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TMR JAN 15.GLB Log A\_ENGINEERING BOREHOLE LOG W LITHOLOGY FG6184 - BOREHOLES.GPJ <<DrawingFile>> Datgel CPT Tool gINt Add-In 04/03/2015 10:51

## ENGINEERING BOREHOLE LOG

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

| BOREHOLE No  | BH152      |
|--------------|------------|
| SHEET        | _1_ of _3_ |
| REFERENCE No | 12093      |

| PRO  | JECT        | _N         | 1 <u>acka</u>              | ay Ring F                    | Road_  | Geotechnical Investigation - Stage 1  |           |     |                 |                                     |              |                                |                             |                       |
|--|-------------|------------|----------------------------|------------------------------|--------|---|-----------|-----|-----------------|-------------------------------------|--------------|--------------------------------|-----------------------------|-----------------------|
| LOC  | ATION       | _C         | <u>R N</u>                 | orth Coa                     | st Ra  | il Overpass Abutment B; CH: 9988m;  |           |     |                 |                                     | CO           | ORDINATES 721580               | ) <u>.0 E; 7662297.</u>     | 4 <u>N</u>            |
| PRO  | JECT N      | 0 <u>F</u> | <u>G61</u>                 | 84                           |        | SURFACE R.L. <u>11</u> .04m PLUNGE _  |           |     |                 | DATE STARTED 2                      | <u>9/10/</u> | /14 GRID DATUM                 | GDA 94 /MG/                 | <u> Zone 55</u>       |
| JOB  | No          | _          |                            |                              |        | HEIGHT DATUM <u>AHD</u> BEARING _   |           |     | [               | DATE COMPLETED 3                    | <u>0/10/</u> | <u>/14</u> DRILLER             | Saxon Drilling              |                       |
| DEPTH (m)                                      | R.L.<br>(m) |            | ASH BORING<br>ORE DRILLING | RQD<br>( )%<br>CORE<br>REC % | SAMPLE | MATERIAL<br>DESCRIPTION   | LITHOLOGY | SC  | EATHERING<br>FH | INTACT DEFECT STRENGTH SPACING (mm) | GRAPHIC LOG  | ADDITIONAL<br>AND<br>TEST RESU |                             | SAMPLES TESTS         |
| 0  | 11.04       | . ₹C       | (S)                        | REC %                        | Ŋ      | Clayey GRAVEL and SAND (FILL)   | <u>-</u>  | ) s | <u> </u>        | <del> </del>                        | 9            |                                |                             | S F                   |
| 0.60   | 10.44       | <u>.</u>   |                            |                              |        | Silty CLAY (ALLUVIUM)   | KXX       | (GC |                 |                                     |              |                                |                             | -<br>-<br>-<br>-<br>- |
| -<br>-<br>-1<br>-                              |             |            |                            |                              | A      | Black, moist, soft to firm.<br>High plasticity.                                       |           |     |                 |                                     |              |                                | 2,2,2<br>N=4                | SPT T                 |
| -<br>-<br>-<br>-<br>-<br>-<br>-                |             |            |                            |                              |        |   |           | (CF | ⊣)              |                                     |              |                                | 111-4                       | -<br>-<br>-<br>-<br>- |
| -<br>-<br>-<br>-<br>-<br>-<br>-<br>2.70        | 8.34        |            |                            |                              | В      | 2.00m: Becoming stiff to very stiff.  |           |     |                 |                                     |              | Ş                              | Su <sub>(PP)</sub> =100kPa; | U50 ]                 |
