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QLD_DMR_LIB_01A GLB Log A_ENGINEERING BOREHOLE LOG WLITHOLOGY TOWNSYILLE RING ROAD 4 STONY CREEK GPJ «ChawingFile>> Datgel CPT Tool glNt Add-in 17/10/2013 11:55

ENGINEERINGBOREHOLE LOG

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

| BOREHOLE No | BH302 |
|--------------|------------|
| SHEET | _1_ of _4_ |
| REFERENCE No | 11480 |

| PRO | JECT | _T | <u>wn</u> | s <u>vi</u> ll <u>e</u> R | ing [| Road Section 4 | | | | | | | | | | | |
|--|-------------|-----------------|------------------------------|---------------------------|--------|--|----------------|--------|------------|---------------------------------------|-------------|-------------------------------------|--------------------------------|----------------------|------------------|--|--|
| LOCA | ATION | _St | <u>:on</u> | <u>/ Creek</u> | Brid | ge | | | | | (| COORDINATES 464691.9 E; 7871501.6 N | | | | | |
| PRO | JECT No | _F | <u> 360</u> | <u> 20</u> | | SURFACE R.L. <u>12.25m</u> PLUNGE | | _ | - | DATE STARTED | 19/ | 4/13 | GRID DATUM | <u>GDA 94</u> | | | |
| JOB I | No | _26 | <u>88/1</u> | <u>0M/5</u> | | HEIGHT DATUM <u>AHD</u> BEARING | | _ | - | DATE COMPLETED . | 20/ | 4/13 | DRILLER | Saxon Drilling | | | |
| O DEPTH (m) | R.L. (m) | AÜGER CASING | WASH BOKING CORE DRILLING | RQD ()% | SAMPLE | MATERIAL DESCRIPTION | ПТНОСОСУ | nsc | WEATHERING | INTACT DEFECT SPACING (mm) | GRAPHIC LOG | | ADDITIONAL AND TEST RESU | | SAMPLES TESTS | | |
| - | | | | | | Silty Sandy CLAY (TOPSOIL) | 7 <u>7 1</u> X | | 1 | | | | | | | | |
| - - - - - - - 1 | 11.95 | | | | А | Pale grey, dark brown, moist. Soft to medium plasticity. Some tree ro Silty CLAY Dark brown, moist, very stiff. High plasticity. | ots. | | | | _ | | | 6,11,10 N=21 | SPT : | | |
| - - - - - - 2 - - | | | | | В | Becoming brown sandy clay of low plasticity. | | C | L- H) | | | | | 6,8,9 N=17 | SPT - | | |
| - - - - - - -3 | 9.35 | | | | С | Becoming hard. Sandy SILT Grey, brown, moist, hard. | | | _ | ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± | | | | 13,16,17 N=33 | SPT - | | |
| - - - - - - - -4 | | | | | D | Low plasticity. Some white calcareous material. | | | | ± | | | | 6,12,20 N=32 | SPT - | | |
| - - - - - - - - - - - | | | | | E | | | | | # # # # # # | | | | 8,21,27 N=48 | SPT - | | |
| - - - - - - - - - - | | | | | F | Minor silty sand lenses at 5.5m. Grey - brown, moist, very dense. Fine to medium grained sand. | | | | ‡ ‡ | | | 2 | 3,30/70mm,HB N>50 | SPT - | | |
| - - - - - - - - - - - - | | | | | G | | | (N | ΛL) | | | | 12 | 2,25,30/120mm | SPT - | | |
| - - - - - - - - 8 | | | | | 0 | | | | | ‡ † † † | | | | N>50 | | | |
| - - - - - - - - 9 | | | | | Н | | | | | ‡ + + + + + + + | | | | 9,16,28 N=44 | SPT - | | |
| - - - - - 10 | 2.25 | | | | | | | | | ‡ ‡ | | | | LOGGED BY | - | | |
| R | EMARK | s _ _ | | | | | | _ _ | _ | | | | | MS | | | |



QLD_DMR_LIB_01A.GLB Log A_ENGINEERING BOREHOLE LOG WLITHOLOGY TOWNSVILLE RING ROAD 4 STONY CREEK.GPJ «ChawingFile>> Datgel CPT Tool glNt Add-In 17/10/2013 11:55

