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# ENGINEERING BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/6-2010

|           | JECT        |                                |          | <u>hw</u> a | ıχŲ    | pgrade (Cooroy to Curra) Section C  |   |                   |                               |  |             | DORDINATES 470527.1 E; 7097567.0 N   |
|-----------|-------------|--------------------------------|----------|-------------|--------|---|---|-------------------|-------------------------------|--|-------------|--|
|           |             | _Cut                           | -        |             |        | SURFACE R.L. <u>83.30m</u> PLUNGE _   |   |                   | <br>DATE S                    | <br>TARTED _                                 |             |  |
| JOB       |             |                                |          |             |        | HEIGHT DATUM AHD BEARING  |   |                   |                               |  |             |  |
| DEPTH (m) | R.L.<br>(m) | AUGER<br>CASING<br>WASH BORING |          | %<br>RE     | SAMPLE | MATERIAL<br>DESCRIPTION   | LITHOLOGY                               | JSC<br>WEATHERING | INTACT<br>STRENGTH<br>ボデェアップゴ | DEFECT<br>SPACING<br>(mm)                    | GRAPHIC LOG | ADDITIONAL DATA  AND SAMPLES SAMPLESTS   |
| 0         | 83.30       |                                | O INEC   | 74          | -      | TOPSOIL: Grey, dry, clayey silt. Gravel   | 71.4                                    | (ML)              |                               | <u>-                                    </u> |             |  |
|           | 00.00       |                                |          |             | A      | fragments <50mm  SILTSTONE (HW): Brown/grey, fine grained, subtly foliated.   | ***                                     | HW                | -                             |  |             | Based on driller's logs only  28,30/80 N>50  SPT   |
| E         |             | _ [                            |          |             |        |   | XXX                                     |                   | ]                             | -  |             | <u>-</u>   |
| 2         | 81.60       |                                | 10 (25   | 0           |        | SILTSTONE (MW): Grey/brown, fine grained, subtly foliated, medium to high strength, indurated and/or slightly metamorphosed.  Defects: -Foliation parting at 40° (4/m) -Joint at 30° (<1/m) -Joint at 60°-70° (<1/m)  Defect spacing is generally medium. | × > > × > > × > × > × > × > × > × > × > |                   |                               |  |             | Clay Seam HW Zone Clay Seam  BZ  J, 60°, PI, T, Clnf  FP, 50°, PI, T, FeSt J, 40°, PI, T, Clnf, 3mm                        |
| 4         |             |                                | (5)      | _           |        | Defect surfaces are planar, tight, smooth, thinly clay infilled, iron stained.  | *******                                 |                   |                               |  |             | — J, 60°, PI, O, Clnf, 10mm  |
| 5         |             |                                | 10       |             |        |   | × × × × ×                               | MW                |                               |  |             | — J, 40°, PI, T, S<br>— J, 40°, PI, T, S<br>Is(50) = 3.04MPa o ls(50) = 2.14MPa x  |
| 7         |             |                                | 10 (4-   | -           |        |   | × 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 |                   |                               |  |             | Is(50) = 1.19MPa x ls(50) = 0.58MPa o _  |
| - 8       |             |                                | 10       |             |        |   | X                                       |                   |                               |  |             | DD = 2.53t/m³; MC = 2.4%; UCS=6.44MPa  FP, 40°, PI, O, Clnf, 10mm  FP, 40°, PI, O, Clnf, 10mm  — J, 60°, PI, T, Clnf, FeSt |
| 9 10      |             |                                | 10       |             |        |   | *************************************** |                   |                               |  |             | Is(50) = 0.80MPa x - Is(50) = 4.04MPa o  |
|           | EMARK       | 3 *Poi                         | int load | faile       | d al   | ong existing defect.  | 22                                      | 22                |                               |  |             | LOGGED BY  |
|           |             |                                |          |             | _      |   |   |                   |                               |  |             | JA/DC  |