| -<br>-<br>-3<br>-<br>-                         |             |            |                            |                              | С      | Silty CLAY (ALLUVIUM) Brown-grey, moist, firm to stiff. Medium plasticity.            |           | (CI | ·1)             |                                     |              |                                | 3,3,5<br>N=8                | SPT                   |
| 3.80   | 7.24        |            |                            |                              |        | Sandy Silty CLAY (ALLUVIUM)   |           |     | +               |                                     |              |                                |                             | -<br>-<br>-<br>-<br>- |
| -4<br>-<br>-<br>-<br>-<br>-<br>-               | 0.04        |            |                            |                              | D      | Brown-grey, moist, stiff.<br>Medium plasticity. Fine grained sand.                    |           | (CI | I)              |                                     |              |                                | 3,3,6<br>N=9                | SPT :                 |
| 4.80<br>-<br>-<br>5<br>-<br>-<br>-             | 6.24        | <u>-</u>   |                            |                              | Е      | Silty CLAY (ALLUVIUM) Brown-grey, moist, stiff. Medium plasticity. Trace fine gravel. |           |     |                 |                                     |              |                                | 3,3,5<br>N=8                | SPT -                 |
| -<br>-<br>-<br>-<br>6<br>-<br>-<br>-           |             |            |                            |                              | F      |   |           | (CI | 1)              | ±<br>±<br>±<br>±                    |              |                                | 4,6,8<br>N=14               | SPT =                 |
| -<br>-<br>-<br>-<br>7<br>-<br>-<br>-<br>-<br>- |             |            |                            |                              | G      |   |           |     |                 |                                     |              |                                | 3,5,7<br>N=12               | SPT -                 |
| -<br>- <sub>7.80</sub><br>-<br>- 8<br>-<br>-   | 3.24        |            |                            |                              | Н      | Silty SAND (ALLUVIUM) Pale brown-grey, moist, medium dense. Fine grained sand.        |           |     |                 |                                     |              |                                | 10,10,11<br>N=21            | SPT                   |
| <br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-       |             |            |                            |                              | J      |   |           | (SM | <b>VI)</b>      |                                     |              |                                | 9,12,13<br>N=25             | SPT :                 |
| -<br>-<br>-<br>-<br>10                         |             |            |                            | \A/                          | 05:: 0 | randicite:  |           |     |                 | +                                   |              |                                | 00050 00                    | -                     |
| R  | EMARK       |            |                            |                              |        | Granodiorite;   |           |     |                 |                                     |              |                                | LOGGED BY<br>ME             |                       |
|  |             |            |                            |                              |        | ong existing defect surface.  |           |     |                 |                                     |              |                                |                             |                       |
|  |             | K          | OCK                        | rzollet b                    | ı use  | d from 13.45m to 14.40m.  |           |     | — –             |                                     |              |                                |                             |                       |



