



**Appendix 6:**  
**Summary monitoring information post-December**  
**2010**

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## Meteorological Monitoring

**Table 1: Annual rainfall (mm) measured at Dublin Airport**

| Year | Rainfall (mm) |
|------|---------------|
| 2011 | 672           |
| 2010 | 667           |

**Table 2: Annual evapotranspiration (mm) measured at Dublin Airport**

| Year | Evapotranspiration (mm) |
|------|-------------------------|
| 2011 | 401                     |
| 2010 | 410                     |

**Table 3: Annual effective rainfall as calculated from rainfall and evapotranspiration recorded at Dublin Airport**

| Year | Rainfall (mm) | Evapotranspiration (mm) | Effective rainfall (mm) |
|------|---------------|-------------------------|-------------------------|
| 2011 | 672           | 401                     | 272                     |
| 2010 | 667           | 410                     | 256                     |

**Table 4: Total rainfall (mm) measured at Dublin Airport**

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual     |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|
| 2012 | 63  | 21  | 26  | 90  |     |     |     |     |     |     |     |     |            |
| 2011 | 29  | 76  | 19  | 28  | 37  | 65  | 43  | 40  | 65  | 170 | 49  | 52  | <b>672</b> |
| 2010 | 45  | 36  | 55  | 27  | 38  | 51  | 79  | 48  | 104 | 31  | 96  | 57  | <b>667</b> |

**Table 5: Evapotranspiration (mm) measured at Dublin Airport**

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual     |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|
| 2012 | 14  | 27  | 36  | 71  |     |     |     |     |     |     |     |     |            |
| 2011 | 15  | 17  | 32  | 51  | 48  | 48  | 54  | 39  | 38  | 30  | 18  | 13  | <b>401</b> |
| 2010 | 7   | 12  | 31  | 47  | 51  | 63  | 57  | 55  | 41  | 27  | 14  | 5   | <b>410</b> |

## Meteorological Monitoring

**Table 6: Potential rainfall (mm) (Rainfall minus Evapotranspiration) measured at Dublin Airport**

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual     |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|
| 2012 | 49  | -6  | -11 | 20  |     |     |     |     |     |     |     |     |            |
| 2011 | 14  | 59  | -12 | -23 | -11 | 17  | -11 | 1   | 28  | 139 | 31  | 39  | <b>272</b> |
| 2010 | 39  | 24  | 24  | -21 | -13 | -12 | 21  | -7  | 64  | 3   | 82  | 52  | <b>256</b> |

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## Groundwater Levels

Table 7: Groundwater Levels (mOD), Sep 2010 to March 2012

|              | 27/09/2010 | 14/12/2010 | 22/02/2011 | 27/06/2011 | 14/09/2011 | 01/12/2011 | 22/03/2012 |
|--------------|------------|------------|------------|------------|------------|------------|------------|
| <b>BH4A</b>  | 91.96      | 91.96      | 91.96      | 91.96      | 91.96      | 91.96      | 91.96      |
| <b>BH5</b>   | 101.26     | 101.75     | 102.75     | 101.88     | 101.04     | 101.74     | -          |
| <b>BH6</b>   | 117.31     | 117.31     | 117.31     | 117.31     | 117.31     | 117.31     | 117.31     |
| <b>BH8</b>   | 133.73     | 134.5      | 133.53     | 133.52     | 133        | 133.62     | 133.52     |
| <b>BH9</b>   | 104.59     | 105.41     | 107.47     | 105.27     | 104.18     | 104.76     | 106.11     |
| <b>BH10A</b> | 99.59      | 99.89      | 100.54     | 100.1      | 99.44      | 99.65      | -          |
| <b>BH11A</b> | 98.48      | 98.49      | 98.47      | 98.41      | 98.37      | 98.4       | 98.4       |
| <b>BH12</b>  | 100.35     | 100.72     | 101.53     | 100.82     | 100.2      | 100.36     | 100.83     |
| <b>BH13</b>  | 108.78     | 111.39     | 112.86     | 111.7      | 111.61     | 112.67     | 113.51     |
| <b>BH14</b>  | 98.73      | 98.09      | 99.65      | 99.03      | 98.5       | 98.83      | 99.1       |

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## Groundwater Quality

Table 8: Groundwater monitoring results for BH-4A, Quarter 2, 2010 – Quarter 1, 2012

| Parameter                   | Units                   | Drinking Water Directive (98/83/EC) | EPA Trigger Levels for W0129-02 | Q2, 2010   | Q3, 2010   | Q4, 2010   | Q1, 2011   | Q2, 2011   | Q3, 2011   | Q4, 2011   | Q1, 2012   |
|-----------------------------|-------------------------|-------------------------------------|---------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Date of Sampling:           |                         |                                     |                                 | 17/06/2010 | 27/09/2010 | 14/12/2010 | 22/02/2011 | 27/06/2011 | 14/09/2011 | 01/12/2011 | 23/03/2012 |
| Ammoniacal Nitrogen         | mg/l NH <sub>4</sub> -N | 0.39                                | N/A                             | <0.03      | <0.03      | <0.03      | 0.03       | <0.03      | <0.03      | <0.03      | 0.03       |
| Arsenic                     | mg/l                    | 0.01                                | N/A                             | <0.0009    |            |            | <0.0025    | <0.0025    | 0.0065     | <0.0025    | <0.0025    |
| Barium                      | mg/l                    | N/A                                 | N/A                             | 0.02       |            |            | 0.017      | 0.028      | 0.046      | 0.017      | 0.008      |
| Calcium                     | mg/l                    | N/A                                 | N/A                             | 109.7      | 104.7      | 97.5       | 103.1      | 79.9       | 73.9       | 97.1       | 44.5       |
| Chloride                    | mg/l                    | 250                                 | 75                              | 24.9       | 22.3       | 23.7       | 20.2       | 6.5        | 21.6       | 20.5       | 19.5       |
| Colour                      | N/A                     | N/A                                 | N/A                             | Clear      | Clear      | Clear      | Clear      | Clear      | Clear      | clear      | Clear      |
| Conductivity                | mS/cm                   | 2.5                                 | 1                               | 0.66       | 0.64       | 0.671      | 0.62       | 0.58       | 0.47       | 0.59       | 0.56       |
| Cyanide                     | mg/l                    | 0.05                                | N/A                             |            |            | <0.04      | <0.01      |            |            |            | <0.01      |
| Dissolved Oxygen            | mg/l                    | N/A                                 | N/A                             | 12%        | 2.44       | 1.88       | 0.88       | 4          | 0.76       | 0.63       | 2.75       |
| Iron                        | mg/l                    | 0.2                                 | N/A                             | 0.01       | 0.02       | <0.02      | <0.02      | <0.02      | <0.02      | <0.02      | <0.02      |
| Level, Water                | mOD                     | N/A                                 | N/A                             | 91.96      | 91.96      | 91.96      | 91.96      | 91.96      | 91.96      | 91.96      | 91.96      |
| Manganese                   | mg/l                    | 0.05                                | N/A                             | 0.17       | 0.167      | 0.187      | 0.177      | 0.373      | 0.318      | 0.172      | 0.131      |
| Odour                       | N/A                     | N/A                                 | N/A                             | None       | None       | None       | none       | None       | None       | none       | None       |
| pH                          | pH                      | 6.5<pH<9.5                          | 6<pH<9                          | 7.5        | 7.4        | 7.2        | 7.2        | 7.5        | 7.2        | 7.7        | 7.4        |
| Phenols, Total              | mg/l                    | N/A                                 | 0.1                             | <0.18      | <0.18      | <0.15      | <0.0005    | <0.15      | <0.15      | <0.1       | <0.1       |
| Potassium                   | mg/l                    | N/A                                 | N/A                             | 1.2        | 1.3        | 1.2        | 1.2        | 1.2        | 1.4        | 1.5        | 1.6        |
| Sodium                      | mg/l                    | 200                                 | 80                              | 10.7       | 10.8       | 8.9        | 9.9        | 10.1       | 11         | 15.2       | 657.3      |
| Sulphate                    | mg/l                    | 250                                 | 150                             | 48.66      | 43.2       | 37.52      | 31.61      | 24.61      | 12.66      | 28.93      | 30.35      |
| Temperature                 | °C                      | N/A                                 | N/A                             | 10.8       | 10.4       | 9.1        | 10.5       | 15.2       | 16.1       | 6.1        | 12.7       |
| Total Organic Carbon        | mg/l                    | N/A                                 | 50                              | <2         | 7          | 0.43       | 3          | 8          | 6          | 4          | 4          |
| Total Oxidized Nitrogen     | mg/l                    | N/A                                 | N/A                             | 2.02       | 0.53       | 0.43       | <0.2       | <0.2       | <0.2       | <0.2       | <0.2       |
| Boron                       | mg/l                    | N/A                                 | N/A                             |            |            |            | 0.049      |            |            |            | 0.016      |
| Cadmium                     | mg/l                    | 0.005                               | 0.004                           | 0.0004     |            |            | <0.0005    |            |            |            | <0.0005    |
| Chromium, Total             | mg/l                    | 0.05                                | N/A                             | 0.0001     |            |            | <0.0015    |            |            |            | <0.0015    |
| Coliforms, Faecal           | cfus/100ml              | 0                                   | N/A                             |            |            |            | 0          |            |            |            | 0          |
| Coliforms, Total            | cfus/100ml              | 0                                   | N/A                             |            |            |            | 0          |            |            |            | 0          |
| Copper                      | mg/l                    | 2                                   | 0.5                             | <0.003     |            |            | <0.007     |            |            |            | <0.007     |
| Fluoride                    | mg/l                    | 1.5                                 | N/A                             |            |            |            | <0.3       |            |            |            | <0.3       |
| Lead                        | mg/l                    | 0.01                                | N/A                             | 0.002      |            |            | <0.005     |            |            |            | <0.005     |
| List I and II Substances    | mg/l                    | N/A                                 | N/A                             |            |            |            | <0.01      |            |            |            | <0.01      |
| Magnesium                   | mg/l                    | N/A                                 | N/A                             | 9.7        |            |            | 9.2        |            |            |            | 8.9        |
| Mercury                     | mg/l                    | 0.001                               | N/A                             | <0.0005    |            |            | <0.001     |            |            |            | <0.001     |
| Orthophosphates             | mg/l                    | N/A                                 | N/A                             |            |            |            | 0.93       |            |            |            | <0.03      |
| PAHs, Total 6/16/17 (Note1) | mg/l                    | 0.0001                              | N/A                             | <0.0001    |            |            |            | <0.0003    |            |            | <0.0001    |
| Phosphorus, Total           | mg/l                    | N/A                                 | N/A                             |            |            |            | 0.069      |            |            |            | <0.005     |
| Total Solids                | mg/l                    | N/A                                 | N/A                             |            |            |            | 347        |            |            |            | 233        |
| Zinc                        | mg/l                    | N/A                                 | N/A                             | 0.004      |            |            | 0.004      |            |            |            | 0.049      |

