

Table DR1: Lithological Summary and Isotope data

| Sample (all JR63) | lithology   | $\delta^{18}\text{O}$ | Sr ppm | $^{87}\text{Sr}/^{86}\text{Sr}$ |
|-------------------|---|-----------------------|--------|---------------------------------|
| BR22 pc 1a -6     | cuspate-textured talc (>90%) rock after harzburgite       | 1.1                   | 0.6    | 0.707344                        |
| BR22 pc 1a -7     | amphibole-chlorite vein in fault schist                   | 1.6                   | 6.17   | 0.705293                        |
| BR22 pc 1a -8     | tremolite-rich fault schist                               | 3.7                   | 5.87   | 0.708224                        |
| BR31 pc1-3        | basalt cutting fault schist                               | 2.3                   | 168    | 0.703396                        |
| BR31 pc1-4        | tremolite-chlorite schist                                 | 0.4                   | 24     | 0.703779                        |
| BR71 pc 4(i)      | tremolite-talc-chlorite fault schist                      | 2.7                   | 5.07   | 0.708378                        |
| BR75pc1d (i)-4    | tremolite-rich fault schist                               | -0.4                  | 2.89   | 0.70585                         |
| BR75pc1d (i)-6    | talc-tremolite schist                                     | 0.4                   | 3.96   | 0.705016                        |
| BR75pc1d(iii)-5   | Basalt (2nd intrusion)                                    | 0.6                   | 180    | 0.703353                        |
| BR75pc1d(iii)-6   | Margin of 2nd basaltic intrusion                          | 1.15                  | 158    | 0.703369                        |
| BR75pc1d(iii)-7   | 1st basaltic intrusion into fault schist                  | 0.8                   | 120    | 0.703624                        |
| BR86pc4-1         | fine grained chloritized basalt (>90% chlorite)           | -0.3                  | 1.5    | 0.70624                         |
| BR86pc4-3         | talc schist   | 0.9                   | 4.1    | 0.70721                         |
| BR86pc4-5         | cuspate talc rock after harzburgite (>90% talc)           | 2.6                   | 0.43   | 0.708                           |
| BR90pc7a(ii)-1    | basalt intruding talc rock                                | 2.3                   | 78.3   | 0.70333                         |
| BR90pc7a(ii)-3    | well-foliated talc rock (talc ~80% + chlorite, tremolite) | 4.1                   | 3.2    | 0.70516                         |
| DR23-04           | secondary amphibole grain in gabbro                       | 3.4                   | 32.7   | 0.704054                        |
| DR23-04           | partly altered pyroxene grain in gabbro                   | 3.2                   | 62.6   | 0.704102                        |
| DR23-04           | amphibole vein in gabbro                                  | 3.2                   | 25.7   | 0.703547                        |
| DR23-04           | pyroxene/amphibole grain in gabbro                        | 3.2                   | 14     | 0.704525                        |
| DR23-04           | amphibolite facies shear zone in gabbro                   | 3.6                   | 82.7   | 0.703309                        |
| DR23-06           | amphibole vein in gabbro                                  | 2.7                   | 24.8   | 0.703628                        |
| DR23-06           | partly altered pyroxene grain in gabbro                   | 2.4                   | 59.1   | 0.70343                         |
| DR23-06           | amphibole grain in gabbro                                 | 3.7                   | 36.5   | 0.70329                         |

BR refers to samples taken with the BGS/BRIDGE drill, DR to dredge samples. For sample locations see Escartin et al. (2003). Most samples were cut out of thin section billets. Mineral proportions where stated are only approximate due to fine grain size and heterogeneity. Mineralogy of "basalt" is amphibole + plagioclase  $\pm$  oxide  $\pm$  titanite

