

## *Appendix 8-I*

*Winter Flow Measurements in February 2014*

MURRAY RIVER COAL PROJECT

**Application for an Environmental Assessment Certificate / Environmental Impact Statement**



Appendix 8-I2. Manual Flow Measurement at M19 Creek (Hydrometric Station MH-7)

| Site Information                  |                           |                                |           | Discharge Measurement - Mid-Section Method   |                             |         |          |                     |                |                         |     |                     |              |  |
|-----------------------------------|---------------------------|--------------------------------|-----------|--|-----------------------------|---------|----------|---------------------|----------------|-------------------------|-----|---------------------|--------------|--|
| Project Name                      | Murray River              |                                |           | Time (24 hr)   | Start                       | 12:00   | End      |                     | Location       | At section 5 m DS of PT |     |                     |              |  |
| Station Identification            | MH-7                      |                                |           | Method   | Velocity-area (Mid-section) |         |          | Instrument Model    | FH950          |                         |     |                     |              |  |
| Stream Name                       | M19 Creek                 |                                |           | Flow Meter Type  | Electromagnetic             |         |          | Instrument Serial # | 130861001498   |                         |     |                     |              |  |
| Date Monitored                    | 13-Feb-14                 |                                |           | Stage (m)  | Start                       | Reading | n/a      | Time                | -              |                         |     |                     |              |  |
| Time at Site (24 hr)              | Start Time:               | 12:00:00 PM                    | End Time: |  |                             | End     | Reading  | n/a                 | Time           | -                       |     |                     |              |  |
| Personnel                         | E. Belland, T. Gale       |                                |           |  | Station                     | Depth   | Distance | Area                | Velocity (m/s) |                         |     | Q                   | % of Total Q |  |
| Station Coordinates               | Easting                   | Northing                       | Elevation | Notes  | (m)                         | (m)     | (m)      | (m <sup>2</sup> )   | 60%            | 20%                     | 80% | (m <sup>3</sup> /s) | %            |  |
| Weather Conditions                | clear/ snowy, -10 deg C   |                                |           | RB   | 1.98                        | 0.00    | 0.0      | 0.00                | 0              |                         |     | 0.000               | 0.0          |  |
|                                   |                           |                                |           |  | 2.04                        | 0.12    | 0.1      | 0.01                | 0              |                         |     | 0.000               | 0.0          |  |
| Transducer Information            |                           |                                |           |  | 2.10                        | 0.12    | 0.1      | 0.01                | 0.12           |                         |     | 0.001               | 2.0          |  |
| PT Model                          |                           | Serial #                       |           |  | 2.15                        | 0.12    | 0.0      | 0.01                | 0.05           |                         |     | 0.000               | 1.1          |  |
| Gain                              |                           | Offset                         |           |  | 2.25                        | 0.16    | 0.1      | 0.02                | 0.05           |                         |     | 0.001               | 2.0          |  |
| Status                            |                           | Battery                        |           |  | 2.35                        | 0.20    | 0.1      | 0.02                | 0.1            |                         |     | 0.002               | 5.1          |  |
| # of Records                      |                           | Memory Free                    |           |  | 2.45                        | 0.18    | 0.1      | 0.02                | 0.13           |                         |     | 0.002               | 6.0          |  |
| Date Serviced                     |                           | Crest Gauges                   |           |  | 2.55                        | 0.16    | 0.1      | 0.02                | 0.32           |                         |     | 0.005               | 13.1         |  |
| Hydrometric Leveling Survey       |                           |                                |           |  | 2.65                        | 0.16    | 0.1      | 0.01                | 0.37           |                         |     | 0.004               | 11.3         |  |
| Stn                               | BS                        | HI                             | FS        | Elevation  | Notes                       |         |          |                     |                |                         |     |                     |              |  |
|                                   |                           |                                |           |  |                             | 2.70    | 0.16     | 0.1                 | 0.01           | 0.34                    |     | 0.004               | 10.4         |  |
|                                   |                           |                                |           |  |                             | 2.80    | 0.14     | 0.1                 | 0.01           | 0.37                    |     | 0.005               | 13.2         |  |
|                                   |                           |                                |           |  |                             | 2.90    | 0.11     | 0.1                 | 0.01           | 0.31                    |     | 0.003               | 8.7          |  |
|                                   |                           |                                |           |  |                             | 3.00    | 0.10     | 0.1                 | 0.01           | 0.33                    |     | 0.003               | 8.4          |  |
|                                   |                           |                                |           |  |                             | 3.10    | 0.11     | 0.1                 | 0.01           | 0.34                    |     | 0.004               | 9.6          |  |
|                                   |                           |                                |           |  |                             | 3.20    | 0.10     | 0.1                 | 0.01           | 0.29                    |     | 0.003               | 7.4          |  |
|                                   |                           |                                |           |  |                             | 3.30    | 0.10     | 0.1                 | 0.01           | 0.06                    |     | 0.001               | 1.5          |  |
|                                   |                           |                                |           |  |                             | 3.40    | 0.00     | 0.1                 | 0.00           | 0                       |     | 0.000               | 0.0          |  |
|                                   |                           |                                |           |  |                             |         |          |                     |                |                         |     |                     |              |  |
|                                   |                           |                                |           |  |                             |         |          |                     |                |                         |     |                     |              |  |
|                                   |                           |                                |           |  |                             |         |          |                     |                |                         |     |                     |              |  |
|                                   |                           |                                |           |  |                             |         |          |                     |                |                         |     |                     |              |  |
|                                   |                           |                                |           |  |                             |         |          |                     |                |                         |     |                     |              |  |
| BM#                               | Established Elevation (m) | Mean Elevation (this date) (m) |           | Difference (m)   | Notes                       |         |          |                     |                |                         |     |                     |              |  |
|                                   |                           |                                |           |  |                             |         |          |                     |                |                         |     |                     |              |  |
|                                   |                           |                                |           |  |                             |         |          |                     |                |                         |     |                     |              |  |
|                                   |                           |                                |           |  |                             |         |          |                     |                |                         |     |                     |              |  |
|                                   |                           |                                |           | Total Q  |                             |         |          |                     |                |                         |     | 0.039               | 100.0        |  |
| Summary                           |                           |                                |           | General Notes  |                             |         |          |                     |                |                         |     |                     |              |  |
| Stage (m)                         | n/a                       |                                |           | Stage values not recorded, winter low-flow trip.<br>Discharge measured 5 m DS of PT. |                             |         |          |                     |                |                         |     |                     |              |  |
| Discharge (m <sup>3</sup> /s)     | 0.039                     |                                |           |  |                             |         |          |                     |                |                         |     |                     |              |  |
| Pressure Transducer Reading (m)   | n/a                       |                                |           |  |                             |         |          |                     |                |                         |     |                     |              |  |
| Pressure Transducer Elevation (m) | n/a                       |                                |           |  |                             |         |          |                     |                |                         |     |                     |              |  |

