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**Queensland  
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**GEOTECHNICAL  
BOREHOLE LOG**

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

BOREHOLE No **BH253**

Sheet 1 of 4

REFERENCE No **H12262**

PROJECT Mackay Ring Road  
 LOCATION Pioneer River Bridge, Pier 17 (CL) COORDINATES 721361.0 E; 7660593.5 N  
 PROJECT No FG6184 SURFACE RL 4.43m PLUNGE 90° DATE STARTED 12/08/2015 GRID DATUM GDA 94 / MGA Z55  
 JOB No 242/10G/906 HEIGHT DATUM A.H.D. BEARING ° DATE COMPLETED 14/08/2015 DRILLER Saxon Drilling

| DEPTH (m) | R.L. (m) | FAUGER CASING WASHBORING CONE DRILLING | RQD (%)<br>CORE REC % | SAMPLE | MATERIAL DESCRIPTION   | LITHOLOGY | USCS WEATHERING | INTACT STRENGTH |    |   |   |   | DEFECT SPACING |    |    |    |   | ADDITIONAL DATA AND TEST RESULTS | SAMPLES TESTS |
|-----------|----------|--|-----------------------|--------|--|-----------|-----------------|-----------------|----|---|---|---|----------------|----|----|----|---|----------------------------------|---------------|
|           |          |  |                       |        |  |           |                 | EH              | VH | H | M | J | VI             | EL | EC | VC | C |                                  |               |
| 4.34      |          |  |                       | A      | Silty SAND (Topsoil)<br>Pale brown, dry, loose.<br>fine to medium grained.       |           |                 |                 |    |   |   |   |                |    |    |    |   | 2, 2, 7<br>N=9                   | SPT           |
|           |          |  |                       | B      | Silty SAND (Alluvium)<br>Pale brown, dry, very loose.<br>fine to medium grained. |           |                 |                 |    |   |   |   |                |    |    |    |   | 2, 2, 3<br>N=5                   | SPT           |
|           |          |  |                       | C      | 0.65m: becomes loose. Fine grained sand.   |           |                 |                 |    |   |   |   |                |    |    |    |   | 4, 3, 2<br>N=5                   | SPT           |
|           |          |  |                       | D      |  | (SM)      |                 |                 |    |   |   |   |                |    |    |    |   | 3, 4, 5<br>N=9                   | SPT           |
|           |          |  |                       | E      | 2.00m: becomes medium dense.   |           |                 |                 |    |   |   |   |                |    |    |    |   | 4, 6, 9<br>N=15                  | SPT           |
|           |          |  |                       | F      |  |           |                 |                 |    |   |   |   |                |    |    |    |   | 4, 6, 9<br>N=15                  | SPT           |
|           |          |  |                       | G      |  |           |                 |                 |    |   |   |   |                |    |    |    |   | 4, 5, 6<br>N=11                  | SPT           |
|           | 0.94     |  |                       | H      | SAND trace silt (Alluvium)<br>Pale grey brown, wet, medium dense.                |           |                 |                 |    |   |   |   |                |    |    |    |   | 5, 7, 5<br>N=12                  | SPT           |
|           |          |  |                       | I      | Fine to medium grained sand.   | (SP)      |                 |                 |    |   |   |   |                |    |    |    |   | 9, 8, 7<br>N=15                  | SPT           |
|           |          |  |                       | J      | Gravelly SAND trace silt (Alluvium)<br>Dark grey brown, wet, medium dense.       |           |                 |                 |    |   |   |   |                |    |    |    |   | 8, 12, 14<br>N=26                | SPT           |
|           |          |  |                       | K      | Fine to coarse grained sand, fine to medium grained gravel, subrounded grains.   |           |                 |                 |    |   |   |   |                |    |    |    |   | 18, 12, 11<br>N=23               | SPT           |
|           |          |  |                       | L      |  | (SP)      |                 |                 |    |   |   |   |                |    |    |    |   | 21, 18, 11<br>N=29               | SPT           |
|           |          |  |                       | M      | 6.00m: gravelly bands throughout.  |           |                 |                 |    |   |   |   |                |    |    |    |   | 12, 10, 9<br>N=19                | SPT           |
|           |          |  |                       | N      |  |           |                 |                 |    |   |   |   |                |    |    |    |   | 16, 9, 8<br>N=17                 | SPT           |
|           | -0.32    |  |                       | O      | Clayey SAND (Alluvium)<br>Pale grey, wet, medium dense.<br>Fine grained sand.    |           |                 |                 |    |   |   |   |                |    |    |    |   | 8, 6, 9<br>N=15                  | SPT           |
|           |          |  |                       | P      |  |           |                 |                 |    |   |   |   |                |    |    |    |   | 8, 10, 11<br>N=21                | SPT           |
|           |          |  |                       | Q      |  |           |                 |                 |    |   |   |   |                |    |    |    |   | 10, 9, 10<br>N=19                | SPT           |
|           |          |  |                       | R      |  | (SC)      |                 |                 |    |   |   |   |                |    |    |    |   | 5, 4, 6<br>N=10                  | SPT           |
|           |          |  |                       | S      | 9.30 to 9.35m: grey, wet, stiff, clay lens. Medium to high plasticity.           |           |                 |                 |    |   |   |   |                |    |    |    |   | 7, 6, 7<br>N=13                  | SPT           |
|           | -2.56    |  |                       | T      |  |           |                 |                 |    |   |   |   |                |    |    |    |   | 5, 5, 12<br>N=17                 | SPT           |
|           | -5.42    |  |                       |        |  |           |                 |                 |    |   |   |   |                |    |    |    |   |                                  |               |