TMR JAN 15.GLB Log A\_ENGINEERING BOREHOLE LOG W LITHOLOGY FG6184 - BOREHOLES.GPJ <<DrawingFile>> Datgel CPT Tool gINt Add-In 04/03/2015 10:51

# **ENGINEERING**BOREHOLE LOG

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

BOREHOLE No \_\_BH152 \_\_

SHEET \_\_2 \_ of \_\_3 \_\_

REFERENCE No \_\_12093 \_\_\_

| PRO   | JECT        |                 |                              |                                    |        | Geotechnical Investigation - Stage 1   |   |      |   |                     |             |  |                           |
|---|-------------|-----------------|------------------------------|------------------------------------|--------|--|---|------|---|---------------------|-------------|--|---------------------------|
|   | ATION       |                 |                              |                                    |        | il Overpass Abutment B; CH: 9988m;   |   |      |   |                     |             | ORDINATES 721580.0 E; 7662297  |                           |
| PRO   | JECT N      | 0_F             |                              |                                    |        | SURFACE R.L. <u>11.04m</u> PLUNGE  |   |      |   |                     |             | <u>/14</u> GRID DATUM <u>GDA 94 /MG</u>  | <u>A Zone 55</u>          |
| JOB   | No          | _               |                              |                                    |        | HEIGHT DATUM <u>AHD</u> BEARING  |   |      | DATE CO                                 | MPLETED 3           | 0/10        | DRILLER Saxon Drilling   | 1                         |
| DEPTH (m)   | R.L.<br>(m) | AÚGER<br>SASING | WASH BORING<br>SORE DRILLING | RQD<br>( )%                        | SAMPLE | MATERIAL<br>DESCRIPTION  | LITHOLOGY                               | JSC  | INTACT STRENGTH                         | DEFECT SPACING (mm) | GRAPHIC LOG | ADDITIONAL DATA  AND  TEST RESULTS   | SAMPLES                   |
| 10  | 1.04        | T               |                              | REC 76                             |        | Silty SAND (ALLUVIUM)  |   | 1212 | 1                                       | +                   |             | 7,12,14  | -                         |
| -<br>-<br>-<br>-<br>-<br>10.70  | 0.34        |                 |                              |                                    | K      | (Cont'd)   |   | (SN  |   |                     |             | N=26   | SPT :                     |
| -<br>-<br>11<br>-<br>-<br>-   |             |                 |                              |                                    | L      | Sandy Silty CLAY (RESIDUAL) Brown and grey, moist, very stiff. Medium plasticity. Fine to medium grained sand.   |   |      |   | #                   |             | 7,11,16<br>N=27  | SPT                       |
| -<br>-<br>-<br>-<br>-<br>12.20  | -1.16       |                 |                              |                                    |        |  |   | (CI  | )                                       |                     |             | 8 12 21  | -                         |
| -   | 1.10        |                 |                              |                                    | M      | GRANODIORITE (Kgwu) HW: Grey, white and black, medium to coarse grained, very low strength.  | + + +                                   | xw   | 1                                       |                     |             | N=33   | SPT =                     |
| 13<br><br><br><br>  |             |                 |                              |                                    | N      |  | + |      |   |                     |             | 10,20,30/140   | SPT :                     |
| -<br>-<br>-<br>- 14<br>-  |             |                 |                              |                                    | Р      |  | +<br> -                                 | HW   | / : : : : : : : : : : : : : : : : : : : |                     |             | - 13.45m-14.40m: Rock Roller bit used.<br>30/150   | SPT -                     |
| -14.48<br><br><br><br><br><br><br><br>  | -3.44       |                 |                              | (0)<br>100<br>(100)<br>100<br>(39) |        | MICRODIORITE (Kgwu)<br>SW: Grey, medium grained, massive, very<br>high strength.   | + \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | SW   |   |                     |             | 14.40m-14.48m: HW zone.  14.55m-14.60m: Clay seam  Is(50) = 7.40MPa Is(50) = 4.88MPa; # UCS=132MPa  15.26m-15.29m: Clay seam  15.47m: VN; CA, 20°, 40mm. | D (14.85m)-<br>A (14.90m) |
| -15.68<br><br><br><br><br><br><br><br><br><br>  | -4.64       |                 |                              | 100 (96)                           |        | GRANODIORITE (Kgwu) HW: Grey and white, medium to coarse grained, massive, very low strength. Defects: - Js; 0°-30° (5/m); PI/Ro, TI or CD;                | + + + + + +                             | HW   | ,                                       |                     |             | — 15.60m: VN; CA, 20°, 20mm.   |                           |
| - 17<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>17.80  | -6.76       |                 |                              | (72)                               |        |  | +                                       |      |   |                     |             | Is(50) = 0.04MPa   | A (17.20m)                |
| -<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>- | 5.70        |                 |                              | 100<br>(67)<br>100<br>(59)         |        | GRANODIORITE (Kgwu) MW: Grey and white, medium to coarse grained, massive, varies from low to high strength. Defects: - Js; 0°-30° (5/m); PI/Ro, TI or CD; | + - + - + - + - + - + - + + +           | MV   | ,                                       |                     |             | Is(50) = 1.14MPa<br>Is(50) = 1.71MPa   | A (18.90m) D (18.95m)     |
| 20  |             | ( L             | 71.47                        | ا ۱۸/۱۰۰۰                          | nru O  | ranodiorito:   | LΤ                                      |      |   |                     |             | LOCOED BY  |                           |
| F   | REMARK      |                 |                              |                                    |        | ranodiorite;   |   |      |   |                     |             | LOGGED BY ME   |                           |
|   |             | _               | _                            |                                    |        | ng existing defect surface.  d from 13.45m to 14.40m.  |   |      |   |                     |             |  |                           |
|   |             | ĸ               | DC:K                         | recoller bi                        | ιuse   | u iioiii 13.40III l0 14.4UM.   |   |      |   |                     |             |  |                           |



TMR JAN 15.GLB Log A\_ENGINEERING BOREHOLE LOG W LITHOLOGY FG6184 - BOREHOLES.GPJ <<DrawingFile>> Datgel CPT Tool glNt Add-In 04/03/2015 10:51

