

THE SHELL COMPANY OF AUSTRALIA LTD.

BOREHOLE LITHOLOGICAL DESCRIPTION

GRAY

GY 174BL

HOLE TYPE CORE  
EASTING 591,864 M AM GRID  
NORTHING 5,398,605 M AM GRID  
ELEVATION 463.04 M  
TOTAL DEPTH DRILLED 131.99 M  
DRILLING STARTED 05/10/82  
DRILLING TIME 17 DAYS  
CORE SIZE 100.0 MM  
HOLE SIZE 190.0 MM  
LENGTH CASED 12.00 M  
INITIAL WATER LEVEL  
WATER LEVEL AT  
GEOPHYSICAL LOGGING  
DRILLING FLUID  
DRILLING CONTRACTOR ASSOCIATED DIAMOND DRILLERS  
GEOPHYSICAL LOGGING  
CONTRACTOR  
LITHOLOGICAL DESCRIPTION BY P. SANSON  
INFORMATION AVAILABLE : SAMPLES TAKEN  
ANALYTICAL DATA  
LITHOLOGICAL DESCRIPTION  
PETROPHYSICAL WIRELINE LOGS RUN : NIL

\*\*\* FRAME J01\*\*\*

BOREHOLE : GY 174BL

| DEPTH<br>TO BASE<br>M                        | THICKNESS<br>M | REC<br>% | SAMPLE<br>NUMBER | ROCK TYPE   | GEOLOGICAL DESCRIPTION  |
|--|----------------|----------|------------------|---|---|
| 8.50   | 8.30           |          |                  | 100% DOLERITE   | SCREE.  |
| 32.50  | 24.00          |          |                  | 100% SEDIMENTARY ROCK   |   |
| *** CORE DESCRIPTION ***                     |                |          |                  |   |   |
| 33.11  | 0.61           | 100      |                  | 100% SANDSTONE, MEDIUM GRAINED  | MASSIVE, LIGHT GREY, UNWEATHERED, WEAK ROCK.  |
| 33.30  | 0.19           | 100      | T1               | 100% SANDSTONE, MEDIUM GRAINED  | MASSIVE, LIGHT GREY, UNWEATHERED, WEAK ROCK.  |
| 33.63  | 0.33           | 100      | T2               | 100% SANDSTONE, MEDIUM GRAINED  | MASSIVE, LIGHT GREY, UNWEATHERED, WEAK ROCK.  |
| 33.80  | 0.17           | 100      |                  | 55% SANDSTONE, MEDIUM GRAINED<br>45% COAL                             | FRAGMENTS, BADLY BROKEN, LIGHT GREY.<br>FRAGMENTS, BADLY BROKEN, BLACK.<br>UNWEATHERED, MODERATELY WEAK ROCK. |
| TOP OF MT. NICHOLAS MIDDLE 1 : 429.24 M R.L. |                |          |                  |   |   |
| 33.90  | 0.10           | 100      | A1               | 100% CLAYSTONE  | BROWN, UNWEATHERED, VERY WEAK ROCK, RAPID SLAKING.  |
