#### **COPYRIGHT NOTICE**

This geotechnical log and its associated data (the Document) is licensed by the Queensland Department of Transport and Main Roads under the <u>Creative Commons Attribution 4.0 Licence</u> (CC BY 4.0). When reusing the Document, in whole or in part, please attribute the Department as follows: "(c) State of Queensland (Department of Transport and Main Roads) 2020, licensed under the CC BY 4.0 Licence". This licence does not apply to the Queensland Government logo or trademarks.

### **LIMITATION OF LIABILITY**

The CC BY 4.0 Licence contains a comprehensive Disclaimer of Warranties and Limitation of Liability. In addition, please note that this Document was prepared for Departmental use only. Reuse of the Document by anyone for any other purpose could result in error and/or loss. You should obtain professional advice before making decisions based on the contents of the Document.

When reproducing any part of this Document, you must also reproduce this limitation of liability notice in addition to the italicised attribution statement above.

Retrieved from the Queensland Geotechnical Database http://qgd.org.au/



# **ENGINEERING**BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/5-2009

BOREHOLE No \_\_\_BH004 \_\_\_

SHEET \_\_1\_\_ of \_\_2\_\_

REFERENCE No \_\_\_H10625 \_\_\_

|                                     | BRU<br>Cut 4  |                  |        | AY (COOROY - CURRA) SECTION A GEOTI  |           |         |                               | <u>GATION</u>             |             | ORDINATI | <br>FS 489681.                   | 0 E; 7077864.8   | <br>B N |
|-------------------------------------|---------------|------------------|--------|--|-----------|---------|-------------------------------|---------------------------|-------------|----------|----------------------------------|--|---------|
|                                     |               |                  |        | SURFACE R.L127.19m PLUNGE  |           |         | DATE S                        | TARTED                    |             |          |                                  | MGA94  |         |
|                                     |               |                  |        | HEIGHT DATUM _AHD BEARING  |           |         |                               |                           |             |          |                                  | R & D Drilling   |         |
| R.L.<br>(m)                         | SORING        | RQD<br>()%       | SAMPLE | MATERIAL<br>DESCRIPTION  | LITHOLOGY | HERING  | INTACT<br>STRENGTH<br>ボデェミンブロ | DEFECT<br>SPACING<br>(mm) | GRAPHIC LOG | А        | DDITIONAL E<br>AND<br>TEST RESUL |  | SAMPLES |
| 0 127.19                            | 40≥0          | REC %            | S      | ROAD BASE  | 1         |         |                               | -                         | 0           |          |                                  |  | 0)      |
| 126.79                              |               |                  | A      | Silty CLAY Pale grey with mottled red iron staining, moist, very stiff. Intermediate plasticity, iron cemented in part.  |           | (CL-ML) | L) -                          |                           |             |          | N=20                             | 4,8,12<br>; MC = 17.6%   | SPT     |
| 124.69                              |               |                  | В      | Becoming less iron stained with depth.   |           |         | -                             |                           |             |          |                                  | 6,9,11<br>N=20   | SP      |
| 124.69 13 14 14 15 121.69 16 118.86 |               |                  | С      | MUDSTONE (XW): Generally exhibits the engineering properties of pale grey, moist, very stiff to hard silty Clay of intermediate plasticity.  Iron cemented in parts. |           |         |                               |                           |             |          |                                  | 7,13,18<br>N=31  | SP      |
| 4                                   |               |                  | D      |  |           | xw      |                               |                           |             |          | N=28                             | 7,11,17<br>s; MC = 21.2%   | SP      |
| 5 121.69                            |               |                  | Е      | 4.5m: Becoming slightly sandy, fine grained.   |           |         |                               |                           |             |          |                                  | 7,11,15<br>N=26  | SF      |
| 6                                   |               |                  | F      | SANDSTONE (XW): Generally exhibits the engineering properties of pale grey, moist, medium dense clayey Sand.  Becoming mottled red to brown with depth.              |           | xw      |                               | -                         |             |          |                                  | 6,11,13<br>N=24  | SF      |
| 7 120.19                            |               | (80)             | G      | SANDSTONE (HW): Pale grey with orange-red mottles.   |           |         |                               |                           |             |          | N>50                             | 13,22,30/140<br>0; MC = 17.2%                                    | SP      |
| 8                                   |               | 100              | X      |  |           | HW      |                               |                           |             |          | ls(t                             | 50) = 0.03MPa<br>50) = 0.01MPa                                   | x       |
| 118.86                              |               | (0)<br>44<br>(0) | _      | 8.1m: Becoming dark red.  MUDSTONE (MW): Pale grey with patches of brown-red, fine   |           |         |                               |                           |             |          | ls(!                             | 50) = 0.06MPa<br>50) = 0.06MPa<br>50) = 0.07MPa<br>50) = 0.05MPa | x       |
| 9                                   |               | 80 (8)           |        | grained.  Some steeply dipping defects.  Detailed defect descriptions shown on Form GEOT553/8 attached.  |           | MV      |                               |                           |             |          |                                  | UCS=55kPa<br>50) = 0.08MPa                                       | V       |
| 10                                  |               |                  |        | (See over)   |           | 1_      |                               |                           |             |          |                                  |  |         |
| REMARKS                             | S <u>Deta</u> | iled defe        | ct de  | scriptions are shown on Form GEOT533/8 attac   | ned.      |         |                               |                           |             | -        |                                  | LOGGED BY  |         |