## Groundwater Quality

Table 9: Groundwater monitoring results for BH-5, Quarter 2, 2010 – Quarter 1, 2012

| Parameter                   | Units                   | Drinking Water Directive (98/83/EC) | EPA Trigger Levels for W0129-02 | Q2, 2010              | Q3, 2010        | Q4, 2010            | Q1, 2011   | Q2, 2011   | Q3, 2011      | Q4, 2011   | Q1, 2012   |
|-----------------------------|-------------------------|-------------------------------------|---------------------------------|-----------------------|-----------------|---------------------|------------|------------|---------------|------------|------------|
| Date of Sampling:           |                         |                                     |                                 | 17/06/2010            | 27/09/2010      | 14/12/2010          | 22/02/2011 | 27/06/2011 | 14/09/2011    | 01/12/2011 | 23/03/2012 |
| Ammoniacal Nitrogen         | mg/l NH <sub>4</sub> -N | 0.39                                | N/A                             | 0.11                  | 0.05            | <0.03               | <0.03      |            | 0.11          | <0.03      | 0.12       |
| Arsenic                     | mg/l                    | 0.01                                | N/A                             | 0.0154                |                 |                     | 0.0065     |            | 0.0075        | 0.0033     | 0.0163     |
| Barium                      | mg/l                    | N/A                                 | N/A                             | 0.04                  |                 |                     | 0.012      |            | 0.03          | 0.018      | 0.012      |
| Calcium                     | mg/l                    | N/A                                 | N/A                             | 113                   | 78.1            | 97.5                | 75.9       |            | 88.1          | 78.3       | 86.7       |
| Chloride                    | mg/l                    | 250                                 | 75                              | 21.9                  | 20.1            | 22.6                | 19.2       |            | 22.9          | 20.4       | 21         |
| Colour                      | N/A                     | N/A                                 | N/A                             | Quite black in colour | Slightly Cloudy | Cloudy, Light brown | Clear      |            | Some sediment | clear      | Clear      |
| Conductivity                | mS/cm                   | 2.5                                 | 1                               | 0.7                   | 0.57            | 0.657               | 0.66       |            | 0.6           | 0.61       | 0.55       |
| Cyanide                     | mg/l                    | 0.05                                | N/A                             |                       |                 | <0.04               | <0.01      |            |               |            | <0.01      |
| Dissolved Oxygen            | mg/l                    | N/A                                 | N/A                             |                       | 4.6             | 4.05                | 3.3        |            | 0.79          | 1.97       | 0.75       |
| Iron                        | mg/l                    | 0.2                                 | N/A                             | 0.007                 | <0.02           | <0.020              | <0.02      |            | <0.02         | <0.02      | <0.02      |
| Level, Water                | mOD                     | N/A                                 | N/A                             | 101.25                | 101.26          | 101.75              | 102.75     | 101.88     | 101.04        | 101.74     |            |
| Manganese                   | mg/l                    | 0.05                                | N/A                             | 0.241                 | 0.12            | 0.072               | 0.116      |            | 0.156         | 0.17       | 0.269      |
| Odour                       | N/A                     | N/A                                 | N/A                             | None                  | None            | None                | none       |            | None          | none       | None       |
| pH                          | pH                      | 6.5<pH<9.5                          | 6<pH<9                          | 7.3                   | 6.9             | 7.2                 | 7.3        |            | 6.6           | 7.4        | 7          |
| Phenols, Total              | mg/l                    | N/A                                 | 0.1                             | <0.18                 | <0.18           | 0.15                | <0.0005    |            | <0.15         | <0.1       | <0.1       |
| Potassium                   | mg/l                    | N/A                                 | N/A                             | 1                     | 1.1             | 1.2                 | 1.4        |            | 1.3           | 1.5        | 1.2        |
| Sodium                      | mg/l                    | 200                                 | 80                              | 16.2                  | 29.3            | 52.3                | 52.1       |            | 31.8          | 42.2       | 18.1       |
| Sulphate                    | mg/l                    | 250                                 | 150                             | 55.71                 | 62.26           | 74.6                | 63.13      |            | 84.34         | 62.3       | 77.28      |
| Temperature                 | °C                      | N/A                                 | N/A                             | 11.6                  | 10.4            | 6.5                 | 8.9        |            | 12.1          | 7.2        | 11.5       |
| Total Organic Carbon        | mg/l                    | N/A                                 | 50                              | <2                    | 7               | 0.45                | 4          |            | 5             | 4          | <2         |
| Total Oxidized Nitrogen     | mg/l                    | N/A                                 | N/A                             | 1                     | 0.22            | 0.45                | 0.2        |            | <0.2          | <0.2       | <0.2       |
| Boron                       | mg/l                    | N/A                                 | N/A                             |                       |                 |                     | 0.054      |            |               |            | 0.017      |
| Cadmium                     | mg/l                    | 0.005                               | 0.004                           | 0.0017                |                 |                     | <0.0005    |            |               |            | <0.0005    |
| Chromium, Total             | mg/l                    | 0.05                                | N/A                             | 0.0009                |                 |                     | <0.0015    |            |               |            | <0.0015    |
| Coliforms, Faecal           | cfus/100ml              | 0                                   | N/A                             |                       |                 |                     | 4          |            |               |            | 0          |
| Coliforms, Total            | cfus/100ml              | 0                                   | N/A                             |                       |                 |                     | 4          |            |               |            | 0          |
| Copper                      | mg/l                    | 2                                   | 0.5                             | 0.0006                |                 |                     | <0.007     |            |               |            | <0.007     |
| Fluoride                    | mg/l                    | 1.5                                 | N/A                             |                       |                 |                     | <0.3       |            |               |            | <0.3       |
| Lead                        | mg/l                    | 0.01                                | N/A                             | 0.0003                |                 |                     | <0.005     |            |               |            | <0.05      |
| List I and II Substances    | mg/l                    | N/A                                 | N/A                             |                       |                 |                     | <0.01      |            |               |            | <0.01      |
| Magnesium                   | mg/l                    | N/A                                 | N/A                             | 8.6                   |                 |                     | 6.5        |            |               |            | 8.1        |
| Mercury                     | mg/l                    | 0.001                               | N/A                             | <0.0005               |                 |                     | <0.001     |            |               |            | <0.001     |
| Orthophosphates             | mg/l                    | N/A                                 | N/A                             |                       |                 |                     | <0.06      |            |               |            | <0.03      |
| PAHs, Total 6/16/17 (Note1) | mg/l                    | 0.0001                              | N/A                             | <0.0001               |                 |                     |            |            |               |            | <0.0001    |
| Phosphorus, Total           | mg/l                    | N/A                                 | N/A                             |                       |                 |                     | 0.625      |            |               |            | 0.013      |
| Total Solids                | mg/l                    | N/A                                 | N/A                             |                       |                 |                     | 347        |            |               |            | 346        |
| Zinc                        | mg/l                    | N/A                                 | N/A                             | 0.019                 |                 |                     | 0.033      |            |               |            | 0.211      |