| 34.03  | 0.13           | 100      | A1               | 90% COAL, DULL<br>10% CARBONACEOUS MUDSTONE                           | BLACK.<br>COALY, BLACK.<br>UNWEATHERED, MODERATELY WEAK ROCK.   |
| 34.18  | 0.15           | 100      | A1               | 100% COAL, DULL WITH FEW BRIGHT BANDS                                 | BADLY BROKEN, BLACK, UNWEATHERED, MODERATELY WEAK ROCK.   |
| 34.22  | 0.04           | 100      | A1               | 100% CLAYSTONE  | BROWN, UNWEATHERED, MODERATELY WEAK ROCK, SLOW SLAKING.   |
| 34.30  | 0.08           | 100      | A1               | 100% CARBONACEOUS MUDSTONE  | GRADING TO, HEAVY DULL COAL, BROWN-BLACK,<br>UNWEATHERED, MODERATELY WEAK ROCK.                               |
| 34.87  | 0.57           | 100      | A1               | 70% COAL, DULL<br>25% COAL, DULL WITH FEW BRIGHT BANDS<br>5% MUDSTONE | BADLY BROKEN, BLACK.<br>BANDS, BADLY BROKEN, BLACK.<br>LAMINAE, GREY.<br>UNWEATHERED, MODERATELY WEAK ROCK.   |
| 34.90  | 0.03           | 100      | A1               | 100% MUDSTONE   | BANDS, GREY, UNWEATHERED, MODERATELY WEAK ROCK,<br>RAPID SLAKING.   |
| 35.03  | 0.13           | 100      | A1               | 100% COAL, DULL   | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.   |
| 35.06  | 0.03           | 100      | A1               | 100% COAL, DULL   | BADLY BROKEN, BLACK, UNWEATHERED, MODERATELY WEAK ROCK.   |
| 35.10  | 0.04           | 100      | A1               | 100% COAL, DULL WITH FEW BRIGHT BANDS                                 | BLACK, WITH PYRITE ON JOINTS, UNWEATHERED,<br>MODERATELY WEAK ROCK.   |
| 35.50  | 0.40           | 100      | A1               | 69% COAL, DULL WITH FEW BRIGHT BANDS<br>30% COAL, DULL<br>1% MUDSTONE | BADLY BROKEN, BLACK.<br>BADLY BROKEN, BLACK.<br>LAMINAE, GREY.<br>UNWEATHERED, MODERATELY WEAK ROCK.          |
| 35.51  | 0.01           | 100      | A1               | 55% COAL, DULL WITH FEW BRIGHT BANDS<br>45% MUDSTONE                  | BLACK.<br>LAMINAE, GREY.<br>UNWEATHERED, MODERATELY WEAK ROCK.  |
| 35.55  | 0.04           | 100      | A1               | 100% COAL, DULL WITH NUMEROUS BRIGHT BANDS                            | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.   |

