | H | 8.00m: Becoming hard, trace Gravel. | | (CI) | | | 10, 15, 20<br>N=35 | SPT |
| 9 | 117.95 | | | I | Silty CLAY trace Sand (Alluvium)<br>Pale brown mottle pale grey, moist, very stiff to hard.<br>Low to medium plasticity.<br>Fine grained sand. | | (CL) | | | 11, 14, 15<br>N=29 | SPT |
| | 116.95 | | | | | | | | | | |

Continued on next sheet

REMARKS: Je1 - Evergreen Formation. Standpipe piezometer installed.

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

FINAL 02/11/2017

Queensland Government

# GEOTECHNICAL BOREHOLE LOG

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

BOREHOLE No **BH17**

Sheet 2 of 3

REFERENCE No **H12911**

PROJECT Boyne River Bridge Repalcement

LOCATION Abutment B, LHS

COORDINATES 323395.2 E; 7159808.3 N

PROJECT No FG6482 | SURFACE RL 126.95m | PLUNGE 90° | DATE STARTED 04/07/2017 | GRID DATUM MGA Z56

JOB No 249/435/375550 | HEIGHT DATUM AHD | BEARING ° | DATE COMPLETED 05/07/2017 | DRILLER NorthCoast Drilling

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | | | | J | Silty CLAY trace Sand (Alluvium)<br>Cont'd. Becoming hard, | | (CL) | | | 14, 16, 19<br>N=35 | SPT |
| | | | | K | | | | | | 15, 20, 30/130mm<br>hb | SPT |
| 12 | 114.95 | | | L | Silty SAND (Alluvium)<br>Pale brown mottled pale grey, moist, dense.<br>Fine grained sand. | | (SM) | | | 15, 15, 24<br>N=39 | SPT |
| 13 | 113.95 | | | M | Silty CLAY trace Sand (Alluvium)<br>Pale brown mottled pink and pale grey, moist, hard.<br>Medium plasticity.<br>Fine grained sand. | | | | | 17, 28, 30/90mm | SPT |
| | | | | | | | | | | 13.65m: Groundwater level.<br>04/09/2017 | |
| 14 | | | | N | 14.00m: Becoming pale grey pale brown, stiff. | | (CI) | | | 13, 8, 17<br>N=25 | SPT |
| 15 | 111.95 | | | O | Sandy SILT (Residual)<br>Red mottled pale brown, moist, hard.<br>Medium to high plasticity.<br>Fine grained sand. | | (MH) | | | 30/145mm<br>hb | SPT |
| 16 | 110.95 | | | P | Silty CLAY with Sand (Residual)<br>Pale grey mottled pale brown, moist, hard. Low plasticity, fine grained sand. | | (CL) | | | 30/100mm<br>hb | SPT |
| | 110.35 | | (56) | | SANDSTONE (Je1)<br>MW: Pale grey mottled orange brown, fine grained, very thinly to thinly bedded, low to medium strength.<br>- BP: 20° to 30° (4-6/m); Pl/Ro; Tl; Fe St; some Cly Vr<br>- Js: 45° to 60° (<1/m); Pl/Ro; Tl; Fe St; Cly Vr<br>- Js: 80° to 90° (<1/m); Un/Ro; Tl-CD; Fe St; Cly Vr | | MW | L C | | Is(50)=0.26 MPa<br>Is(50)=0.15 MPa | D (16.80m)<br>A (16.81m) |
| 17 | | | | | | | HW | M C | | 17.08m-17.13m: HW, Sand | |
| | | | 100 (15) | | | | MW | M C LM VC L | | Is(50)=0.22 MPa<br>Is(50)=0.48 MPa<br>18.17m-18.21m: BZ, DI<br>18.31m-18.36m: BZ, HW<br>18.42m-18.48m: BZ, HW | D (17.42m)<br>A (17.44m) |
| 18 | | | 100 (41) | | | | XW | M C LM | | Is(50)=0.14 MPa<br>Is(50)=0.21 MPa | D (18.52m)<br>A (18.54m) |
| 19 | | | 100 (28) | | | | MW | M M | | Is(50)=0.66 MPa<br>Is(50)=0.46 MPa<br>UCS=6.23 MPa | D (19.52m)<br>A (19.54m)<br>(19.71m) |
| | 106.95 | | | | | | | | | | |

Continued on next sheet

REMARKS: Je1 - Evergreen Formation. Standpipe piezometer installed.