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REMARKS: Kgwu = Wundaru Granodiorite

|                  |                    |
|------------------|--------------------|
| <b>LOGGED BY</b> | <b>REVIEWED BY</b> |
| T.Goosey         | S.Foley            |



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

BOREHOLE No **BH253**

Sheet 2 of 4

REFERENCE No **H12262**

PROJECT Mackay Ring Road  
 LOCATION Pioneer River Bridge, Pier 17 (CL) COORDINATES 721361.0 E; 7660593.5 N  
 PROJECT No FG6184 SURFACE RL 4.43m PLUNGE 90° DATE STARTED 12/08/2015 GRID DATUM GDA 94 / MGA Z55  
 JOB No 242/10G/906 HEIGHT DATUM A.H.D. BEARING ° DATE COMPLETED 14/08/2015 DRILLER Saxon Drilling

| DEPTH (m) | R.L. (m) | FAUGER<br>CASING<br>WASHBORING<br>CORE DRILLING | RQD (%)<br>CORE REC % | SAMPLE | MATERIAL DESCRIPTION   | LITHOLOGY | USCS WEATHERING | INTACT STRENGTH | DEFECT SPACING | ADDITIONAL DATA AND TEST RESULTS | SAMPLES TESTS      |     |    |
|-----------|----------|---|-----------------------|--------|--|-----------|-----------------|-----------------|----------------|----------------------------------|--------------------|-----|----|
|           |          |   |                       |        |  |           |                 |                 |                |                                  |                    | EH  | VH |
| 11        | -6.56    |   |                       | U      | Clayey SAND trace gravel (Alluvium)<br>Pale brown, wet, medium dense.<br>Fine to coarse grained sand, low plasticity.  | (SC)      |                 |                 |                |                                  | 13, 13, 12<br>N=25 | SPT |    |
|           |          |   |                       | V      | 10.5m: Becoming dense.   |           |                 |                 |                |                                  | 28, 26, 14<br>N=40 | SPT |    |
|           | -7.06    |   |                       | W      | Silty CLAY (Residual)<br>Brown grey, moist, very stiff.<br>High plasticity.  | (CH)      |                 |                 |                |                                  | 7, 8, 10<br>N=18   | SPT |    |
| 12        |          |   |                       | X      | GRANODIORITE (Kgwu)<br>XW: Recovered as pale brown grey, moist, hard, sandy clay trace gravel.   |           |                 |                 |                |                                  | 8, 14, 20<br>N=34  | SPT |    |
|           |          |   |                       | Y      | Fine grained sand, high plasticity.  | XW        |                 |                 |                |                                  | 16, 17, 30<br>N=47 | SPT |    |
| 13        | -8.56    |   |                       | Z      | GRANODIORITE (Kgwu)<br>XW: Recovered as pale grey brown mottled black and white, wet, very dense, clayey sand. Fine to coarse grained sand, high plasticity. |           |                 |                 |                |                                  | 21, 30/120<br>hb   | SPT |    |
| 14        |          |   |                       | AA     |  |           |                 |                 |                |                                  | 18, 30, 29<br>N=59 | SPT |    |
| 15        |          |   |                       | AB     |  | XW        |                 |                 |                |                                  | 29, 30/120<br>hb   | SPT |    |
| 16        |          |   |                       | AC     |  |           |                 |                 |                |                                  | 30/120<br>hb       | SPT |    |
| 17        | -12.56   |   |                       | AD     | GRANODIORITE (Kgwu)<br>HW: Brown grey, coarse grained, porphyritic, extremely low to very low strength.  |           |                 |                 |                |                                  | 30/70<br>hb        | SPT |    |
| 18        |          |   |                       | AE     |  | HW        |                 |                 |                |                                  | 30/50<br>hb        | SPT |    |
| 19        |          |   |                       | AF     |  |           |                 |                 |                |                                  | 30/100<br>hb       | SPT |    |
|           | -15.56   |   |                       |        |  |           |                 |                 |                |                                  |                    |     |    |

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REMARKS: Kgwu = Wundaru Granodiorite

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**GEOTECHNICAL  
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FOR GEOTECHNICAL TERMS AND  
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BOREHOLE No **BH253**

Sheet 3 of 4

REFERENCE No **H12262**

|            |                                    |                                     |                             |
|------------|------------------------------------|-------------------------------------|-----------------------------|
| PROJECT    | Mackay Ring Road                   |                                     |                             |
| LOCATION   | Pioneer River Bridge, Pier 17 (CL) | COORDINATES 721361.0 E; 7660593.5 N |                             |
| PROJECT No | FG6184                             | SURFACE RL 4.43m                    | PLUNGE 90°                  |
|            |                                    |                                     | DATE STARTED 12/08/2015     |
|            |                                    |                                     | GRID DATUM GDA 94 / MGA Z55 |
| JOB No     | 242/10G/906                        | HEIGHT DATUM A.H.D.                 | BEARING °                   |
|            |                                    |                                     | DATE COMPLETED 14/08/2015   |
|            |                                    |                                     | DRILLER Saxon Drilling      |