### ENGINEERING BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/6-2010

PROJECT Bruce Highway Upgrade (Coordy to Curra) Section C COORDINATES 470527.1 E; 7097567.0 N LOCATION Cut 16\_ DATE STARTED \_19/08/11\_ SURFACE R.L. \_\_83.30m\_ PLUNGE GRID DATUM MGA94\_ PROJECT No FG5799 \_ 232/10A/2 \_ \_ HEIGHT DATUM \_ AHD \_ BEARING \_\_\_\_\_. DATE COMPLETED 19/08/11 DRILLER <u>Drillsure Pty Ltd</u> JOB No INTACT DEFECT RQD R.L AUGER CASHING WASH BORING CORE DRILLING ADDITIONAL DATA STRENGTH SPACING ()% 90 Ξ MATERIAL LITHOLOGY DEPTH AND GRAPHIC SAMPLE DESCRIPTION USC SAMPLE TESTS 88888 CORE TEST RESULTS ᄪᆇᆂᄛᄀᆋᇚ REC % 10 (30) SILTSTONE (MW): Cont'd ☐— Clayey Zone J, 70°, PI, T, S, CInf MAA -FP. 40°. Pl. O. Cinf, 5mm 72.13 FP 40° PLO CINE 5mm SILTSTONE (SW): 100 Grey, fine grained, subtly foliated, high (95)strength, indurated and/or slightly Is(50) = 2.36MPa metamorphosed. Is(50) = 1.41MPa 0 12/12/2011 16:30 12 Defects: -Foliation parting at 40° (3-4/m) -Joint at 50° (<1/m) -Joint at 70° (<1/m) Datgel CPT Tool glNt Add⊣n Defect spacing is generally medium. Defect surfaces are planar, tight or open, 100 - 13 smooth, thinly clay infilled, iron stained. (75)DWG46352.GDW L<sub>14</sub> Is(50) = 2.11MPa J. 60°, Pl. T. Cinf, FeSt J, 40°, Pl, C, QZ 100 - FP, 40°, PI, T, S, CInf, FeSt - FP, 40°, PI, T, S, CInf, FeSt SECTION C.GPJ (57) UPGRADE - J. 70°. Pl. T. Cinf SW ¥ 100 FG5799 - BRUCE - 16 (63) Is(50) = 3.41MPa 16,75-20.5: Water loss Leg A\_ENGINEERING BOREHOLE LOG W LITHOLOGY BZ - HFZ 100 (50)- 18 FP, 40°, PI, T, S J, 50°, PI, 1 is(50) = 0.94MPa Is(50) = 1.14MPa 0 Clayey Zone, 40° 100 01A.GLB (69) - J. 70°, Pl. T. SR, Cn DMR\_LIB 19.65-20.5: Becomming conglomeritic in parts with subrounded clasts sizing up to is(50) = 2.06MPa 20mm. <u>ls(50) = 0.60MPa;</u> LOGGED BY REMARKS \*Point load failed along existing defect JA/DC



# ENGINEERING BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/6-2010 BOREHOLE No \_\_BH C60\_ SHEET \_\_3\_ of \_\_3\_ REFERENCE No \_\_H11142\_\_