ENGINEERINGBOREHOLE LOG

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

| BOREHOLE No | BH302 |
|--------------|------------|
| SHEET | _2_ of _4_ |
| REFERENCE No | 11480 |

| PROJECT | Townsville Ring Road Section 4 | | | | | | | | | | | |
|-----------------------------|--|----------------------|---------------------------------|--------|---|---------------|----------------------|---|-------------|------------|------------------------|----------------------------|
| LOCATION | | | | | ge | OORDINATES 4 | 64691.9 E; 7871501.6 | <u> </u> | | | | |
| PROJECT | T No <u>FG6020</u> SURFACE R.L. <u>12.25m</u> PLUNGE DATE STARTED <u>19/4/13</u> | | | | | | | | 13 GRID DA | TUM GDA 94 | | |
| | | | 10M/5 HEIGHT DATUM _AHD BEARING | | | | | | | | LER Saxon Drilling | |
| R.L. (m) | | H BORING DRILLING | POD | | MATERIAL | | | INTACT DEFECT STRENGTH SPACING (mm) | | | NAL DATA | |
| DEPTH (m) | ~ ⁽⁾ | 띯 | | щ | DESCRIPTION | -06 | | (11111) | 일 | Δ | ND | ES |
| DEI | AUGE CASIN | ASH | CORE | SAMPLE | DESCRIPTION | LITHOLOGY | USC | 000 000 000 000 000 000 000 | GRAPHIC LOG | TEST F | RESULTS | SAMPLES |
| 10 2.2 | 25 ₹ Û | ≥ō □ | REC % | Ś | Clayey SAND | /// | ⋽ 3 | | 9 | | | S E |
| | | | | J | Pale grey, pale brown, moist, mainly dense. | | | | | | 6,11,20 N=31 | SPT] |
| - | | | | | Fine to medium grained sand. | | | | | | 11-01 | - |
| - | | | | | Tille to medium grained sand. | | | | | | | |
| - 11 - - - - | | | | | | | | | | | | - - - - - - |
| - | | | | K | Becoming medium dense. | | | | | | 8,10,15 N=25 | SPT |
| - 12 - 12 | | | | | | | | | | | | - |
| 13 | | | | | Becoming dense. | | | | | | 10 16 21 | _ |
| - | | | | L | - | | | : : : : : : ‡ : : : : : | | | 10,16,21 N=37 | SPT - |
| - | | | | | | | | | | | | - |
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| 14 | | | | | | | | | | | | - |
| - | | | | | | | | 1:::::::::::::::::::::::::::::::::::::: | | | |] |
| - | | | | | Becoming medium to coarse grained sand. | | | | | | 11.17.15 | 0.07 |
| | | | | М | | | | : : : : : : ‡ : : : : : | | | 11,17,15 N=32 | SPT - |
| 15 | | | | | | | (SC |) | | | | |
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| | | | | | | | | | | | |] |
| — 16 - | | | | | | | | 1:::::::::::::::::::::::::::::::::::::: | | | 12,19,27 | - |
| - | | | | N | | | | | | | N=46 | SPT - |
| - | | | | | Fine to medium grained sand with high clay | | | | | | | - |
| | | | | | content. | | | | | | | |
| 17 | | | | | | | | | | | | - |
| - | | | | | | | | 1:::::::::::::::::::::::::::::::::::::: | | | | - |
| - | | | | | Pagaming yang danga | | | 1:::::::::: | | | | - |
| | | | | Р | Becoming very dense. | | | | | | 11,23,30/130mm N>50 | SPT - |
| - 18 | | | | | | | | : : : : : : : : : : | | | 55 | <u>-</u> |
| - | | | | | | | | | | | | 1 |
| | | | | | | | | | | | |] |
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| <u> </u> | | | | | | | | : : : : : : : : : : : : : : : : : : : | | | | = |
| 19 | | | | Q | Becoming medium to coarse grained sand. | | | | | | 14,22,30/110mm | SPT - |
| | | | | | (Residual?) | | | [] | | | N>50 | J |
| El | | | | | | | | | | | | |
| 20 -7.7 | ,, | | | | | | | | | | | |
| REMAF | | | | | | <u>v.x.</u> _ | | | | | LOGGED BY | |
| | | | | | | | | | | _ | MS | |