| DEPTH<br>TO BASE<br>M  | THICKNESS<br>M | REC<br>X | SAMPLE<br>NUMBER | ROCK TYPE  | GEOLOGICAL DESCRIPTION   |
|--|----------------|----------|------------------|--|--|
| 35.56  | 0.01           | 100      | A1               | 55% COAL, DULL<br>45% MUDSTONE   | BLACK.<br>BANDS, GREY.<br>UNWEATHERED, MODERATELY WEAK ROCK.                                 |
| 35.70  | 0.14           | 100      | A1               | 100% COAL, DULL WITH NUMEROUS BRIGHT BANDS                                   | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.  |
| 35.77  | 0.07           | 100      | A1               | 100% COAL, DULL  | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.  |
| 35.80  | 0.03           | 100      | A1               | 100% MUDSTONE  | CARBONACEOUS, BROWN-BLACK, UNWEATHERED, VERY WEAK ROCK.                                      |
| 35.91  | 0.11           | 100      | A1               | 100% COAL, DULL WITH NUMEROUS BRIGHT BANDS                                   | BADLY BROKEN, BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                      |
| BASE OF MT. NICHOLAS MIDDLE 1 : THICKNESS= 2.11 M; SAMPLED THICKNESS= 2.11 M |                |          |                  |  |  |
| 36.09  | 0.18           | 100      | T3               | 100% MUDSTONE  | GREY, UNWEATHERED, WEAK ROCK.  |
| *** CHIP DESCRIPTION ***   |                |          |                  |  |  |
| 122.00   | 85.91          |          |                  | 100% SEDIMENTARY ROCK  |  |
| *** CORE DESCRIPTION ***   |                |          |                  |  |  |
| 122.70   | 0.70           | 100      |                  | 100% CARBONACEOUS MUDSTONE   | DARK GREY, UNWEATHERED, MODERATELY WEAK ROCK.  |
| 123.02   | 0.32           | 100      |                  | 100% COAL, DULL WITH FEW BRIGHT BANDS  | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.  |
| 123.46   | 0.44           | 75       |                  | 100% COAL, DULL WITH FEW BRIGHT BANDS  | BADLY BROKEN, BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                      |
| 123.60   | 0.14           | 100      |                  | 100% MUDSTONE  | GREY, UNWEATHERED, MODERATELY WEAK ROCK.   |
| 124.28   | 0.68           | 100      |                  | 75% SANDSTONE, FINE GRAINED<br>20% SILTSTONE<br>5% SANDSTONE, MEDIUM GRAINED | LIGHT GREY.<br>BANDS, LENSES, GREY.<br>BANDS, GREY.<br>UNWEATHERED, MODERATELY WEAK ROCK.    |
| 124.64   | 0.36           | 100      |                  | 80% SANDSTONE, MEDIUM GRAINED<br>15% SILTSTONE<br>5% COAL                    | LIGHT GREY.<br>LAMINAE, LIGHT GREY.<br>LAMINAE, BLACK.<br>UNWEATHERED, MODERATELY WEAK ROCK. |
| 124.82   | 0.18           | 100      | T11              | 81% SILTSTONE<br>10% CALCITE<br>9% MUDSTONE                                  | GREY.<br>LENSES, WHITE.<br>LAMINAE, GREY.<br>UNWEATHERED, MODERATELY WEAK ROCK.              |
| 124.84   | 0.02           | 100      | T11              | 100% CLAYSTONE   | BANDS, GREY, UNWEATHERED, VERY WEAK ROCK, RAPID SLAKING.                                     |
| 124.91   | 0.07           | 100      | T11              | 100% MUDSTONE  | GREY, UNWEATHERED, MODERATELY WEAK ROCK, WITH PLANT REMAINS.                                 |