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

FINAL 02/11/2017

Queensland Government

# GEOTECHNICAL BOREHOLE LOG

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

BOREHOLE No **BH17**

Sheet 3 of 3

REFERENCE No **H12911**

PROJECT Boyne River Bridge Repalcement

LOCATION Abutment B, LHS

COORDINATES 323395.2 E; 7159808.3 N

PROJECT No FG6482 | SURFACE RL 126.95m | PLUNGE 90° | DATE STARTED 04/07/2017 | GRID DATUM MGA Z56

JOB No 249/435/375550 | HEIGHT DATUM AHD | BEARING ° | DATE COMPLETED 05/07/2017 | DRILLER NorthCoast Drilling

| DEPTH (m) | R.L. (m) | RQD ( ) % / CORE REC % | SAMPLE | MATERIAL DESCRIPTION | USCS WEATHERING | ADDITIONAL DATA AND TEST RESULTS | SAMPLES TESTS |
|---|---|---|---|---|---|---|---|
| 21 | | 100 (8) | | SANDSTONE (Je1) MW: Cont'd. | MW | 20.44m-20.49m: BZ, HW<br>20.68m-20.72m: BZ, HW | Is(50)=0.31 MPa D (20.35m)<br>Is(50)=0.24 MPa A (20.36m) |
| 22 | | | | | XW<br>MW | | Is(50)=0.19 MPa D (21.22m)<br>Is(50)=0.11 MPa A (21.25m) |
| 23 | 104.13 | 96 (17) | CORE LOSS | SANDSTONE (Je1) HW: Pale grey mottled orange brown, fine grained, very thinly bedded, mainly very low to low strength. - BP: 15° to 25° (9-12/m); Pl/Sm-Ro; Tl; some Fe St; Cly Vr - Js: 50° to 70° (3-4/m); Pl-Un/Sm-Ro; Tl; some Fe St; Cly Vr | XW<br>MW<br>XW<br>XW<br>HW<br>MW | 23.54m-23.75m: HFZ, BZ<br>23.75m-23.90m: HW, BZ<br>24.14m-24.24m: BZ | Is(50)=0.07 MPa D (22.10m)<br>Is(50)=0.21 MPa A (22.11m)<br>Is(50)=0.02 MPa D (24.05m)<br>Is(50)=0.03 MPa A (24.06m)<br>Is(50)=0.13 MPa D (24.45m)<br>Is(50)=0.10 MPa A (24.46m) |
| 25 | 101.95 | 100 (29) | | SANDSTONE (Je1) MW: Pale grey mottled pale brown, fine grained, very thinly to thinly bedded, low to medium strength. - LP/BP: 10° to 20° (3-6/m); Pl/Ro-Sm; Tl; some Fe St; Cly Vr - Js: 40° to 60° (1-2/m); Pl/Ro-Sm; Tl; some Fe St; some Cly Vr - Js: 80° to 90° (<1/m); Un/Sm; Tl; Cly Vr | HW<br>MW | 25.03m-25.11m: HW, BZ<br>25.70m-25.97m: J:90°: Un/Sm,Tl, Cly Vr | UCS=6.16 MPa (25.22m) |
| 26 | | | | | | | Is(50)=0.11 MPa D (26.05m)<br>Is(50)=0.04 MPa A (26.06m) |
| 27 | | 100 (54) | | | HW<br>MW<br>HW<br>MW<br>HW | 26.60m-26.70m: BZ, DI<br>27.49m-27.62m: HW, BZ | Is(50)=0.08 MPa D (26.85m)<br>Is(50)=0.08 MPa A (26.87m)<br>Is(50)=0.19 MPa D (27.20m)<br>Is(50)=0.09 MPa A (27.22m) |
| 28 | 98.85 | 100 | | Borehole completed at 28.10m | MW | 27.85m-27.94m: BZ | |
| 29 | | | | | | | |

REMARKS: Je1 - Evergreen Formation. Standpipe piezometer installed.