## Groundwater Quality

Table 10: Groundwater monitoring results for BH-6, Quarter 2, 2010 – Quarter 1, 2012

| Parameter                | Units                   | Drinking Water Directive (98/83/EC) | EPA Trigger Levels for W012 9-02 | Q2, 2010   | Q3, 2010 EPA Samples | Q3, 2010 EPA Samples - MEHL Split | Q3, 2010   | Q4, 2010   | Q1, 2011   | Q1, 2011 EPA: MEHL Split | Q1, 2011 EPA | Q2, 2011   | Q3, 2011   | Q4, 2011   | Q1, 2012   |
|--------------------------|-------------------------|-------------------------------------|----------------------------------|------------|----------------------|-----------------------------------|------------|------------|------------|--------------------------|--------------|------------|------------|------------|------------|
| Date of Sampling:        |                         |                                     |                                  | 17/06/2010 | 13/09/2010           | 13/09/2010                        | 27/09/2010 | 14/12/2010 | 22/02/2011 | 28/03/2011               | 28/03/2011   | 27/06/2011 | 14/09/2011 | 01/12/2011 | 23/03/2012 |
| Ammoniacal Nitrogen      | mg/l NH <sub>4</sub> -N | 0.39                                | N/A                              | 0.28       | 0.26                 | 0.27                              | 0.27       | 0.28       | 0.28       | 0.26                     | 0.28         | 0.52       | 0.29       | 0.32       | 0.3        |
| Arsenic                  | mg/l                    | 0.01                                | N/A                              | <0.0009    | 0.0009               | <0.0025                           |            |            | <0.0025    | <0.0025                  |              | <0.0025    | <0.0025    | <0.0025    | <0.0025    |
| Barium                   | mg/l                    | N/A                                 | N/A                              | 0.065      |                      | 0.061                             |            |            | 0.061      | 0.066                    |              | 0.239      | 0.076      | 0.061      | <0.003     |
| Calcium                  | mg/l                    | N/A                                 | N/A                              | 95.9       | 101.2                | 72.7                              | 93.3       | 97.5       | 95.5       | 94.1                     | 99           | 58.9       | 101.9      | 97.2       | 0.6        |
| Chloride                 | mg/l                    | 250                                 | 75                               | 21.7       | 20.1                 | 20.5                              | 19.9       | 23.2       | 20.1       | 21.4                     | 19.4         | 22.8       | 21.7       | 21         | 20.6       |
| Colour                   | N/A                     | N/A                                 | N/A                              | Clear      |                      |                                   | Clear      | Clear      | Clear      |                          |              | Clear      | Clear      | Clear      | Clear      |
| Conductivity             | mS/cm                   | 2.5                                 | 1                                | 0.7        | 0.58                 | 0.608                             | 0.66       | 0.622      | 0.66       |                          | 0.596        | 0.53       | 0.66       | 0.7        | 0.67       |
| Cyanide                  | mg/l                    | 0.05                                | N/A                              |            |                      | <0.02                             |            | <0.04      | <0.01      |                          |              |            |            |            | <0.01      |
| Dissolved Oxygen         | mg/l                    | N/A                                 | N/A                              |            |                      | 10                                | 5.2        | 3.86       | 2.54       |                          |              | 5%         | 0.7        | 1.07       | 0.34       |
| Iron                     | mg/l                    | 0.2                                 | N/A                              | 0.008      | 1.37                 | <0.020                            | <0.02      | <0.02      | <0.02      | <0.02                    |              | <0.02      | <0.02      | <0.02      | 0.065      |
| Level, Water             | mOD                     | N/A                                 | N/A                              | 117.31     |                      |                                   | 117.31     | 117.31     | 117.31     |                          |              | 117.31     | 117.31     | 117.31     | 117.31     |
| Manganese                | mg/l                    | 0.05                                | N/A                              | 0.202      | 0.217                | 0.124                             | 0.218      | 0.259      | 0.218      | 0.203                    |              | 0.164      | 0.197      | 0.157      | 0.012      |
| Odour                    | N/A                     | N/A                                 | N/A                              | None       |                      |                                   | None       | None       | none       |                          |              | none       | None       | None       | None       |
| pH                       | pH                      | 6.5<pH<9.5                          | 6<pH<9                           | 7.2        | 7.3                  | 8.05                              | 7.2        | 7.3        | 7.2        |                          | 7.3          | 7.6        | 6.8        | 7.5        | 7.2        |
| Phenols, Total           | mg/l                    | N/A                                 | 0.1                              | <0.18      |                      | <0.18                             | <0.18      | <0.15      | <0.0005    | <0.15                    |              | <0.15      | <0.15      | <0.1       | <0.1       |
| Potassium                | mg/l                    | N/A                                 | N/A                              | 4.8        | 5.4                  | 5.2                               |            | 4.6        | 5          | 5                        | 5.1          | 6          | 5.8        | 6.8        | 6.1        |
| Sodium                   | mg/l                    | 200                                 | 80                               | 16.9       | 17.8                 | 17.4                              | 17         | 52.3       | 16.7       | 17.9                     | 17.1         | 27.3       | 17.5       | 20.7       | 675        |
| Sulphate                 | mg/l                    | 250                                 | 150                              | 25.75      | 25.8                 | 28.57                             | 27.32      | 28.01      | 23.99      | 29.74                    | 25           | 2.31       | 40.63      | 59.5       | 64.65      |
| Temperature              | °C                      | N/A                                 | N/A                              | 11.3       |                      |                                   | 11.5       | 8          | 9.8        |                          |              | 5.7        | 12.6       | 7.2        | 9.7        |
| Total Organic Carbon     | mg/l                    | N/A                                 | 50                               | <2         |                      | 9                                 | 8          | 18         | 4          | <2                       |              | 9          | 2          | 7          | <2         |
| Total Oxidized Nitrogen  | mg/l                    | N/A                                 | N/A                              | 0.72       | <0.1                 | 0.2                               | 0.09       | 0.2        | <0.2       | <0.2                     | 0.4          | <0.2       | <0.2       | <0.2       | <0.2       |
| Boron                    | mg/l                    | N/A                                 | N/A                              |            |                      | 0.063                             |            |            | 0.105      |                          |              |            |            |            | 0.065      |
| Cadmium                  | mg/l                    | 0.005                               | 0.004                            | <0.00003   | <0.0001              | <0.00005                          |            |            | <0.0005    |                          |              |            |            |            | <0.0005    |
| Chromium, Total          | mg/l                    | 0.05                                | N/A                              | 0.001      | <0.0005              | <0.0015                           |            |            | <0.0015    |                          |              |            |            |            | <0.0015    |
| Coliforms, Faecal        | cfus/100 ml             | 0                                   | N/A                              |            |                      | 0                                 |            |            | 0          |                          |              |            |            |            | 5          |
| Coliforms, Total         | cfus/100 ml             | 0                                   | N/A                              |            |                      | 0                                 |            |            | 0          |                          |              |            |            |            | 5          |
| Copper                   | mg/l                    | 2                                   | 0.5                              | <0.003     | <0.0005              | <0.007                            |            |            | <0.007     |                          |              |            |            |            | <0.007     |
| Fluoride                 | mg/l                    | 1.5                                 | N/A                              |            | 0.19                 | 0.3                               |            |            | 0.4        |                          | 0.27         |            |            |            | <0.3       |
| Lead                     | mg/l                    | 0.01                                | N/A                              | 0.001      | <0.0005              | <0.005                            |            |            | <0.005     |                          |              |            |            |            | <0.005     |
| List I and II Substances | mg/l                    | N/A                                 | N/A                              |            |                      |                                   |            |            | <0.01      |                          |              |            |            |            | <0.01      |
| Magnesium                | mg/l                    | N/A                                 | N/A                              | 17.9       | 19.3                 | 17.7                              |            |            | 17.6       |                          | 18.4         |            |            |            | 0.8        |
| Mercury                  | mg/l                    | 0.001                               | N/A                              | <0.0005    | <0.00005             | <0.001                            |            |            | <0.001     |                          |              |            |            |            | <0.001     |
| Orthophosphat            | mg/l                    | N/A                                 | N/A                              |            | 0.005                | <0.06                             |            |            | <0.06      |                          | <0.05        |            |            |            | <0.03      |