ENGINEERINGBOREHOLE LOG

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

BOREHOLE No __BH302__

SHEET __3_ of _4_

REFERENCE No __11480___

| PROJ | | Townsville Ring Road Section 4 COORDINATES 464691.9 E; 7871501.6 N | | | | | | | | | | | |
|-----------|--------|--|---------------|---------------|---|---|----------------|-----|----------------------|-----------------|--------------|--|-----------------------|
| LOCA | | | | | ge SURFACE R.L. <u>12.25m</u> PLUNGE | | | | | — – TARTED | | OORDINATES <u>464691.9 E; 7871501</u> 113 GRID DATUM GDA 94 | .014 |
| JOB N | | | | | HEIGHT DATUM AHD BEARING | | | | ATE COM | | | | |
| | R.L. | | POD | - | | T | | Τ | INTACT | DEFECT | | ADDITIONAL DATA | |
| Œ T | (m) | R IG BORING DRILLING | ()% | | MATERIAL | }5 | THERING | 5 | TRENGTH | SPACING (mm) | GRAPHIC LOG | | (0 |
| DEPTH (m) | ģ | | 0005 | SAMPLE | DESCRIPTION | гітногосу | | | | 008 | PHIC | AND | SAMPLES |
| 20 | -7.75 | NASA SASA SASA SASA SASA SASA SASA SASA | CORE REC % | SAN | | | USC | 古 | >±≥¬>□ | 20000 1111 | GRA | TEST RESULTS | SAMPLI |
| - 21 | | | | R | VOLCANIC BRECCIA Pyroclastic rock consisting of angular fragments embedded in a finer grained matrix. XW: Generally exhibits the engineering properties of yellow - brown - red, moist, hard, sandy clay. | +-+-+- | xw | | | | | 27,30/50mm,HB N>50 | |
| E | | | | | Mainly low to medium plasticity. | [+] | | | | | | | |
| - | | | | | manny territe mediam places, | [+] | | | : : : : | -: : : : : | | | - |
| F | | | | | | +- | - | | | - : : : : : | | | - |
| -22 | -9.75 | | (32) | | HW: Brown - red - grey, medium to | ++ | ┼- | - | | | | Is(50) = 0.06MPa | |
| | | | | | coarse grained, massive, very low to low | [+] | HW | | | | | 13(30) - 0.001111 2 | - |
| | | | (0) | | strength. some medium strength zones. | + | xw | | | | | XW rock, VL to EL strength | - |
| | | | 100 | | Defects: - Joints at 55° (1/m) | +- | 1 | | | : : : | | In (FO) = 0.00MDn | |
| 23 | | | 100 | | - Joints at 65° (1/m) - Irregular Joints (3/m) | + | HW | | | | | Is(50) = 0.03MPa | 0 - |
| <u> </u> | | | (56) | | | [+] | | | | | | Is(50) = 0.13MPa | 0 |
| - | | | | | Defect surfaces are generally planar, rough, open, weathered, secondary | +- | xw | - : | | | | Is(50) = 0.15MPa | 0 - |
| | | | (55) | | mineralisation along joints, with clay infill. | +- | 7,11 | 1 | | | | | - |
| -24 | | | (00) | | | [+] | | | | | | | - |
| - | | | | | | + | нw | | | | | | |
| | | | 100 | | | +- | 1 | | | | | Is(50) = 0.39MPa | 0 - |
| - | | | (0) | | | + | | | | | | Is(50) = 0.31MPa | 0 - |
| 25 | -13.00 | | 100 | | | + | XW | | | | | XW rock, VL to EL strength) = 0.09MPa | 0 - |
| | .6.66 | | (44) | | MW: Dark brown, dark red - pink, medium to coarse grained, massive, 25.20 - 28.00m: low to medium strength, 28.00-30.70m: mainly medium to high strength. | + | (HW | | | | | | - - - - - |
| 26 | | | | | • | [+] | | | | | | Is(50) = 0.16MPa | 0 - |
| - | | | | | Defects: - Joints at 35° - 45° (1/m) | +- | MW | | | | | | - |
| F | | | | | - Joints at 65° (2/m) - Joints at 75° (1/m) | - | 1 | | | <u> </u> | | | - |
| 27 | | | 100 (50) | | - Irregular Joints (2/m) | + | | | | : : : | | Is(50) = 0.54MPa | 0 - |
| | | | (00) | | Defect surfaces are generally planar, | + | - | | | | | Is(50) = 0.23MPa | - |
| | | | | | irregular, rough, open, some weathering. | +- | 1 | | | | | 15(50) - 0.25Wii d | |
| | | | | | | + | HW | | | | | HW rock, L strength | |
| 28 | | | (34) | | | [+] | | - | | | | Is(50) = 0.19MPa | |
| | | | | | Becoming high strength. | +- | 1 | | | | | Is(50) = 0.47MPa | 0 - |
| | | | | | | - | 1 | | | | | 1 (50) 0 70145 | _ |
| | | | | | | [+] | MW | | | | | Is(50) = 2.78MPa | 0 - |
| 29 | | | | | | +- | | | | | | | - |
| | | | | | | +- | 1 | | | | | | |
| | | | 100 | | | + | | | | | | | - |
| - | | | 100 | | | [+ | HW | 1 : | | | | HW rock, L-M strength | |
| 30 | -17.75 | <u> </u> | (22) | | | | | 1 | | | | Is(50) = 1.00MPa | 0 - |
| K | EMARKS | | | | | | | · — | | | | _ LOGGED BY | |