| DEPTH (m) | R.L. (m) | FAUGER CASING WASHBORING CONE DRILLING | RQD (%)<br>CORE REC % | SAMPLE | MATERIAL DESCRIPTION   | LITHOLOGY | USCS WEATHERING | INTACT STRENGTH | DEFECT SPACING | ADDITIONAL DATA AND TEST RESULTS   | SAMPLES TESTS |     |    |
|-----------|----------|--|-----------------------|--------|--|-----------|-----------------|-----------------|----------------|------------------------------------|---------------|-----|----|
|           |          |  |                       |        |  |           |                 |                 |                |                                    |               | EH  | VH |
| 21        |          |  |                       | AG     | GRANODIORITE (Kgwu)<br>HW: (Cont'd)  | +         | HW              |                 |                |                                    | 30/100 hb     | SPT |    |
|           |          |  |                       | AH     |  | +         |                 |                 |                |                                    | 30/100 hb     | SPT |    |
| 22        | -17.57   |  |                       | AI     | GRANODIORITE (Kgwu)<br>XW: Recovered as brown grey, wet, very dense, gravelly sand. Fine to coarse grained sand, fine grained gravel, angular grains.          | +         | XW              |                 |                |                                    | 30/100 hb     | SPT |    |
| 23        |          |  |                       | AJ     |  | +         |                 |                 |                |                                    | 30/120 hb     | SPT |    |