## Groundwater Quality

| Parameter                   | Units | Drinking Water Directive (98/83/EC) | EPA Trigger Levels for W012 9-02 | Q2, 2010   | Q3, 2010 EPA Samples | Q3, 2010 EPA Samples - MEHL Split | Q3, 2010   | Q4, 2010   | Q1, 2011   | Q1, 2011 EPA: MEHL Split | Q1, 2011 EPA | Q2, 2011   | Q3, 2011   | Q4, 2011   | Q1, 2012   |
|-----------------------------|-------|-------------------------------------|----------------------------------|------------|----------------------|-----------------------------------|------------|------------|------------|--------------------------|--------------|------------|------------|------------|------------|
| Date of Sampling:           |       |                                     |                                  | 17/06/2010 | 13/09/2010           | 13/09/2010                        | 27/09/2010 | 14/12/2010 | 22/02/2011 | 28/03/2011               | 28/03/2011   | 27/06/2011 | 14/09/2011 | 01/12/2011 | 23/03/2012 |
| es                          |       |                                     |                                  |            |                      |                                   |            |            |            |                          |              |            |            |            |            |
| PAHs, Total 6/16/17 (Note1) | mg/l  | 0.0001                              | N/A                              | <0.0001    |                      |                                   |            |            |            |                          |              | <0.0003    |            |            | <0.0001    |
| Phosphorus, Total           | mg/l  | N/A                                 | N/A                              |            |                      | 0.018                             |            |            | 0.02       |                          |              |            |            |            | <0.005     |
| Total Solids                | mg/l  | N/A                                 | N/A                              |            |                      | 107                               |            |            | 358        |                          |              |            |            |            | 406        |
| Zinc                        | mg/l  | N/A                                 | N/A                              | 0.003      | 0.006                | <0.003                            |            |            | 0.015      |                          |              |            |            |            | 0.031      |

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## Groundwater Quality

Table 11: Groundwater monitoring results for BH-8, Quarter 2, 2010 – Quarter 1, 2012

| Parameter                   | Units                   | Drinking Water Directive (98/83/EC) | EPA Trigger Levels for W0129-02 | Q2, 2010             | Q3, 2010   | Q4, 2010                               | Q1, 2011             | Q2, 2011   | Q3, 2011                      | Q4, 2011       | Q1, 2012                    |
|-----------------------------|-------------------------|-------------------------------------|---------------------------------|----------------------|------------|--|----------------------|------------|-------------------------------|----------------|-----------------------------|
| Date of Sampling:           |                         |                                     |                                 | 17/06/2010           | 27/09/2010 | 14/12/2010                             | 22/02/2011           | 27/06/2011 | 14/09/2011                    | 01/12/2011     | 23/03/2012                  |
| Ammoniacal Nitrogen         | mg/l NH <sub>4</sub> -N | 0.39                                | N/A                             | 0.49                 | 1.66       | 9.57                                   | 0.98                 | 0.77       | 0.44                          | 0.77           | 0.83                        |
| Arsenic                     | mg/l                    | 0.01                                | N/A                             | 0.0015               |            |  | <0.0025              | <0.0025    | <0.0025                       | <0.0025        | <0.0025                     |
| Barium                      | mg/l                    | N/A                                 | N/A                             | 0.071                |            |  | 0.058                | 0.068      | 0.077                         | 0.05           | 0.062                       |
| Calcium                     | mg/l                    | N/A                                 | N/A                             | 121.4                | 80.7       | 105.8                                  | 89.8                 | 115.6      | 117.6                         | 74.2           | 88.8                        |
| Chloride                    | mg/l                    | 250                                 | 75                              | 49.7                 | 51.7       | 56.5                                   | 74.5                 | 42.1       | 47                            | 59.4           | 147.4                       |
| Colour                      | N/A                     | N/A                                 | N/A                             | Muddy; High sediment |            | Very dark brown. High Sediment content | Very brown; sediment | Clear, red | Brown - high sediment loading | brown sediment | Brown sediment; iron flakes |
| Conductivity                | mS/cm                   | 2.5                                 | 1                               | 0.8                  | 0.68       | 0.832                                  | 0.75                 | 0.71       | 0.77                          | 0.62           | 0.84                        |
| Cyanide                     | mg/l                    | 0.05                                | N/A                             |                      |            | <0.04                                  | <0.01                |            |                               |                | <0.01                       |
| Dissolved Oxygen            | mg/l                    | N/A                                 | N/A                             |                      | 2.51       | 2.55                                   | 1.68                 | 4          | 1.23                          | 0.68           | 1                           |
| Iron                        | mg/l                    | 0.2                                 | N/A                             | 0.035                | 1.007      | 0.507                                  | 0.074                | 0.026      | 0.099                         | 0.179          | 0.347                       |
| Level, Water                | mOD                     | N/A                                 | N/A                             | 133.43               | 133.73     | 134.5                                  | 133.53               | 133.52     | 133                           | 133.62         | 133.52                      |
| Manganese                   | mg/l                    | 0.05                                | N/A                             | 1.54                 | 1.978      | 3.906                                  | 1.731                | 0.672      | 1.352                         | 1.225          | 1.301                       |
| Odour                       | N/A                     | N/A                                 | N/A                             | None                 |            | none                                   | None                 | None       | None                          | None           | None                        |
| pH                          | pH                      | 6.5<pH<9.5                          | 6<pH<9                          | 6.8                  | 6.7        | 6.6                                    | 7.3                  | 6.8        | 6.7                           | 6.9            | 6.5                         |
| Phenols, Total              | mg/l                    | N/A                                 | 0.1                             | <0.18                | <0.18      | <0.15                                  | 0.0026               | <0.15      | <0.15                         | <0.1           | <0.1                        |
| Potassium                   | mg/l                    | N/A                                 | N/A                             | 3.9                  | 4.4        | 11.6                                   | 3.4                  | 4.8        | 3.6                           | 3.5            | 3.8                         |
| Sodium                      | mg/l                    | 200                                 | 80                              | 32.8                 | 27.7       | 26.1                                   | 34.2                 | 30.5       | 33                            | 27.6           | 62.3                        |
| Sulphate                    | mg/l                    | 250                                 | 150                             | 120.28               | 113.73     | 154.12                                 | 121.44               | 165.41     | 186.86                        | 92.98          | 96.95                       |
| Temperature                 | °C                      | N/A                                 | N/A                             | 12.1                 | 15.1       | 8.9                                    | 9                    | 11.9       | 14.1                          | 9.8            | 12.7                        |
| Total Organic Carbon        | mg/l                    | N/A                                 | 50                              | 6                    | 13         | 48                                     | 16                   | 19         | 21                            | 20             | 18                          |
| Total Oxidized Nitrogen     | mg/l                    | N/A                                 | N/A                             | 0.71                 | 1.16       | 0.1                                    | 1.2                  | 0.4        | <0.2                          | 0.7            | 1.1                         |
| Boron                       | mg/l                    | N/A                                 | N/A                             |                      |            |  | 0.047                |            |                               |                | 0.013                       |
| Cadmium                     | mg/l                    | 0.005                               | 0.004                           | 0.0008               |            |  | 0.0006               |            |                               |                | <0.0005                     |
| Chromium, Total             | mg/l                    | 0.05                                | N/A                             | 0.0013               |            |  | <0.0015              |            |                               |                | <0.0015                     |
| Coliforms, Faecal           | cfus/100ml              | 0                                   | N/A                             |                      |            |  | 0                    |            |                               |                | 0                           |
| Coliforms, Total            | cfus/100ml              | 0                                   | N/A                             |                      |            |  | 0                    |            |                               |                | 2                           |
| Copper                      | mg/l                    | 2                                   | 0.5                             | 0.016                |            |  | 0.008                |            |                               |                | <0.007                      |
| Fluoride                    | mg/l                    | 1.5                                 | N/A                             |                      |            |  | <0.3                 |            |                               |                | <0.3                        |
| Lead                        | mg/l                    | 0.01                                | N/A                             | 0.001                |            |  | <0.005               |            |                               |                | <0.005                      |
| List I and II Substances    | mg/l                    | N/A                                 | N/A                             |                      |            |  | <0.01                |            |                               |                | <0.01                       |
| Magnesium                   | mg/l                    | N/A                                 | N/A                             | 9.9                  |            |  | 11.4                 |            |                               |                | 12.1                        |
| Mercury                     | mg/l                    | 0.001                               | N/A                             | <0.0005              |            |  | <0.001               |            |                               |                | <0.001                      |
| Orthophosphates             | mg/l                    | N/A                                 | N/A                             |                      |            |  | <0.06                |            |                               |                | <0.03                       |
| PAHs, Total 6/16/17 (Note1) | mg/l                    | 0.0001                              | N/A                             | <0.0001              |            |  |                      | <0.0003    |                               |                | <0.0001                     |
| Phosphorus, Total           | mg/l                    | N/A                                 | N/A                             |                      |            |  | 1.955                |            |                               |                | <0.005                      |
| Total Solids                | mg/l                    | N/A                                 | N/A                             |                      |            |  | 864                  |            |                               |                | 653                         |
| Zinc                        | mg/l                    | N/A                                 | N/A                             | 0.005                |            |  | 0.01                 |            |                               |                | 0.007                       |