TOP OF MT. NICHOLAS LOWER 1 : 338.13 M R.L.

| DEPTH<br>TO BASE<br>M | THICKNESS<br>M | REC<br>% | SAMPLE<br>NUMBER | ROCK TYPE   | GEOLOGICAL DESCRIPTION   |
|-----------------------|----------------|----------|------------------|---|--|
| 124.95                | 0.04           | 100      | A2               | 100% COAL, DULL                                   | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                  |
| 125.16                | 0.21           | 100      | A2               | 100% COAL, DULL WITH FEW BRIGHT BANDS             | BADLY BROKEN, BAKED, UNWEATHERED, MODERATELY WEAK ROCK.                    |
| 125.21                | 0.05           | 100      | A2               | 100% COAL, DULL WITH FEW BRIGHT BANDS             | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                  |
| 125.22                | 0.01           | 100      | A2               | 100% COAL, BRIGHT                                 | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                  |
| 125.24                | 0.02           | 100      | A2               | 100% COAL, MID LUSTROUS                           | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                  |
| 125.25                | 0.01           | 100      | A2               | 60% COAL, MID LUSTROUS<br>40% COAL, BRIGHT        | BLACK.<br>BLACK.<br>UNWEATHERED, MODERATELY WEAK ROCK.                     |
| 125.38                | 0.13           | 100      | A2               | 90% COAL, MID LUSTROUS - DULL<br>10% COAL, BRIGHT | BLACK.<br>BANDS, BLACK.<br>UNWEATHERED, MODERATELY WEAK ROCK.              |
| 125.39                | 0.01           | 100      | A2               | 100% COAL, BRIGHT                                 | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                  |
| 125.42                | 0.03           | 100      | A2               | 100% COAL, DULL WITH NUMEROUS BRIGHT BANDS        | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                  |
| 125.50                | 0.08           | 100      | A2               | 100% COAL, DULL WITH FEW BRIGHT BANDS             | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                  |
| 125.68                | 0.18           | 100      | A2               | 100% COAL, DULL                                   | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                  |
| 125.75                | 0.07           | 100      | A2               | 100% COAL, DULL WITH FEW BRIGHT BANDS             | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                  |
| 125.78                | 0.03           | 100      | A2               | 100% COAL, DULL WITH NUMEROUS BRIGHT BANDS        | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                  |
| 126.30                | 0.52           | 100      | A2               | 100% COAL, HEAVY DULL                             | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                  |
| 126.31                | 0.01           | 100      | A2               | 100% MUDSTONE                                     | BANDS, GREY, UNWEATHERED, MODERATELY WEAK ROCK.                            |
| 126.44                | 0.13           | 100      | A2               | 55% COAL, DULL<br>45% CARBONACEOUS MUDSTONE       | BLACK.<br>BLACK.<br>UNWEATHERED, MODERATELY WEAK ROCK.                     |
| 126.47                | 0.03           | 100      | A2               | 85% TONSTEIN<br>15% COAL, DULL                    | WHITE.<br>BLACK.<br>UNWEATHERED, MODERATELY WEAK ROCK.                     |
| 126.53                | 0.06           | 100      | A2               | 100% CARBONACEOUS MUDSTONE                        | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                  |
| 126.55                | 0.02           | 100      | A2               | 95% CLAYSTONE<br>5% COAL, DULL                    | TUFFACEOUS, WHITE.<br>LENSES, BLACK.<br>UNWEATHERED, MODERATELY WEAK ROCK. |
| 126.59                | 0.04           | 100      | A2               | 100% COAL, DULL                                   | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                  |
| 126.60                | 0.01           | 100      | A2               | 100% COAL, DULL                                   | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                  |
| 126.62                | 0.02           | 100      | A2               | 100% COAL, BRIGHT WITH NUMEROUS DULL BANDS        | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                  |
| 126.66                | 0.04           | 100      | A2               | 100% CARBONACEOUS MUDSTONE                        | BROWN-BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                            |
| 126.98                | 0.32           | 100      | A2               | 100% COAL, DULL WITH FEW BRIGHT BANDS             | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                                  |
| 127.00                | 0.02           | 100      | A2               | 100% MUDSTONE                                     | LIGHT BROWN, UNWEATHERED, MODERATELY WEAK ROCK.                            |