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

TMR GEOTECHNICAL BOREHOLE LOG - CREATED WITH HOLEBASE SI

FINAL 02/11/2017

Queensland Government

# STANDPIPE PIEZOMETER INSTALLATION LOG

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

BOREHOLE No **BH17**

Sheet 1 of 3

PIEZOMETER No **BH17**

PROJECT Boyne River Bridge Repalcement

LOCATION Abutment B, LHS

COORDINATES 323395.2 E; 7159808.3 N

PROJECT No FG6482 | SURFACE RL 126.95m | PLUNGE 90° | DATE STARTED 04/07/2017 | GRID DATUM MGA Z56

JOB No 249/435/375550 | HEIGHT DATUM AHD | BEARING ° | DATE COMPLETED 05/07/2017 | DRILLER NorthCoast Drilling

| DEPTH (m) | R.L. (m) | LITHOLOGY | MATERIAL DESCRIPTION |
|---|---|---|---|
| 0 | | | Sandy SILT (Alluvium)<br>Pale brown to brown, moist, stiff.<br>Fine grained sand. |
| 2 | 124.95 | | Silty CLAY (Alluvium)<br>Pale brown to brown, moist, very stiff.<br>Low plasticity. |
| 3 | | | 3.00m: Becoming dark brown, medium plasticity. |
| 5 | 121.95 | | Silty SAND (Alluvium)<br>Pale brown to brown, moist, medium dense.<br>Fine grained sand. |
| 7 | 119.95 | | Silty CLAY with Sand (Alluvium)<br>Pale brown to dark brown, moist, very stiff.<br>Low to medium plasticity. Fine grained sand. |
| 8 | | | 8.00m: Becoming hard, trace Gravel. |
| 9 | 117.95 | | Silty CLAY trace Sand (Alluvium)<br>Pale brown mottle pale grey, moist, very stiff to hard.<br>Low to medium plasticity.<br>Fine grained sand. |
| | 116.95 | | |

## Standpipe Piezometer Construction Details

| Depth (m) /RL (AHD) | 50mm PVC Class No. 18 Stick Up = 0.50m Encased in Steel Monument | Backfill Details |
|---|---|---|
| 0.20m / 126.75 AHD | | Rapid-set concrete |
| | | Grout |

Continued on next sheet

REMARKS: Je1 - Evergreen Formation. Standpipe piezometer installed.

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

FINAL 02/11/2017

Queensland Government

# STANDPIPE PIEZOMETER INSTALLATION LOG

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

BOREHOLE No **BH17**

Sheet 2 of 3

PIEZOMETER No **BH17**

PROJECT Boyne River Bridge Repalcement

LOCATION Abutment B, LHS — COORDINATES 323395.2 E; 7159808.3 N

PROJECT No FG6482 — SURFACE RL 126.95m — PLUNGE 90° — DATE STARTED 04/07/2017 — GRID DATUM MGA Z56

JOB No 249/435/375550 — HEIGHT DATUM AHD — BEARING ° — DATE COMPLETED 05/07/2017 — DRILLER NorthCoast Drilling

| DEPTH (m) | R.L. (m) | LITHOLOGY | MATERIAL DESCRIPTION |
|---|---|---|---|
| 11 | | | Silty CLAY trace Sand (Alluvium)<br>Cont'd. Becoming hard, |
| 12 | 114.95 | | Silty SAND (Alluvium)<br>Pale brown mottled pale grey, moist, dense.<br>Fine grained sand. |
| 13 | 113.95 | | Silty CLAY trace Sand (Alluvium)<br>Pale brown mottled pink and pale grey, moist, hard.<br>Medium plasticity.<br>Fine grained sand. |
| 14 | | | 14.00m: Becoming pale grey pale brown, stiff. |
| 15 | 111.95 | | Sandy SILT (Residual)<br>Red mottled pale brown, moist, hard.<br>Medium to high plasticity.<br>Fine grained sand. |
| 16 | 110.95 | | Silty CLAY with Sand (Residual)<br>Pale grey mottled pale brown, moist, hard. Low plasticity, fine grained sand. |
| 17 | 110.35 | | SANDSTONE (Je1)<br>MW: Pale grey mottled orange brown, fine grained, very thinly to thinly bedded, low to medium strength.<br>- BP: 20° to 30° (4-6/m); Pl/Ro; Tl; Fe St; some Cly Vr<br>- Js: 45° to 60° (<1/m); Pl/Ro; Tl; Fe St; Cly Vr<br>- Js: 80° to 90° (<1/m); Un/Ro; Tl-CD; Fe St; Cly Vr |
| 18 | | | |
| 19 | 106.95 | | |

## Standpipe Piezometer Construction Details

| Depth (m) /RL (AHD) | 50mm PVC Class No. 18 Stick Up = 0.50m Encased in Steel Monument | Backfill Details |
|---|---|---|
| 04/09/2017<br>14.10m / 112.85 AHD | | |
| 16.10m / 110.85 AHD | | Bentonite<br>Top of slotted pipe |

Continued on next sheet

REMARKS: Je1 - Evergreen Formation. Standpipe piezometer installed.