## Groundwater Quality

Table 12: Groundwater monitoring results for BH-9, Quarter 2, 2010 – Quarter 1, 2012

| Parameter                   | Units                   | Drinking Water Directive (98/83/EC) | EPA Trigger Levels for W0129-02 | Q2, 2010        | Q3, 2010                         | Q4, 2010                         | Q1, 2011     | Q2, 2011   | Q3, 2011   | Q4, 2011       | Q1, 2012                     |
|-----------------------------|-------------------------|-------------------------------------|---------------------------------|-----------------|----------------------------------|----------------------------------|--------------|------------|------------|----------------|------------------------------|
| Date of Sampling:           |                         |                                     |                                 | 17/06/2010      | 27/09/2010                       | 14/12/2010                       | 22/02/2011   | 27/06/2011 | 14/09/2011 | 01/12/2011     | 23/03/2012                   |
| Ammoniacal Nitrogen         | mg/l NH <sub>4</sub> -N | 0.39                                | N/A                             | 0.19            | 0.11                             | 0.13                             | 0.11         | 0.05       | 0.11       | 0.09           | 0.12                         |
| Arsenic                     | mg/l                    | 0.01                                | N/A                             | 0.0077          |                                  |                                  | 0.0028       | <0.0025    | 0.0053     | 0.0026         | <0.0025                      |
| Barium                      | mg/l                    | N/A                                 | N/A                             | 0.067           |                                  |                                  | <0.003       | 0.004      | 0.017      | <0.003         | 0.003                        |
| Calcium                     | mg/l                    | N/A                                 | N/A                             | 87.8            | 86                               | 79.1                             | 85.4         | 92.9       | 92         | 84.5           | 89.1                         |
| Chloride                    | mg/l                    | 250                                 | 75                              | 19.6            | 22.8                             | 25.9                             | 22.2         | 24.3       | 25.4       | 24.6           | 25.9                         |
| Colour                      | N/A                     | N/A                                 | N/A                             | Slightly Cloudy | Orange with some orange sediment | Orange with some orange sediment | Slight brown | clear, red | Clear      | Brown sediment | Clear; Iron flakes (low No.) |
| Conductivity                | mS/cm                   | 2.5                                 | 1                               | 0.55            | 0.53                             | 0.49                             | 0.51         | 0.51       | 0.52       | 0.51           | 0.51                         |
| Cyanide                     | mg/l                    | 0.05                                | N/A                             |                 |                                  | <0.04                            | <0.01        |            |            |                | <0.01                        |
| Dissolved Oxygen            | mg/l                    | N/A                                 | N/A                             | 14%             | 2.31                             | 3.36                             | 2.56         | 6          | 0.51       | 0.52           | 0.43                         |
| Iron                        | mg/l                    | 0.2                                 | N/A                             | 0.01            | <0.020                           | 0.022                            | 0.031        | <0.02      | <0.02      | <0.02          | <0.02                        |
| Level, Water                | mOD Malin               | N/A                                 | N/A                             | 105.76          | 104.59                           | 105.41                           | 107.47       | 105.27     | 104.18     | 104.76         | 106.11                       |
| Manganese                   | mg/l                    | 0.05                                | N/A                             | 0.093           | 0.099                            | 0.086                            | 0.075        | 0.101      | 0.029      | 0.054          | 0.045                        |
| Odour                       | N/A                     | N/A                                 | N/A                             | None            | None                             | None                             | None         | none       | None       | None           | None                         |
| pH                          | pH                      | 6.5<pH<9.5                          | 6<pH<9                          | 7               | 6.9                              | 7.2                              | 6.9          | 6.8        | 6.8        | 6.9            | 6.7                          |
| Phenols, Total              | mg/l                    | N/A                                 | 0.1                             | <0.18           |                                  | <0.15                            | 0.003        | <0.15      | <0.15      | <0.1           | <0.1                         |
| Potassium                   | mg/l                    | N/A                                 | N/A                             | 0.7             | 0.6                              | 0.6                              | 0.5          | 0.6        | 0.7        | 0.7            | 0.5                          |
| Sodium                      | mg/l                    | 200                                 | 80                              | 15.5            | 14.7                             | 12.3                             | 13.7         | 15.5       | 15.3       | 14             | 14.5                         |
| Sulphate                    | mg/l                    | 250                                 | 150                             | 33.96           | 40.28                            | 40.48                            | 34.58        | 40.72      | 40.52      | 32             | 38.68                        |
| Temperature                 | °C                      | N/A                                 | N/A                             | 12.8            | 10.8                             | 9.6                              | 10.1         | 12.4       | 11.6       | 9.7            | 13.9                         |
| Total Organic Carbon        | mg/l                    | N/A                                 | 50                              | <2              | 7                                | 18                               | 7            | 11         | 9          | 5              | 6                            |
| Total Oxidized Nitrogen     | mg/l                    | N/A                                 | N/A                             | 0.51            | 0.08                             | 0.2                              | <0.2         | <0.2       | <0.2       | <0.2           | <0.2                         |
| Boron                       | mg/l                    | N/A                                 | N/A                             |                 |                                  |                                  | 0.038        |            |            |                | <0.012                       |
| Cadmium                     | mg/l                    | 0.005                               | 0.004                           | 0.0001          |                                  |                                  | <0.0005      |            |            |                | <0.0005                      |
| Chromium, Total             | mg/l                    | 0.05                                | N/A                             | 0.0011          |                                  |                                  | <0.0015      |            |            |                | <0.0015                      |
| Coliforms, Faecal           | cfus/100ml              | 0                                   | N/A                             |                 |                                  |                                  | 0            |            |            |                | 0                            |
| Coliforms, Total            | cfus/100ml              | 0                                   | N/A                             |                 |                                  |                                  | 0            |            |            |                | 0                            |
| Copper                      | mg/l                    | 2                                   | 0.5                             | 0.004           |                                  |                                  | <0.007       |            |            |                | <0.007                       |
| Fluoride                    | mg/l                    | 1.5                                 | N/A                             |                 |                                  |                                  | <0.3         |            |            |                | <0.3                         |
| Lead                        | mg/l                    | 0.01                                | N/A                             | 0.003           |                                  |                                  | <0.005       |            |            |                | <0.005                       |
| List I and II Substances    | mg/l                    | N/A                                 | N/A                             |                 |                                  |                                  |              |            |            |                | <0.01                        |
| Magnesium                   | mg/l                    | N/A                                 | N/A                             | 6.6             |                                  |                                  | 4.3          |            |            |                | 4.8                          |
| Mercury                     | mg/l                    | 0.001                               | N/A                             | <0.0005         |                                  |                                  | <0.001       |            |            |                | <0.001                       |
| Orthophosphates             | mg/l                    | N/A                                 | N/A                             |                 |                                  |                                  | <0.06        |            |            |                | <0.03                        |
| PAHs, Total 6/16/17 (Note1) | mg/l                    | 0.0001                              | N/A                             | <0.0001         |                                  |                                  |              | <0.0003    |            |                | <0.0001                      |
| Phosphorus, Total           | mg/l                    | N/A                                 | N/A                             |                 |                                  |                                  | 0.387        |            |            |                | <0.005                       |
| Total Solids                | mg/l                    | N/A                                 | N/A                             |                 |                                  |                                  | 348          |            |            |                | 309                          |
| Zinc                        | mg/l                    | N/A                                 | N/A                             | 0.011           |                                  |                                  | 0.011        |            |            |                | 0.005                        |