## ENGINEERING BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/5-2009

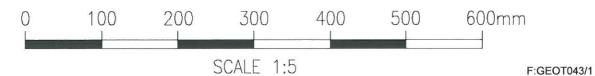
| PRO  | JECT          | BRU                          | CE HIG     | HW/    | Y (COOROY - CURRA) SEC         | TION A GEO   | TECHNIC   | AL INVESTIGATION                  | . — —          | <b></b>                    |                  |         |
|--|---------------|------------------------------|------------|--------|--------------------------------|--------------|-----------|-----------------------------------|----------------|----------------------------|------------------|---------|
|  |               | Cut 4 COORDINA               |            |        |                                |              |           |                                   | OORDINATES 485 | ES 489681.0 E; 7077864.8 N |                  |         |
|  |               |                              |            |        |                                |              |           |                                   |                |                            | GRID DATUM MGA94 |         |
| JOB I  | No            | _128/                        | 10A/901    | L      | HEIGHT DATUM _AHD              | BEARING      |           | DATE COMPLETED                    | 7/9/0          | 9 DRILL                    | ER R&D Drilling  |         |
|  | R.L.<br>(m)   | 90                           | RQD<br>()% |        |                                |              |           | INTACT DEFECT<br>STRENGTH SPACING | U              | ADDITION                   | IAL DATA         |         |
| DEPTH (m)  | , ,           | SORIN                        | 2.5        |        | MATERIAL                       |              | YSO       | (mm)                              | IC LO          | AM                         | ID               | S       |
| DEP  | (m)<br>117.19 | ASING<br>ASING<br>ASH<br>ORE | CORE       | SAMPLE | DESCRIPTIO                     | N            | LITHOLOGY | STRENGTH SPACING (mm)             | GRAPHIC LOG    | TEST RI                    | ESULTS           | SAMPLES |
| 10   | 117.19        | 4020                         | REC %      |        | MUDSTONE (MW): (Cont'd)        |              | 7 2       |                                   |                |                            |                  | 0)      |
|  |               |                              |            |        |                                |              |           |                                   |                |                            |                  |         |
| -  |               |                              | (0)        |        |                                |              |           |                                   |                |                            | ls(50) = 0.07MPa | x :     |
|  |               |                              |            |        |                                |              | MW        |                                   |                |                            |                  | -       |
|  |               |                              |            |        |                                |              |           |                                   |                |                            |                  |         |
| -  |               |                              |            |        |                                |              |           |                                   |                |                            |                  | -       |
| 10.00  | 145 10        |                              | 02         |        |                                |              |           | 1 =                               |                |                            |                  |         |
| 01D 0MR UB 0161B to 9.4 ENGINEERING BOREHOLE TO 6 WITH THE TOTAL T | 115.19        |                              | 83         |        | Borehole terminated at 12m     |              |           | ‡                                 |                |                            |                  | -       |
| -  |               |                              |            |        |                                |              |           | 1                                 |                |                            |                  | -       |
| - I BIINT  |               |                              |            |        |                                |              |           | 1 ‡                               |                |                            |                  |         |
| 13   |               |                              |            |        |                                |              |           | +                                 |                |                            |                  | _       |
| Datger   |               |                              |            |        |                                |              |           | 1                                 |                |                            |                  |         |
|  |               |                              |            |        |                                |              |           | <b>+</b>                          |                |                            |                  | -       |
| - 14   |               |                              |            |        |                                |              |           | 1                                 |                |                            |                  | -       |