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

**FINAL** 02/11/2017

Queensland Government

# STANDPIPE PIEZOMETER INSTALLATION LOG

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

BOREHOLE No **BH17**

Sheet 3 of 3

PIEZOMETER No **BH17**

PROJECT Boyne River Bridge Repalcement

LOCATION Abutment B, LHS

COORDINATES 323395.2 E; 7159808.3 N

PROJECT No FG6482 | SURFACE RL 126.95m | PLUNGE 90° | DATE STARTED 04/07/2017 | GRID DATUM MGA Z56

JOB No 249/435/375550 | HEIGHT DATUM AHD | BEARING ° | DATE COMPLETED 05/07/2017 | DRILLER NorthCoast Drilling

| DEPTH (m) | R.L. (m) | LITHOLOGY | MATERIAL DESCRIPTION | Standpipe Piezometer Construction Details: Depth (m) /RL (AHD) | 50mm PVC Class No. 18 Stick Up = 0.50m Encased in Steel Monument | Backfill Details |
|---|---|---|---|---|---|---|
| 21 | | | SANDSTONE (Je1)<br>MW: Cont'd. | | | |
| 22 | | | | | | |
| | 104.13 | | | | | |
| 23 | | | SANDSTONE (Je1)<br>HW: Pale grey mottled orange brown, fine grained, very thinly bedded, mainly very low to low strength.<br>- BP: 15° to 25° (9-12/m); Pl/Sm-Ro; TI; some Fe St; Cly Vr<br>- Js: 50° to 70° (3-4/m); Pl-Un/Sm-Ro; TI; some Fe St; Cly Vr | | | |
| 24 | | | | | | Graded Sand |
| | 101.95 | | | | | |
| 25 | | | SANDSTONE (Je1)<br>MW: Pale grey mottled pale brown, fine grained, very thinly to thinly bedded, low to medium strength.<br>- LP/BP: 10° to 20° (3-6/m); Pl/Ro-Sm; TI; some Fe St; Cly Vr<br>- Js: 40° to 60° (1-2/m); Pl/Ro-Sm; TI; some Fe St; some Cly Vr<br>- Js: 80° to 90° (<1/m); Un/Sm; TI; Cly Vr | | | |
| 26 | | | | | | |
| 27 | | | | | | |
| 28 | 98.85 | | | 28.10m / 98.85 AHD | | |
| | | | Borehole completed at 28.10m | | | |
| 29 | | | | | | |

REMARKS: Je1 - Evergreen Formation. Standpipe piezometer installed.

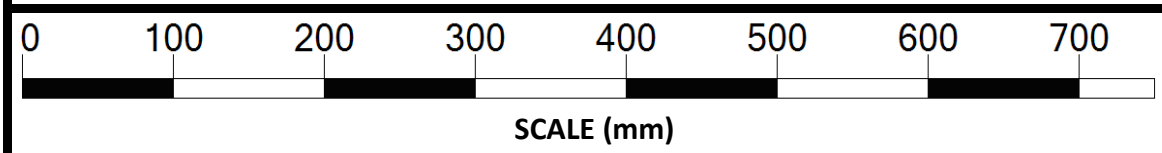
| LOGGED BY | REVIEWED BY |
|---|---|
| S. Louei | S. Foley |

TMR STANDPIPE PIEZOMETER INSTALLATION LOG - CREATED WITH HOLEBASE SI

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

Queensland Government

| | | | |
|---|---|---|---|
| Project Name | **Boyne River Bridge Replacement** | | |
| Project No. | FG6482 | Date | 05/07/2017 |
| Borehole No. | BH17 | Reference No. | H12911 |
| Location | Abutment B, LHS | Start Depth (m) | 16.60 |
| Submitted By | S. Louei | Finish Depth (m) | 28.10 |
| Remarks | | | |

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

Queensland Government

| | | | |
|---|---|---|---|
| Project Name | **Boyne River Bridge Replacement** | | |
| Project No. | FG6482 | Date | 05/07/2017 |
| Borehole No. | BH17 | Reference No. | H12911 |
| Location | Abutment B, LHS | Start Depth (m) | 16.60 |
| Submitted By | S. Louei | Finish Depth (m) | 28.10 |
| Remarks | | | |