## Groundwater Quality

Table 13: Groundwater monitoring results for BH-10A, Quarter 2, 2010 – Quarter 1, 2012

| Parameter                | Units                   | Drinking Water Directive (98/83/EC) | EPA Trigger Levels for W012 9-02 | Q2, 2010   | Q3, 2010 EPA Samples | Q3, 2010 EPA Samples - MEHL Split | Q3, 2010   | Q4, 2010   | Q1, 2011   | Q1, 2011 EPA: MEHL Split | Q1, 2011 EPA | Q2, 2011   | Q3, 2011   | Q4, 2011   | Q1, 2012   |
|--------------------------|-------------------------|-------------------------------------|----------------------------------|------------|----------------------|-----------------------------------|------------|------------|------------|--------------------------|--------------|------------|------------|------------|------------|
| Date of Sampling:        |                         |                                     |                                  | 17/06/2010 | 13/09/2011           | 13/09/2010                        | 27/09/2010 | 14/12/2010 | 22/02/2011 | 28/03/2011               | 28/03/2011   | 27/06/2011 | 14/09/2011 | 01/12/2011 | 23/03/2012 |
| Ammoniacal Nitrogen      | mg/l NH <sub>4</sub> -N | 0.39                                | N/A                              | <0.03      | 0.02                 | <0.03                             | <0.03      | 0.03       | 0.03       | 0.09                     | <0.01        | <0.03      |            | <0.03      | <0.03      |
| Arsenic                  | mg/l                    | 0.01                                | N/A                              | 0.0011     | 0.0023               | <0.0025                           |            |            | <0.0025    | <0.0025                  |              | <0.0025    |            | <0.0025    | <0.0025    |
| Barium                   | mg/l                    | N/A                                 | N/A                              | 0.019      |                      | 0.018                             |            |            | 0.014      | 0.018                    |              | 0.015      |            | 0.012      | 0.013      |
| Calcium                  | mg/l                    | N/A                                 | N/A                              | 159.6      | 188.3                | 160.3                             | 158        | 274.4      | 213.8      | 170.9                    | 189.5        | 164.7      |            | 163.4      | 150.3      |
| Chloride                 | mg/l                    | 250                                 | 75                               | 33.3       | 31.7                 | 31.5                              | 32.5       | 23.6       | 28.9       | 34.5                     | 32.7         | 37.6       |            | 38.8       | 40         |
| Colour                   | N/A                     | N/A                                 | N/A                              | Clear      |                      |                                   | Clear      | Cloudy     | Clear      |                          |              | Cloudy     |            | Clear      | Clear      |
| Conductivity             | mS/cm                   | 2.5                                 | 1                                | 0.94       | 0.83                 | 0.89                              |            | 1.318      | 1.15       |                          | 0.892        | 0.85       |            | 0.91       | 0.83       |
| Dissolved Oxygen         | mg/l                    | N/A                                 | N/A                              |            |                      | 11                                | 6.48       | 3.36       |            |                          |              | 11         |            | 1.74       | 2.22       |
| Iron                     | mg/l                    | 0.2                                 | N/A                              | 0.007      | <0.01                | <0.020                            | <0.02      | <0.020     | <0.02      | <0.02                    |              | <0.02      |            | <0.02      | <0.02      |
| Level, Water             | mOD Malin               | N/A                                 | N/A                              | 99.73      |                      |                                   | 99.59      | 99.89      | 100.54     |                          |              | 100.1      | 99.44      | 99.65      |            |
| Manganese                | mg/l                    | 0.05                                | N/A                              | <0.0015    | 0.024                | <0.002                            | 0.003      | 0.044      | 0.002      | 0.005                    |              | <0.002     |            | <0.002     | <0.002     |
| Odour                    | N/A                     | N/A                                 | N/A                              | None       |                      |                                   | None       | None       | None       |                          |              | None       |            | None       | None       |
| pH                       | pH                      | 6.5<pH<9.5                          | 6<pH<9                           | 7.7        | 7.5                  | 8.05                              | 7.6        | 7.2        | 7          |                          | 7.5          | 7.8        |            | 7.7        | 7.3        |
| Phenols, Total           | mg/l                    | N/A                                 | 0.1                              | <0.18      |                      | <0.18                             | <0.18      | <0.15      | 0.0013     | <0.15                    |              | <0.15      |            | <0.1       | <0.1       |
| Potassium                | mg/l                    | N/A                                 | N/A                              | 2.3        | 2.5                  | 2.5                               | 2.6        | 2.5        | 2.7        | 2.3                      | 2.4          | 2.8        |            | 3.1        | 2.6        |
| Sodium                   | mg/l                    | 200                                 | 80                               | 15.5       | 16                   | 16.3                              | 16.5       | 10.6       | 29.3       | 17.2                     | 16.7         | 18.6       |            | 18.5       | 19.2       |
| Sulphate                 | mg/l                    | 250                                 | 150                              | 292.66     |                      | 330.22                            | 293.11     | 548.19     | 401.65     | 346.71                   | 354.2        | 283.64     |            | 276.45     | 278.19     |
| Temperature              | °C                      | N/A                                 | N/A                              | 11.8       |                      |                                   | 11.8       | 7.4        | 10.6       |                          |              | 13.1       |            | 9          | 10.6       |
| Total Organic Carbon     | mg/l                    | N/A                                 | 50                               | <2         |                      | 10                                | 5          | 18         | 5          | 7                        |              | 10         |            | 6          | 27         |
| Total Oxidized Nitrogen  | mg/l                    | N/A                                 | N/A                              | 2.21       | 0.9                  | 0.7                               | 1.23       | 0.29       | 0.9        | 0.6                      | 0.8          | 0.7        |            | 0.2        | 0.6        |
| Boron                    | mg/l                    | N/A                                 | N/A                              |            | 0.016                | 0.017                             |            |            | 0.054      |                          |              |            |            |            | <0.012     |
| Cadmium                  | mg/l                    | 0.005                               | 0.004                            | 0.0002     | 0.0002               | <0.0005                           |            |            | <0.0005    |                          |              |            |            |            | <0.0005    |
| Chromium, Total          | mg/l                    | 0.05                                | N/A                              | 0.0011     | <0.0005              | <0.0015                           |            |            | <0.0015    |                          |              |            |            |            | <0.0015    |
| Coliforms, Faecal        | cfus/100 ml             | 0                                   | N/A                              |            |                      | 0                                 |            |            | 0          |                          |              |            |            |            | 0          |
| Coliforms, Total         | cfus/100 ml             | 0                                   | N/A                              |            |                      | 28                                |            |            | 0          |                          |              |            |            |            | 0          |
| Copper                   | mg/l                    | 2                                   | 0.5                              | <0.003     | <0.0005              | <0.007                            |            |            | <0.007     |                          |              |            |            |            | <0.007     |
| Cyanide                  | mg/l                    | 0.05                                | N/A                              |            |                      | <0.02                             |            | <0.04      | <0.01      |                          |              |            |            |            | <0.01      |
| Fluoride                 | mg/l                    | 1.5                                 | N/A                              |            | 0.1                  | <0.3                              |            |            | 0.3        |                          | 0.08         |            |            |            | <0.3       |
| Lead                     | mg/l                    | 0.01                                | N/A                              | 0.001      | <0.0005              | <0.005                            |            |            | <0.005     |                          |              |            |            |            | <0.005     |
| List I and II Substances | mg/l                    | N/A                                 | N/A                              |            |                      |                                   |            |            |            |                          |              |            |            |            | <0.01      |
| Magnesium                | mg/l                    | N/A                                 | N/A                              | 9.8        | 11.9                 | 11.4                              |            |            | 15.6       |                          | 13.7         |            |            |            | 10.7       |
| Mercury                  | mg/l                    | 0.001                               | N/A                              | <0.0005    | <0.00005             | <0.001                            |            |            | <0.001     |                          |              |            |            |            | <0.001     |