**Table DR2: Major and trace element data\***

| Sample number  |                                      |     | BR86<br>PC4-1                    | BR86<br>PC4-2                         | BR90<br>PC7A(ii)-1   | BR90<br>PC7A(ii)-2                    | JB1a Standard | JB1a1 certified values |
|--|--------------------------------------|-----|----------------------------------|---------------------------------------|----------------------|---------------------------------------|---------------|------------------------|
| sample description   |                                      |     | chloritized metabasalt intrusive | chloritized metabasalt chilled margin | metabasalt intrusive | chloritized metabasalt chilled margin |               |                        |
| <b>ICP-OES data</b>  | <b>SiO<sub>2</sub></b>               | wt% | 26.42                            | 29.06                                 | 41.57                | 27.96                                 | 52.46         | 52.16                  |
|  | <b>TiO<sub>2</sub></b>               | wt% | 1.29                             | 0.93                                  | 1.01                 | 1.09                                  | 1.27          | 1.3                    |
|  | <b>Al<sub>2</sub>O<sub>3</sub></b>   | wt% | 20.14                            | 16.51                                 | 15.13                | 18.44                                 | 14.56         | 14.51                  |
|  | <b>Fe<sub>2</sub>O<sub>3</sub></b>   | wt% | 20.37                            | 16.99                                 | 13.43                | 19.10                                 | 8.96          | 9.1                    |
|  | <b>MnO</b>                           | wt% | 0.14                             | 0.11                                  | 0.17                 | 0.24                                  | 0.15          | 0.15                   |
|  | <b>MgO</b>                           | wt% | 21.76                            | 24.53                                 | 13.51                | 21.37                                 | 7.65          | 7.75                   |
|  | <b>CaO</b>                           | wt% | 0.18                             | 0.34                                  | 7.75                 | 0.43                                  | 9.29          | 9.23                   |
|  | <b>Na<sub>2</sub>O</b>               | wt% | 0.04                             | 0.08                                  | 1.34                 | 0.15                                  | 2.73          | 2.74                   |
|  | <b>K<sub>2</sub>O</b>                | wt% | 0.00                             | 0.01                                  | 0.04                 | 0.02                                  | 1.37          | 1.42                   |
|  | <b>P<sub>2</sub>O<sub>5</sub></b>    | wt% | 0.13                             | 0.09                                  | 0.10                 | 0.11                                  | 0.27          | 0.25                   |
|  | <b>LOI</b>                           | wt% | 9.99                             | 10.30                                 | 4.23                 | 9.95                                  | 0.78          | 0.78                   |
|  | <b>Total</b>                         | wt% | 100.47                           | 98.94                                 | 98.26                | 98.87                                 | 99.48         | 99.39                  |
|  |                                      |     |                                  |                                       |                      |                                       |               |                        |
|  | <b>Sc</b>                            | ppm | 44.32                            | 29.38                                 | 39.77                | 33.97                                 | 27.64         | 27.9                   |
|  | <b>V</b>                             | ppm | 246.93                           | 188.59                                | 202.97               | 199.17                                | 198.76        | 206                    |
|  | <b>Cr</b>                            | ppm | 417.99                           | 501.69                                | 373.99               | 434.16                                | 417.28        | 415                    |
|  | <b>Co</b>                            | ppm | 146.53                           | 112.15                                | 65.12                | 110.15                                | 39.72         | 39.5                   |
|  | <b>Ni</b>                            | ppm | 547.59                           | 1122.03                               | 289.81               | 790.91                                | 144.13        | 140                    |
|  | <b>Cu</b>                            | ppm | 83.08                            | 70.84                                 | 149.48               | 155.35                                | 29.75         | 55                     |
|  | <b>Zn</b>                            | ppm | 58.98                            | 45.42                                 | 25.43                | 53.81                                 | 83.57         | 82                     |
|  | <b>Sr</b>                            | ppm | 4.92                             | 4.84                                  | 101.69               | 11.17                                 | 446.81        | 443                    |
|  | <b>Y</b>                             | ppm | 10.39                            | 6.43                                  | 26.19                | 12.35                                 | 23.77         | 24                     |
|  | <b>Zr</b>                            | ppm | 75.16                            | 53.63                                 | 71.83                | 68.66                                 | 136.09        | 146                    |
|  | <b>Ba</b>                            | ppm | 1.29                             | 0.83                                  | 11.81                | 2.73                                  | 492.41        | 497                    |
| <b>ICP-MS data (reported as element concentration with measured isotope indicated)</b> |                                      |     |                                  |                                       |                      |                                       |               |                        |
|  | <b>49TiO<sub>2</sub></b>             | wt% | 1.29                             | 0.91                                  | 0.98                 | 1.05                                  | 1.27          | 1.3                    |
|  | <b>51V</b>                           | ppm | 241.52                           | 186.91                                | 199.33               | 192.87                                | 192.90        | 206                    |
|  | <b>52Cr</b>                          | ppm | 433.99                           | 496.20                                | 379.92               | 433.13                                | 413.40        | 415                    |
|  | <b>53Cr</b>                          | ppm | 452.92                           | 492.28                                | 398.43               | 451.33                                | 415.70        | 415                    |
|  | <b>55MnO</b>                         | wt% | 0.14                             | 0.10                                  | 0.16                 | 0.23                                  | 0.14          | 0.149                  |
|  | <b>57Fe<sub>2</sub>O<sub>3</sub></b> | wt% | 19.70                            | 16.07                                 | 13.04                | 18.24                                 | 8.90          | 9.1                    |
|  | <b>59Co</b>                          | ppm | 155.22                           | 113.27                                | 70.58                | 119.33                                | 37.05         | 39.5                   |
|  | <b>60Ni</b>                          | ppm | 570.88                           | 1065.21                               | 300.98               | 815.45                                | 145.20        | 140                    |
|  | <b>62Ni</b>                          | ppm | 566.34                           | 1020.66                               | 291.75               | 801.09                                | 140.30        | 140                    |
|  | <b>70Zn</b>                          | ppm | 44.62                            | 34.83                                 | 45.28                | 41.66                                 | 164.90        | 82                     |
|  | <b>71Ga</b>                          | ppm | 15.41                            | 21.21                                 | 14.99                | 17.98                                 | 19.40         | 18                     |