## ENGINEERING BOREHOLE LOG

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

| BOREHOLE No  | BH152      |
|--------------|------------|
| SHEET        | _3_ of _3_ |
| REFERENCE No | 12093      |

| PROJECT                                       | _Mack   | ay Ring F                    | Road_  | Geotechnical Investigation - Stage 1  |           |        |            |                        |   |             |                   |  |                 |
|---|---|------------------------------|--------|---|-----------|--------|------------|------------------------|---|-------------|-------------------|--|-----------------|
| LOCATION                                      | <u>QR N</u>                                     | orth Coas                    | st Ra  | il Overpass Abutment B; CH: 9988m;  |           |        |            |                        | _                                       | СО          | ORDINATES 72      | 21580.0 E; 7662297.  | <u>4 N</u>      |
| PROJECT No                                    |   |                              |        | SURFACE R.L. <u>11.04m</u> PLUNGE   |           |        |            |                        |   |             |                   | UM <u>GDA 94 /MG/</u>  | <u> 20ne 55</u> |
| JOB No  |   |                              |        | HEIGHT DATUM <u>AHD</u> BEARING   |           |        |            | DATE COMPL             | ETED 3                                  | 0/10        | <u>0/14</u> DRILI | _ER <u>Saxon Drilling</u>  | L               |
| R.L. (m)                                      | AUGER<br>CASING<br>WASH BORING<br>CORE DRILLING | RQD<br>( )%<br>CORE<br>REC % | SAMPLE | MATERIAL<br>DESCRIPTION   | LITHOLOGY | USC    | WEATHERING | INTACT C<br>STRENGTH S | DEFECT PACING (mm)                      | GRAPHIC LOG | A                 | NAL DATA<br>ND<br>ESULTS   | SAMPLES         |
| 20 -8.96<br>                                  |   | 100 (64)  100 (77)           |        | GRANODIORITE (Kgwu) MW: (Cont'd) Defects: - Js; 0°-30° (4/m); PI/Ro, TI;  GRANODIORITE (Kgwu) SW: Grey, pink and white, medium to coarse grained, massive, high strength. Defects: - Js; 0°-30° (7/m); PI-Un/Ro, TI-OP;  Borehole terminated at 23.65m. | ) H L 1   | OSO MV | w          |                        | >0≥≥≥±±±±±±±±±±±±±±±±±±±±±±±±±±±±±±±±±± | GRAF        | TEST F            | Is(50) = 0.30MPa  Is(50) = 1.19MPa Is(50) = 1.23MPa Is(50) = 1.07MPa | D (20.74m)      |
| -25<br>25<br>26<br>27<br>27<br>28<br>29<br>29 | s Kgwu  | - Wunda                      | aru G  | ranodiorite;  |           |        |            |                        |   |             |                   | LOGGED BY  |                 |
| REMARK  |   |                              |        |   |           |        |            |                        |   |             | -                 | LOGGED BY<br>ME  |                 |
|   |   |                              |        | ng existing defect surface. d from 13.45m to 14.40m.  |           |        |            |                        |   |             |                   |  |                 |

DEPARTMENT OF TRANSPORT & MAIN ROADS Geotechnical Branch 35 Butterfield Street, HERSTON Qld 4006 Phone 07 3066 3336



| Drainat Nama              | Maakay Ding Da   | - d         |                  |          |
|---------------------------|--|-------------|------------------|----------|
| Project Name              | Mackay – Ring Roa  | au          | Date             | 30/10/14 |
| Project No<br>Borehole No | FG6184<br>BH152  |             | TMR H No         | 12093    |
|                           |  | il Overnoos |                  |          |
| Location                  | QR North Coast Ra  | ii Overpass | Start Depth (m)  | 14.40    |
| Detail                    | Abutment B   |             | Finish Depth (m) | 23.65    |
| Chainage                  | 9988m  |             | Submitted By     | M.Ensor  |
| Remarks                   | Una 2001 1 5 100 F (A)   |             |                  |          |
| 5                         |  | \$9.h       |                  |          |
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|                           |  | SCALE 1:5   |                  |          |