| PRO                      | DJECT       |   |                |            | Jpgrade (Cooroy to Curra) Se            | ction C    |           |                   |                         |                           |             |  |            |
|--------------------------|-------------|---|----------------|------------|---|------------|-----------|-------------------|-------------------------|---------------------------|-------------|--|------------|
|                          | ATION       |   |                |            |   | <b>-</b> - |           |                   |                         |                           |             | OORDINATES 470527.1 E; 709756                  | 7.0 N      |
| PRO                      | DJECT No    | • <u>FG5</u>                                    | 799            |            | SURFACE R.L. <u>83,30m</u>              | PLUNGE     |           |                   | DATE S                  | STARTED                   | 19/08       | 8/11 GRID DATUM MGA94                          |            |
| JOB                      | No          | 232/  | 10 <u>A</u> /2 | - <b>-</b> | HEIGHT DATUM AHD                        | BEARING    |           |                   | DATE CO                 | MPLETED                   | 19/08       | 8/11 DRILLER <u>Drillsure Pty</u>              | <u>Ltd</u> |
| DEPTH (m)                | R.L.<br>(m) | AUGER<br>CASING<br>WASH BORING<br>CORE DRILLING | CODE           | SAMPLE     | MATERIA<br>DESCRIPTI                    |            | LITHOLOGY | JSC<br>VEATHERING | INTACT<br>STRENGTH      | DEFECT<br>SPACING<br>(mm) | GRAPHIC LOG | ADDITIONAL DATA AND TEST RESULTS               | SAMPLES    |
| 20                       | 63.30       | 111   | REC %          | (0)        | SILTSTONE (SW): Cont'd                  |            |           | ⊃ ≤               |                         |                           | 9           | L SOR DI T OD OUG E-O                          | S F        |
| Ē                        | 62.80       |   | 100            |            | , |            | ××××      | sw                |                         |                           |             | J, 50°, Pl, T, SR, Clnf, FeSt<br>J, 40°, Pl, T |            |
| -                        | 02.00       |   | 100            |            | Borehole terminated at 20.5             | m          | × :       | 1                 |                         |                           |             |  |            |
| -                        |             |   |                |            |   |            |           |                   |                         | ‡                         |             |  |            |
| -21<br>-                 |             |   |                |            |   |            |           |                   | ]                       | +                         |             |  |            |
| -                        |             |   |                | İ          |   |            |           |                   |                         | Ī                         |             |  |            |
| Ė                        |             |   |                |            |   |            |           |                   | -                       | +                         |             |  |            |
| <u> </u>                 |             |   |                |            |   |            |           |                   |                         | Ī                         |             |  |            |
| -22                      |             |   |                |            |   |            |           |                   | -                       | +                         |             |  |            |
| -                        |             |   |                |            |   |            |           |                   |                         | Ę                         |             |  |            |
| F                        |             |   |                |            |   |            |           |                   | ]                       | -                         |             |  |            |
| ļ ,,                     |             |   |                |            |   |            |           |                   |                         | -                         |             |  |            |
|                          |             |   |                | [          |   |            |           |                   | ] -                     |                           |             |  |            |
| ΕÍ                       |             |   |                |            |   |            |           |                   | -                       | -                         |             |  |            |
|                          |             | İ   |                |            |   |            |           |                   | -                       |                           |             |  |            |
| E24                      |             |   |                |            |   |            |           |                   |                         | -                         |             |  |            |
| -                        |             |   |                |            |   |            |           |                   | ]                       |                           |             |  | '          |
| -24                      |             |   |                |            |   |            |           |                   | -                       | -                         |             |  |            |
| -                        |             |   |                |            |   |            |           |                   | _                       |                           |             |  | ]          |
| 25                       |             |   |                |            |   |            |           |                   | ]                       | -                         |             |  |            |
| Ė                        |             |   |                |            |   |            |           |                   | -                       | -                         |             |  |            |
| -                        |             |   |                |            |   |            |           |                   |                         | -                         |             |  |            |
| ŧΙ                       |             |   |                | 1          |   |            |           |                   | -                       |                           |             |  |            |
| - 26                     |             |   |                |            |   |            |           |                   | ! -<br>-<br>-<br>-<br>- | -                         |             |  |            |
|                          |             | ĺ   |                |            |   |            |           |                   | -                       |                           |             |  |            |
| -                        | 1           |   |                |            |   |            |           |                   |                         |                           |             |  |            |
| ΕÍ                       |             |   |                |            |   |            |           |                   |                         | -                         |             |  |            |
| -27                      |             | - 1   |                |            |   |            |           |                   |                         | -<br>-                    |             |  |            |
| Ę Į                      | -           |   |                |            |   |            |           |                   | -                       |                           |             |  |            |
|                          |             |   |                |            |   |            |           |                   | 1                       | -                         |             |  | .          |
| [                        |             |   |                |            |   |            |           |                   | <del> </del>            |                           |             |  |            |
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| 29                       |             | - 1   |                |            |   |            |           |                   | ‡                       |                           |             |  | -          |
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|                          |             |   |                |            |   |            |           |                   | ‡                       | _                         |             |  | -          |
| -26<br>-27<br>-28<br>-28 |             | 1   |                |            |   |            |           | ł                 | ‡                       |                           |             |  |            |
|                          |             | *Deim   | leed Co        |            |   |            | -         |                   |                         |                           |             | Γ  | <u> </u>   |
| RE                       | EMARKS      | <u>-Point</u>                                   | ioad faile     | alo        | ong existing defect                     |            |           |                   |                         |                           |             | LOGGED BY                                      |            |
|                          |             |   |                |            |   |            |           | -                 |                         |                           |             | JA/DC  |            |