| DEPTH<br>TO BASE<br>M   | THICKNESS<br>M | REC<br>X | SAMPLE<br>NUMBER | ROCK TYPE                             | GEOLOGICAL DESCRIPTION  |
|---|----------------|----------|------------------|---------------------------------------|---|
| 127.05  | 0.05           | 100      | A2               | 100X COAL, HEAVY DULL                 | CHERTY, COARSE GRAINED, BLACK, UNWEATHERED,<br>MODERATELY WEAK ROCK.  |
| BASE OF MT. NICHOLAS LOWER 1 : THICKNESS= 2.14 M; SAMPLED THICKNESS= 2.14 M |                |          |                  |                                       |   |
| 127.10  | 0.05           | 100      |                  | 100X MUDSTONE                         | CARBONACEOUS, DARK GREY, UNWEATHERED, MODERATELY<br>WEAK ROCK.        |
| 127.33  | 0.23           | 100      |                  | 100X MUDSTONE                         | GREY, UNWEATHERED, MODERATELY WEAK ROCK.                              |
| 127.52  | 0.19           | 100      | T12              | 100X MUDSTONE                         | SILTY, GREY, UNWEATHERED, MODERATELY WEAK ROCK.                       |
| 127.85  | 0.33           | 100      |                  | 95X MUDSTONE<br>5X COAL               | SILTY, GREY.<br>LAMINAE, BLACK.<br>UNWEATHERED, MODERATELY WEAK ROCK. |
| 128.14  | 0.29           | 100      |                  | 100X MUDSTONE                         | SILTY, GREY, UNWEATHERED, MODERATELY WEAK ROCK.                       |
| 128.94  | 0.80           | 100      |                  | 100X MUDSTONE                         | MASSIVE, GREY, UNWEATHERED, MODERATELY WEAK ROCK.                     |
| 129.04  | 0.10           | 100      |                  | 100X CARBONACEOUS MUDSTONE            | BRIGHT COAL, LENSES, BLACK, UNWEATHERED,<br>MODERATELY WEAK ROCK.     |
| 129.30  | 0.26           | 100      |                  | 100X MUDSTONE                         | MASSIVE, GREY, UNWEATHERED, MODERATELY WEAK ROCK.                     |
| 129.60  | 0.30           | 100      |                  | 100X SILTSTONE                        | CARBONACEOUS, DARK GREY, UNWEATHERED, MODERATELY<br>WEAK ROCK.        |
| 129.75  | 0.15           |          |                  | 100X MUDSTONE                         | GREY, UNWEATHERED, MODERATELY WEAK ROCK.                              |
| 130.06  | 0.31           |          | T13              | 100X MUDSTONE                         | GREY, UNWEATHERED, MODERATELY WEAK ROCK.                              |
| 130.16  | 0.10           | 100      | T13              | 100X MUDSTONE                         | CARBONACEOUS, DARK GREY, UNWEATHERED, MODERATELY<br>WEAK ROCK.        |
| TOP OF MT. NICHOLAS LOWER 2 : 332.88 M R.L.                                 |                |          |                  |                                       |   |
| 130.59  | 0.43           | 100      | A3               | 100X COAL, DULL                       | BADLY BROKEN, BLACK, UNWEATHERED, MODERATELY WEAK<br>ROCK.            |
| 130.60  | 0.01           | 100      | A3               | 100X TONSTEIN                         | WHITE, UNWEATHERED, MODERATELY WEAK ROCK.                             |
| 130.65  | 0.05           | 100      | A3               | 100X COAL, DULL WITH FEW BRIGHT BANDS | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                             |
| 130.66  | 0.01           | 100      | A3               | 100X CLAYSTONE                        | BROWN, UNWEATHERED, VERY WEAK ROCK.                                   |
| 130.69  | 0.03           | 100      | A3               | 100X TONSTEIN                         | WHITE, UNWEATHERED, MODERATELY WEAK ROCK.                             |
| 130.84  | 0.15           | 100      | A3               | 100X COAL, DULL                       | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.                             |
| 130.96  | 0.12           | 100      | A3               | 100X COAL, DULL                       | BADLY BROKEN, BLACK, UNWEATHERED, MODERATELY WEAK<br>ROCK.            |
| 130.97  | 0.01           | 100      | A3               | 100X TONSTEIN                         | WHITE, UNWEATHERED, MODERATELY WEAK ROCK.                             |
| 131.03  | 0.06           | 100      | A3               | 100X MUDSTONE                         | GREY, UNWEATHERED, MODERATELY WEAK ROCK.                              |

| DEPTH<br>TO BASE<br>M   | THICKNESS<br>M | REC.<br>% | SAMPLE<br>NUMBER | ROCK TYPE                                  | GEOLOGICAL DESCRIPTION                                  |
|---|----------------|-----------|------------------|--|---|
| 131.18  | 0.15           | 100       | A3               | 100X COAL, DULL                            | BADLY BROKEN, BLACK, UNWEATHERED, MODERATELY WEAK ROCK. |
| 131.43  | 0.25           | 100       | A3               | 100X COAL, DULL WITH FEW BRIGHT BANDS      | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.               |
| 131.60  | 0.17           | 100       | A3               | 100X COAL, DULL WITH NUMEROUS BRIGHT BANDS | BLACK, UNWEATHERED, MODERATELY WEAK ROCK.               |
| 131.93  | 0.33           | 0         |                  | CORE LOSS                                  |   |
| BASE OF MT. NICHOLAS LOWER 2 : THICKNESS= 1.77 M; SAMPLED THICKNESS= 1.44 M |                |           |                  |  |   |
| 131.99  | 0.06           | 100       | T14              | 100X SANDSTONE, FINE GRAINED               | CARBONACEOUS, GREY, UNWEATHERED, MODERATELY WEAK ROCK.  |