| 2 14   |               |                              |            |        |                                |              |           | 1                                 |                |                            |                  |         |
| 5.65   |               |                              |            |        |                                |              |           | +                                 |                |                            |                  | -       |
| 2-   |               |                              |            |        |                                |              |           | 1                                 |                |                            |                  |         |
| 15   |               |                              |            |        |                                |              |           | <u> </u>                          |                |                            |                  | -       |
| 20-  |               |                              |            |        |                                |              |           | 1 ±                               |                |                            |                  |         |
| 2  |               |                              |            |        | r.                             |              |           | 1                                 |                | Ĭ                          |                  |         |
| 16   |               |                              |            |        |                                |              |           | 1                                 |                |                            |                  | _       |
| -  |               |                              | ļ          |        |                                |              |           | 1                                 |                |                            |                  |         |
| 2000   |               |                              |            |        | 5                              |              |           | +                                 |                |                            |                  |         |
| 3-   |               |                              |            |        |                                |              |           |                                   |                |                            |                  |         |
| 17   |               |                              |            |        |                                |              |           | <b>T</b>                          |                |                            |                  | 6       |
| \$ -  <br> -<br> -   |               |                              |            |        |                                |              |           | 1 ‡                               |                |                            |                  | -       |
|  |               |                              |            |        |                                |              |           | ‡                                 |                |                            |                  | å 3     |
| 18   |               |                              |            |        |                                |              |           | +                                 |                |                            |                  | -       |
|  |               |                              |            |        |                                |              |           | ‡                                 |                |                            |                  |         |
|  |               |                              |            |        |                                |              |           | <b>+</b>                          |                |                            |                  | 3       |
| B 10   |               |                              |            |        |                                |              |           | 1 ‡                               |                |                            |                  | 55      |
| - 18<br>- 18   |               |                              |            |        |                                |              |           | ‡                                 |                |                            |                  | 8       |
|  |               |                              |            |        |                                |              |           | 1 +                               |                |                            |                  | -       |
|  |               |                              |            |        |                                |              |           | 1                                 |                |                            |                  |         |
| d [ 20 ]   | EMAD          | S Deta                       | iled defe  | ct de  | scriptions are shown on Form C | EOT533/8 att | ached.    |                                   | <u> </u>       | _                          | LOGGED BY        |         |
| ,  | VEINN/L/L     |                              |            | _=     |                                |              |           |                                   |                | _                          | BW               |         |

Project: Bruce Highway Upgrade (Cooroy - Curra) Section A

Borehole No: BH4 7.00m Start Depth: Finish Depth: 12.00m Project No: FG5825

H No: 10626





## GEOTECHNICAL BRANCH LABORATORY

Materials Services - Brisbane 35 Butterfield Street, HERSTON Q 4006 Phone: (07) 3115 3000 Fax: (07) 3115 3011