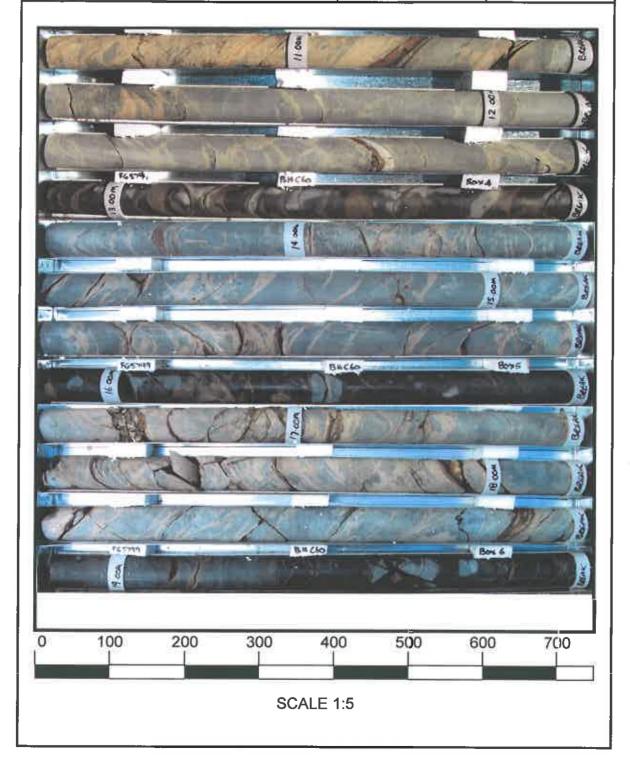


| Project Name: BRUCE HIGHWAY UPGRADE - SECTION C Project No.: FG5799 Date: 08/09/2011 Details: Cut 16 Start Depth (m): 1.70 Reference No.: H11142 Finish Depth (m): 20.50   |                | CORE PHOTO I     | _OG - BH C60      |            |
|--|----------------|------------------|-------------------|------------|
| Details: Cut 16 Start Depth (m): 1.70 Reference No.: H11142 Finish Depth (m): 20.50  | Project Name:  | BRUCE HIGHWAY UP | GRADE - SECTION C |            |
| Reference No.: H11142 Finish Depth (m): 20.50  | Project No.:   | FG5799           | Date:             | 08/09/2011 |
| BHE 60 | Details:       | Cut 16           | Start Depth (m):  | 1.70       |
| Batcas | Reference No.: | H11142           | Finish Depth (m): | 20.50      |
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|  |                | SCALE            | 4.5               |            |



# **CORE PHOTO LOG - BH C60**

| Project Name:  | BRUCE HIGHWAY UPG | RADE - SECTION C  | · · · · · · · · · · · · · · · · · · · |  |
|----------------|-------------------|-------------------|---------------------------------------|--|
| Project No.:   | FG5799            | Date:             | 08/09/2011                            |  |
| Details:       | Cut 16            | Start Depth (m):  | 1.70                                  |  |
| Reference No.: | H11142            | Finish Depth (m): | 20.50                                 |  |



DEPARTMENT OF TRANSPORT & MAIN ROADS Geotechnical Branch 35 Butterfield Street, HERSTON Qld 4006 Phone 07 3115 3035 Fax 07 3115 3011



## CORE PHOTO LOG - BH C60

| <u> </u>       |        | NETTIO101  | _OG - BH C60   |            |
|----------------|--------|------------|--|------------|
| Project Name:  | BRUCE  | HIGHWAY UP | GRADE - SECTION C  |            |
| Project No.:   | FG5799 |            | Date:  | 08/09/2011 |
| Details:       | Cut 16 |            | Start Depth (m):   | 1.70       |
| Reference No.: | H11142 |            | Finish Depth (m):  | 20.50      |
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|                |        | - 0        |  |            |
|                |        | SCALE      |  |            |