QLD_DMR_LIB_01A GLB Log A_ENGINEERING BOREHOLE LOG WLITHOLOGY TOWNSYILLE RING ROAD 4 STONY CREEK GPJ «ChawingFile>> Datgel CPT Tool glNt Add-in 17/10/2013 11:55

ENGINEERING BOREHOLE LOG

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

BOREHOLE No __BH302__

SHEET __4_ of _4__

REFERENCE No __11480___

| | | | | | Road Section 4 | | | | | | | | | | | | |
|----------------|-------------|------------------------------------|-----------------------|--------|------------------------------|--------|-----------|------------|----|---|----------------------|-------------|-------------|-----------------|-------------|------------------|--------------|
| | | | y <u>Creek</u> 220 | | ge | | | | | DATE 9 | — – TADT | ED | | | | .9 E; 7871501.6 | <u> </u> |
| JOB | | | | | HEIGHT DATUM AHD | | | | | | | | | <u>13</u> 13 | | Saxon Drilling | |
| JOD | | _200/_ | | | TILIOTT DATOW _AID | DEANNO | _ | | | | | | 20/4/ | <u> </u> | DIVILLER | _oaxon brilling | |
| _ | R.L. (m) | 9 <u>0</u> | RQD ()% | | | | | (D | ST | NTACT RENGTH | DEFI | ECT CING | O | А | DDITIONAL [| DATA | |
| DEPTH (m) | | ER NG H BORING E DRILLING | | l l | MATERIAL | | λĐC | ERIN | | | (mı | m) | IC LO | | AND | | တ္တ |
| DEP. | -17.75 | JGER VSING ASH E | CORE | SAMPLE | DESCRIPTION | | LITHOLOGY | SC EATH | 픘 | RENGTH | 0.00 | 000 | GRAPHIC LOG | | TEST RESUI | _TS | SAMPLES |
| 30 | -17.75 | ₹0≥Ω | REC % | /S | VOLCANIC BRECCIA | | + | ຶ່≥ | | 123/0 | 1400 | 1 | 9 | | | | <i>'</i> S ⊨ |
| - | | | | | MW: (Cont'd) | | + | MW | | | | : : | | | le/F | 50) = 1.12MPa | 0 |
| - | -18.45 | | 88 | | | - | + | 10100 | | | | | | | 13(0 | 70) - 1.12IVII U | , <u> </u> |
| _ | -10.45 | | | \sim | Borehole terminated at 30.7m | | _ | | | | - : : : | : : | | | | | - |
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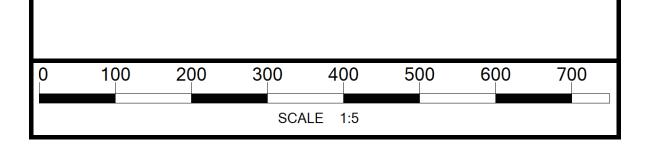
CORE PHOTO LOG

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



Department of Transport and Main Roads

| Project Name | Townsville Ring Road Section 4 | 4 | |
|---|--|--|--|
| Project No | FG 6020 | Date | 20/04/13 |
| Borehole No | BH 302 | TMR H No | 11480 |
| Location | Stony Creek Bridge | Start Depth (m) | 22.00 |
| Detail | Abutment A (Left) | Finish Depth (m) | 30.70 |
| Chainage | | Submitted By | BW |
| Remarks | | | |
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CORE PHOTO LOG

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



Department of Trans port and Main Roads

| Project Name | Townsville Ring Road Section | 4 | |
|--------------|------------------------------|---------------|-----------|
| Project No | FG 6020 | Date | 20/04/13 |
| Borehole No | BH 302 | TMR H No | 11480 |
| Location | Stony Creek Bridge | Start Depth (| (m) 22.00 |
| Detail | Abutment A (Left) | Finish Depth | • |
| Chainage | , , | Submitted B | |
| Remarks | | <u>'</u> | <u> </u> |
| 0 100 | 200 300 | 8 END H | 600 700 |
| 0 100 | 200 300 | 400 500 | 600 /00 |
| | CONT | 1.5 | |
| | SCALE | 1:5 | |