## Groundwater Quality

| Parameter                   | Units | Drinking Water Directive (98/83/EC) | EPA Trigger Levels for W012 9-02 | Q2, 2010   | Q3, 2010 EPA Samples | Q3, 2010 EPA Samples - MEHL Split | Q3, 2010   | Q4, 2010   | Q1, 2011   | Q1, 2011 EPA: MEHL Split | Q1, 2011 EPA | Q2, 2011   | Q3, 2011   | Q4, 2011   | Q1, 2012   |
|-----------------------------|-------|-------------------------------------|----------------------------------|------------|----------------------|-----------------------------------|------------|------------|------------|--------------------------|--------------|------------|------------|------------|------------|
| Date of Sampling:           |       |                                     |                                  | 17/06/2010 | 13/09/2011           | 13/09/2010                        | 27/09/2010 | 14/12/2010 | 22/02/2011 | 28/03/2011               | 28/03/2011   | 27/06/2011 | 14/09/2011 | 01/12/2011 | 23/03/2012 |
| Orthophosphates             | mg/l  | N/A                                 | N/A                              |            | 0.033                | <0.06                             |            |            | <0.06      |                          | <0.005       |            |            |            | <0.03      |
| PAHs, Total 6/16/17 (Note1) | mg/l  | 0.0001                              | N/A                              | <0.0001    |                      |                                   |            |            |            |                          |              | <0.0003    |            |            | <0.0001    |
| Phosphorus, Total           | mg/l  | N/A                                 | N/A                              |            |                      | 0.332                             |            |            | 0.136      |                          |              |            |            |            | <0.005     |
| Total Solids                | mg/l  | N/A                                 | N/A                              |            |                      | 420                               |            |            | 1024       |                          |              |            |            |            | 642        |
| Zinc                        | mg/l  | N/A                                 | N/A                              | 0.004      | 0.0072               | <0.003                            |            |            | 0.009      |                          |              |            |            |            | 0.004      |

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## Groundwater Quality

Table 14: Groundwater monitoring results for BH-11A, Quarter 2, 2010 – Quarter 1, 2012

| Parameter                | Units                   | Drinking Water Directive (98/83/EC) | EPA Trigger Levels for W012 9-02 | Q2, 2010   | Q3, 2010 EPA Samples | Q3, 2010 EPA Samples - MEHL Split | Q3, 2010        | Q4, 2010         | Q1, 2011   | Q1, 2011 EPA: MEHL Split | Q1, 2011 EPA | Q2, 2011   | Q3, 2011   | Q4, 2011   | Q1, 2012   |
|--------------------------|-------------------------|-------------------------------------|----------------------------------|------------|----------------------|-----------------------------------|-----------------|------------------|------------|--------------------------|--------------|------------|------------|------------|------------|
| Date of Sampling:        |                         |                                     |                                  | 17/06/2010 | 13/09/2011           | 13/09/2010                        | 27/09/2010      | 14/12/2010       | 22/02/2011 | 28/03/2011               | 28/03/2011   | 27/06/2011 | 14/09/2011 | 01/12/2011 | 23/03/2012 |
| Ammoniacal Nitrogen      | mg/l NH <sub>4</sub> -N | 0.39                                | N/A                              | 0.19       | 0.22                 | 0.2                               | 0.21            | 0.23             | 0.24       | 0.23                     | 0.29         | 0.19       | 0.23       | 0.21       | 0.23       |
| Arsenic                  | mg/l                    | 0.01                                | N/A                              | 0.0144     | 0.0579               | 0.0054                            |                 |                  | 0.0267     | 0.0269                   |              | 0.0168     | 0.0077     | 0.0149     | 0.0176     |
| Barium                   | mg/l                    | N/A                                 | N/A                              | 0.025      |                      | 0.033                             |                 |                  | 0.019      | 0.035                    |              | 0.021      | 0.032      | 0.018      | 0.017      |
| Calcium                  | mg/l                    | N/A                                 | N/A                              | 94.9       | 97.5                 | 68.5                              | 91.8            | 86.8             | 92.4       | 93.7                     | 101.5        | 70.8       | 90.5       | 93         | 93.9       |
| Chloride                 | mg/l                    | 250                                 | 75                               | 23.4       | 22.2                 | 22.6                              | 22.1            | 25               | 21.7       | 23.4                     | 22.1         | 23.9       | 25         | 24         | 22.8       |
| Colour                   | N/A                     | N/A                                 | N/A                              | Clear      |                      |                                   | Slightly Cloudy | Very light brown | Clear      |                          |              | Cloudy     | Clear      | Clear      | Clear      |
| Conductivity             | mS/cm                   | 2.5                                 | 1                                | 0.63       | 0.532                | 0.542                             | 0.62            | 0.593            | 0.62       |                          | 0.053        | 0.54       | 0.6        | 0.6        | 0.58       |
| Dissolved Oxygen         | mg/l                    | N/A                                 | N/A                              |            |                      | 11                                | 2.62            | 3.16             | 0.97       |                          |              | 4          | 1.69       | 0.95       | 1.51       |
| Iron                     | mg/l                    | 0.2                                 | N/A                              | 0.008      | 1.36                 | <0.020                            | 0.3             | <0.020           | <0.02      | <0.02                    |              | <0.02      | <0.02      | <0.02      | <0.02      |
| Level, Water             | mOD Malin               | N/A                                 | N/A                              | 98.49      |                      |                                   | 98.48           | 98.49            | 98.47      |                          |              | 98.41      | 98.37      | 98.4       | 98.4       |
| Manganese                | mg/l                    | 0.05                                | N/A                              | 0.352      | 0.354                | 0.161                             | 0.358           | 0.376            | 0.372      | 0.314                    |              | 0.371      | 0.363      | 0.358      | 0.357      |
| Odour                    | N/A                     | N/A                                 | N/A                              | None       |                      |                                   | None            | None             | None       |                          |              | None       | None       | None       | None       |
| pH                       | pH                      | 6.5<pH<9.5                          | 6<pH<9                           | 7.1        | 7.2                  | 7.77                              | 7.2             | 7.4              | 7          |                          | 7.2          | 7.6        | 6.7        | 7.9        | 7          |
| Phenols, Total           | mg/l                    | N/A                                 | 0.1                              | <0.18      |                      | <0.18                             | <0.18           | <0.15            | 0.0007     | <0.15                    |              | <0.15      | <0.15      | <0.1       | <0.1       |
| Potassium                | mg/l                    | N/A                                 | N/A                              | 1.9        | 2                    | 2                                 | 1.9             | 1.8              | 1.9        | 1.9                      | 2            | 2          | 2          | 2.4        | 2.2        |
| Sodium                   | mg/l                    | 200                                 | 80                               | 16.3       | 16.4                 | 15.7                              | 16.2            | 13.9             | 15.6       | 16.4                     | 16.1         | 16.5       | 16.5       | 16.5       | 16.6       |
| Sulphate                 | mg/l                    | 250                                 | 150                              | 10.35      | 10                   | 11.52                             | 11.18           | 15.26            | 11.67      | 9.05                     | 10.3         | 9.28       | 9.74       | 7.06       | 31.3       |
| Temperature              | °C                      | N/A                                 | N/A                              | 11.2       |                      |                                   | 10.3            | 8.4              | 9.7        |                          |              | 13.6       | 11.7       | 9.4        | 12.8       |
| Total Organic Carbon     | mg/l                    | N/A                                 | 50                               | <2         |                      | 9                                 | 8               | 17               | 5          | <2                       |              | 9          | 3          | 3          | 4          |
| Total Oxidized Nitrogen  | mg/l                    | N/A                                 | N/A                              | 0.43       | <0.1                 | 0.2                               | 0.08            | 0.2              | <0.2       | <0.2                     | 0.1          | <0.2       | <0.2       | <0.2       | <0.2       |
| Boron                    | mg/l                    | N/A                                 | N/A                              |            | 0.022                | 0.021                             |                 |                  | 0.053      |                          |              |            |            |            | 0.019      |
| Cadmium                  | mg/l                    | 0.005                               | 0.004                            | 0.001      | 0.0002               | <0.0005                           |                 |                  | <0.005     |                          |              |            |            |            | <0.0005    |
| Chromium, Total          | mg/l                    | 0.05                                | N/A                              | 0.001      | <0.0005              | <0.0015                           |                 |                  | <0.0015    |                          |              |            |            |            | <0.0015    |
| Coliforms, Faecal        | cfus/100 ml             | 0                                   | N/A                              |            |                      | 0                                 |                 |                  | 0          |                          |              |            |            |            | 0          |
| Coliforms, Total         | cfus/100 ml             | 0                                   | N/A                              |            |                      | 0                                 |                 |                  | 0          |                          |              |            |            |            | 0          |
| Copper                   | mg/l                    | 2                                   | 0.5                              | <0.003     | <0.0005              | <0.007                            |                 |                  | <0.007     |                          |              |            |            |            | <0.007     |
| Cyanide                  | mg/l                    | 0.05                                | N/A                              |            |                      | <0.02                             |                 | <0.04            | <0.01      |                          |              |            |            |            | <0.01      |
| Fluoride                 | mg/l                    | 1.5                                 | N/A                              |            | 0.33                 | 0.5                               |                 |                  | 0.6        |                          | 0.36         |            |            |            | 0.5        |
| Lead                     | mg/l                    | 0.01                                | N/A                              | 0.0001     | <0.0005              | <0.005                            |                 |                  | <0.005     |                          |              |            |            |            | <0.005     |
| List I and II Substances | mg/l                    | N/A                                 | N/A                              |            |                      |                                   |                 |                  | <0.01      |                          |              |            |            |            | <0.01      |
| Magnesium                | mg/l                    | N/A                                 | N/A                              | 12.1       | 12.4                 | 11                                |                 |                  | 11.9       |                          | 12.2         |            |            |            | 12.6       |
| Mercury                  | mg/l                    | 0.001                               | N/A                              | <0.0005    | <0.00005             | <0.001                            |                 |                  | <0.001     |                          |              |            |            |            | <0.001     |