|              |     |       |       |        |       |        |      |
|--------------|-----|-------|-------|--------|-------|--------|------|
| <b>85Rb</b>  | ppm | 0.14  | 0.07  | 0.06   | 0.12  | 16.79  | 41   |
| <b>88Sr</b>  | ppm | 5.35  | 5.13  | 100.13 | 11.26 | 452.70 | 443  |
| <b>89Y</b>   | ppm | 10.46 | 6.53  | 26.13  | 12.21 | 24.66  | 24   |
| <b>90Zr</b>  | ppm | 69.10 | 52.61 | 65.45  | 69.05 | 131.90 | 146  |
| <b>93Nb</b>  | ppm | 3.45  | 2.17  | 2.56   | 2.59  | 27.42  | 27   |
| <b>137Ba</b> | ppm | 1.08  | 0.51  | 11.57  | 2.50  | 502.00 | 497  |
| <b>139La</b> | ppm | 0.45  | 0.70  | 3.27   | 2.05  | 36.83  | 38.1 |
| <b>140Ce</b> | ppm | 1.97  | 1.71  | 9.13   | 6.09  | 66.01  | 66.1 |
| <b>141Pr</b> | ppm | 0.33  | 0.31  | 1.53   | 0.97  | 7.20   | 7.3  |
| <b>146Nd</b> | ppm | 1.81  | 1.70  | 7.74   | 4.55  | 26.68  | 25.5 |
| <b>147Sm</b> | ppm | 0.70  | 0.69  | 2.50   | 1.25  | 5.19   | 5.02 |
| <b>153Eu</b> | ppm | 0.06  | 0.07  | 0.93   | 0.29  | 1.56   | 1.47 |
| <b>157Gd</b> | ppm | 0.96  | 0.79  | 3.09   | 1.40  | 4.88   | 4.54 |
| <b>159Tb</b> | ppm | 0.19  | 0.14  | 0.57   | 0.25  | 0.70   | 0.69 |
| <b>163Dy</b> | ppm | 1.37  | 0.91  | 4.00   | 1.71  | 4.10   | 4.19 |
| <b>165Ho</b> | ppm | 0.31  | 0.19  | 0.81   | 0.37  | 0.76   | 0.72 |
| <b>166Er</b> | ppm | 1.09  | 0.64  | 2.56   | 1.24  | 2.24   | 2.18 |
| <b>169Tm</b> | ppm | 0.19  | 0.11  | 0.40   | 0.21  | 0.35   | 0.31 |
| <b>172Yb</b> | ppm | 1.32  | 0.72  | 2.49   | 1.37  | 2.08   | 2.1  |
| <b>175Lu</b> | ppm | 0.26  | 0.14  | 0.37   | 0.23  | 0.32   | 0.32 |
| <b>178Hf</b> | ppm | 1.78  | 1.43  | 1.62   | 1.72  | 3.46   | 3.48 |
| <b>181Ta</b> | ppm | 0.23  | 0.21  | 0.15   | 0.17  | 1.66   | 2    |
| <b>208Pb</b> | ppm | 7.04  | 8.09  | 7.15   | 17.94 | 6.52   | 7.2  |
| <b>232Th</b> | ppm | 0.23  | 0.17  | 0.14   | 0.18  | 9.26   | 8.8  |
| <b>238U</b>  | ppm | 0.08  | 0.07  | 0.06   | 0.08  | 1.60   | 1.6  |