| 24        | -19.57   |  |                       | AK     | GRANODIORITE (Kgwu)<br>XW: Recovered as brown grey, wet, very dense, sandy gravel. Fine to coarse grained sand, fine to medium grained gravel, angular grains. | +         | XW              |                 |                |                                    | 30/100 hb     | SPT |    |
| 25        |          |  |                       | AL     |  | +         |                 |                 |                |                                    | 30/100 hb     | SPT |    |
| 26        |          |  |                       | AM     |  | +         |                 |                 |                | 26.00m-26.05m: No sample recovered | 30/50 hb      | SPT |    |
| 27        |          |  |                       | AN     |  | +         |                 |                 |                |                                    | 30/130 hb     | SPT |    |
| 28        |          |  |                       | AO     |  | +         |                 |                 |                | 28.00m-28.05m: No sample recovered | 30/50 hb      | SPT |    |
| 29        |          |  |                       | AP     |  | +         |                 |                 |                | 29.00m-29.01m: No sample recovered | 30-Oct hb     | SPT |    |
|           | -25.56   |  |                       |        |  | +         |                 |                 |                | 30.00m-30.02m: No sample recovered |               |     |    |

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30.00m-30.02m: No sample recovered

REMARKS: Kgwu = Wundaru Granodiorite

| LOGGED BY | REVIEWED BY |
|-----------|-------------|
| T.Goosey  | S.Foley     |



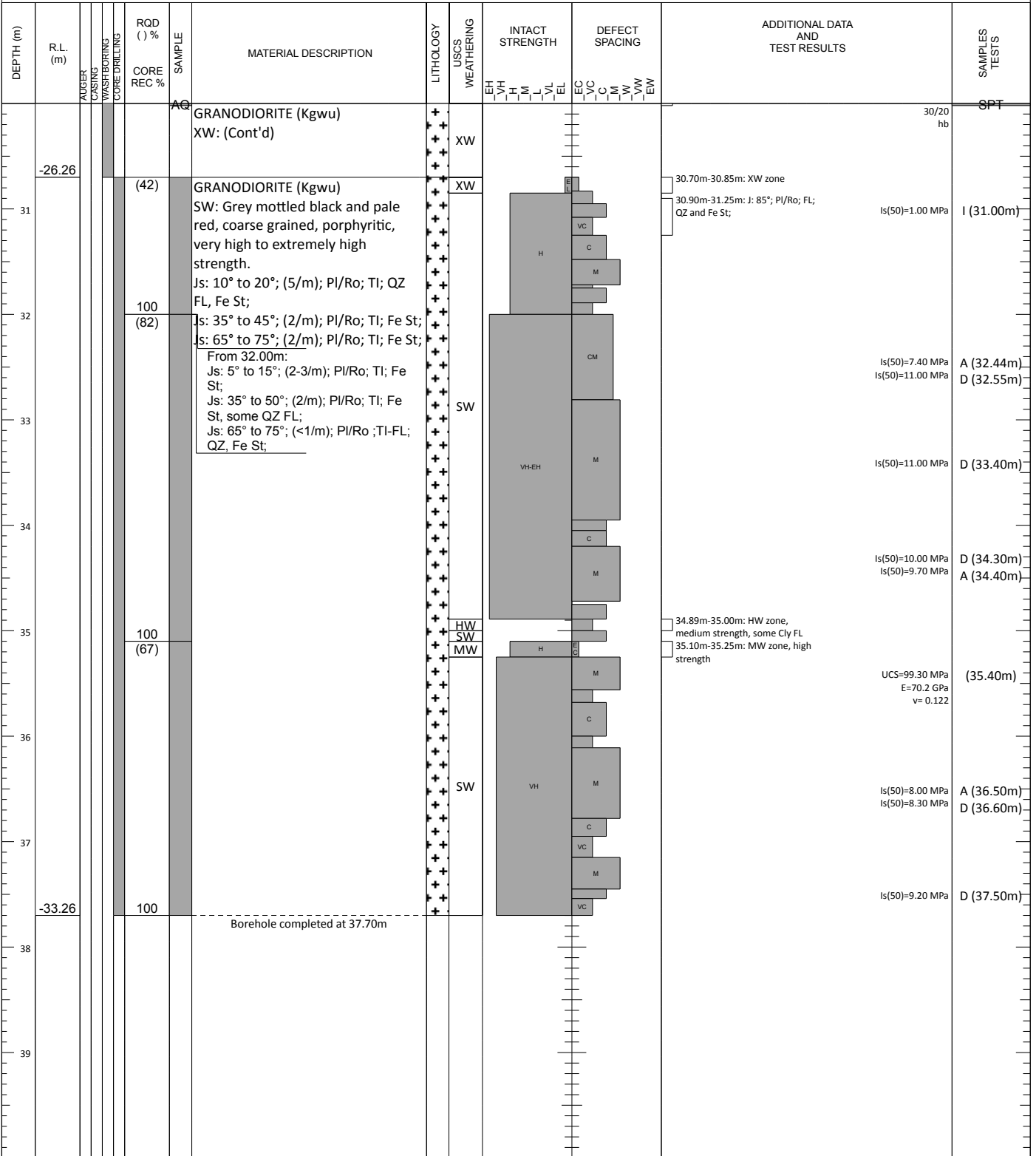
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## GEOTECHNICAL BOREHOLE LOG