## DEFECT DESCRIPTIONS OF ENGINEERING BORELOGS

[CHARACTERISATION OF DEFECTS ARE IN ACCORDANCE WITH GEOTECHNIICAL TERMS AND SYMBOLS – FORM : GEOT 017/5 – 2009

BOREHOLE NO.: BH4

SHEET: 1 of 1

REFERENCE NO.: H10625

PROJECT: Bruce Highway Upgrade (Cooroy – Curra) Section A Geotechnical Investigation

Cut 4

PROJECT NO.: FG5825 SURFACE R.L.: 127.2 DRILLER: R & D Drilling

JOB NO.: 128/10A/901 DATUM: MGA94 DATE DRILLED: 20/10/09

| DEPTH | DEFECT<br>TYPE | DIP<br>(DEGREES) | PLANARITY | ROUGHNESS | APERTURE | WALL<br>ALTERATION | OTHER |
|-------|----------------|------------------|-----------|-----------|----------|--------------------|-------|
| 7.18  | J              | 40               | PI        | S         | 0        |                    |       |
| 7.48  | J              | 20               | PI        | S         | 0        |                    |       |
| 8.29  | J              | 30               | Un        | S         | 0        |                    |       |
| 8.65  | J              | 65               | Pl        | S         | 0        |                    |       |
| 9.03  | J              | 60               | PI        | S         | 0        |                    |       |
| 10.88 | J              | 25               | PI        | S         | 0        |                    |       |
|       |                |                  |           |           |          |                    | 100 M |
|       |                |                  |           |           |          |                    |       |
|       |                |                  |           |           |          |                    |       |
|       |                |                  |           |           |          |                    |       |
|       |                |                  |           |           |          |                    | 101   |
|       |                |                  |           |           |          |                    |       |
|       |                |                  |           |           |          |                    |       |
|       |                |                  |           |           |          |                    | 8     |
|       |                |                  |           |           | 197      |                    |       |
|       |                |                  |           |           |          |                    |       |
|       |                |                  |           |           |          |                    |       |
|       |                |                  |           |           |          |                    |       |

Abbreviations (as per F: GEOT 017/5 - 2009)

|    | ROUGHNESS      | 1    | WALL ALTERATIONS         |       | TYPE                  | OTHER   |                  |  |
|----|----------------|------|--------------------------|-------|-----------------------|---------|------------------|--|
| R  | Rough          | FeSt | Iron Stained             | J, Js | Joint, Joints         | CI      | Clay Infill      |  |
| SR | Slightly Rough | W    | Weathered                | В     | Bedding               | CLy     | Clayey           |  |
| S  | Smooth         | Smn  | Secondary Mineralisation | BP    | Bedding Parting       | Co      | Coal Seam        |  |
| SL | Slickensided   | Cn   | Clean                    | FP    | Foliation Parting     | Carb    | Carbonaceous     |  |
| РО | Polished       | Mn   | Manganese Stained        | LP    | Lamination Parting    | SI      | Sand Infill      |  |
|    | PLANARITY      |      | APERTURE                 | CLV   | Cleavage              | QZ      | Quartz           |  |
| PI | Planar         | С    | Closed                   | Fr    | Fracture              | CA      | Calcite          |  |
| St | Stepped        | 0    | Open                     | SZ    | Sheared Zone          | Chl     | Chlorite         |  |
| Un | Undulating     | F    | Filled                   | CZ    | Crushed Zone          | In      | Incipient        |  |
| Cu | Curved         | Т    | Tight                    | BZ    | Broken Zone           | Int     | Intersecting     |  |
| lr | Irregular      |      |                          | HFZ   | Highly Fractured Zone | Lam (s) | Lamination (s)   |  |
|    |                |      |                          | WS    | Weathered Seam        | DI      | Drilling Induced |  |
|    |                |      |                          | VN    | Vein                  | Н       | Horizontal       |  |
|    |                |      |                          |       |                       | V       | Vertical         |  |

NOTE: This sheet should be read in conjunction with appropriate Engineering Borelog. Defect angles were measured with respect to horizontal plane.