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

BOREHOLE No **BH253**  
Sheet 4 of 4  
REFERENCE No **H12262**

|            |                                    |                     |                                     |                           |                             |
|------------|------------------------------------|---------------------|-------------------------------------|---------------------------|-----------------------------|
| PROJECT    | Mackay Ring Road                   |                     |                                     |                           |                             |
| LOCATION   | Pioneer River Bridge, Pier 17 (CL) |                     | COORDINATES 721361.0 E; 7660593.5 N |                           |                             |
| PROJECT No | FG6184                             | SURFACE RL 4.43m    | PLUNGE 90°                          | DATE STARTED 12/08/2015   | GRID DATUM GDA 94 / MGA Z55 |
| JOB No     | 242/10G/906                        | HEIGHT DATUM A.H.D. | BEARING °                           | DATE COMPLETED 14/08/2015 | DRILLER Saxon Drilling      |



|                                      |                       |                        |
|--------------------------------------|-----------------------|------------------------|
| REMARKS: Kgwu = Wundaru Granodiorite | LOGGED BY<br>T.Goosey | REVIEWED BY<br>S.Foley |
|--------------------------------------|-----------------------|------------------------|

**CORE PHOTO LOG**

DEPARTMENT OF TRANSPORT AND MAIN ROADS  
 Geotechnical Section  
 35 Butterfield Street, Herston Qld 4006  
 Phone 07 3066 3336



|              |                                     |                  |          |
|--------------|-------------------------------------|------------------|----------|
| Project Name | <b>Mackay – Ring Road (Stage 2)</b> |                  |          |
| Project No.  | FG6184                              | Date             | 13/08/15 |
| Borehole No. | BH 253                              | TMR H No.        | H12262   |
| Location     | Pioneer River Bridge                | Start Depth (m)  | 30.70    |
| Detail       | Pier 17, centreline                 | Finish Depth (m) | 37.70    |
| Chainage     |                                     | Submitted By     | M.Ensor  |
| Remarks      |                                     |                  |          |