## Groundwater Quality

| Parameter                   | Units | Drinking Water Directive (98/83/EC) | EPA Trigger Levels for W012 9-02 | Q2, 2010   | Q3, 2010 EPA Samples | Q3, 2010 EPA Samples - MEHL Split | Q3, 2010   | Q4, 2010   | Q1, 2011   | Q1, 2011 EPA: MEHL Split | Q1, 2011 EPA | Q2, 2011   | Q3, 2011   | Q4, 2011   | Q1, 2012   |
|-----------------------------|-------|-------------------------------------|----------------------------------|------------|----------------------|-----------------------------------|------------|------------|------------|--------------------------|--------------|------------|------------|------------|------------|
| Date of Sampling:           |       |                                     |                                  | 17/06/2010 | 13/09/2011           | 13/09/2010                        | 27/09/2010 | 14/12/2010 | 22/02/2011 | 28/03/2011               | 28/03/2011   | 27/06/2011 | 14/09/2011 | 01/12/2011 | 23/03/2012 |
| Orthophosphates             | mg/l  | N/A                                 | N/A                              |            | 0.022                | <0.06                             |            |            | <0.06      |                          | <0.05        |            |            |            | <0.03      |
| PAHs, Total 6/16/17 (Note1) | mg/l  | 0.0001                              | N/A                              | <0.0001    |                      |                                   |            |            |            |                          |              | <0.0003    |            |            | <0.0001    |
| Phosphorus, Total           | mg/l  | N/A                                 | N/A                              |            |                      | 0.463                             |            |            | 0.02       |                          |              |            |            |            | <0.005     |
| Total Solids                | mg/l  | N/A                                 | N/A                              |            |                      | 1257                              |            |            | 348        |                          |              |            |            |            | 233        |
| Zinc                        | mg/l  | N/A                                 | N/A                              | 0.016      | 0.0145               | <0.003                            |            |            | 0.018      |                          |              |            |            |            | 0.017      |

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## Groundwater Quality

Table 15: Groundwater monitoring results for BH-12, Quarter 2, 2010 – Quarter 1, 2012

| Parameter                   | Units                   | Drinking Water Directive (98/83/EC) | EPA Trigger Levels for W0129-02 | Q2, 2010          | Q3, 2010     | Q4, 2010    | Q1, 2011    | Q2, 2011       | Q3, 2011    | Q4, 2011   | Q1, 2012       |
|-----------------------------|-------------------------|-------------------------------------|---------------------------------|-------------------|--------------|-------------|-------------|----------------|-------------|------------|----------------|
| Date of Sampling:           |                         |                                     |                                 | 17/06/2010        | 27/09/2010   | 14/12/2010  | 22/02/2011  | 27/06/2011     | 14/09/2011  | 01/12/2011 | 23/03/2012     |
| Ammoniacal Nitrogen         | mg/l NH <sub>4</sub> -N | 0.39                                | N/A                             | <0.03             | 0.03         | 0.02        | 0.03        | 0.05           | 0.14        | 0.9        | <0.03          |
| Arsenic                     | mg/l                    | 0.01                                | N/A                             | 0.0102            |              |             | <0.0025     | <0.0025        | 0.0055      | <0.0025    | <0.0025        |
| Barium                      | mg/l                    | N/A                                 | N/A                             | 0.004             |              |             | 0.02        | 0.028          | 0.036       | 0.016      | 0.013          |
| Calcium                     | mg/l                    | N/A                                 | N/A                             | 84.7              | 23.9         | 14.5        | 16.7        | 40.3           | 16.6        | 18.1       | 14.1           |
| Chloride                    | mg/l                    | 250                                 | 75                              | 30.9              | 2.2          | 21.8        | 9.6         | 7.4            | 2.5         | 5.6        | 3              |
| Colour                      | N/A                     | N/A                                 | N/A                             | Dark colour/muddy | Slight Brown | Light brown | Light brown | V slight brown | Light brown | Clear      | Light sediment |
| Conductivity                | mS/cm                   | 2.5                                 | 1                               | 0.54              | 0.16         | 0.179       | 0.14        | 0.11           | 0.11        | 0.2        | 0.09           |
| Dissolved Oxygen            | mg/l                    | N/A                                 | N/A                             |                   | 8.01         | 7.72        | 1.47        | 8              | 2.72        | 1.95       | 2.29           |
| Iron                        | mg/l                    | 0.2                                 | N/A                             | 0.007             | <0.02        | <0.02       | <0.02       | <0.02          | <0.02       | <0.02      | <0.02          |
| Level, Water                | mOD Malin               | N/A                                 | N/A                             | 100.64            | 100.35       | 100.72      | 101.53      | 100.82         | 100.2       | 100.36     | 100.83         |
| Manganese                   | mg/l                    | 0.05                                | N/A                             | <0.0015           | <0.002       | <0.002      | <0.002      | <0.002         | <0.002      | <0.002     | <0.002         |
| Odour                       | N/A                     | N/A                                 | N/A                             | None              | None         | None        | None        | None           | None        | None       | None           |
| pH                          | pH                      | 6.5<pH<9.5                          | 6<pH<9                          | 7.8               | 7.3          | 7.8         | 7.8         | 8.1            | 7.9         | 7.3        | 7.6            |
| Phenols, Total              | mg/l                    | N/A                                 | 0.1                             | <0.18             |              | <0.15       | 0.0017      | <0.15          | <0.15       | <0.1       | <0.1           |
| Potassium                   | mg/l                    | N/A                                 | N/A                             | 1.9               | 3.7          | 2.8         | 2           | 2.9            | 4.1         | 2.8        | 3.6            |
| Sodium                      | mg/l                    | 200                                 | 80                              | 15.1              | 4.6          | 11.4        | 11.9        | 7              | 4.7         | 4.5        | 4              |
| Sulphate                    | mg/l                    | 250                                 | 150                             | 25.6              | 3.92         | 4.86        | 2.65        | 9.81           | 2.95        | 1.29       | 7.28           |
| Temperature                 | °C                      | N/A                                 | N/A                             | 13.3              | 10.8         | 6.1         | 10          | 12             | 11.1        | 9.5        | 10.3           |
| Total Organic Carbon        | mg/l                    | N/A                                 | 50                              | <2                | 4            | 10          | 5           | 12             | 9           | 8          | 5              |
| Total Oxidized Nitrogen     | mg/l                    | N/A                                 | N/A                             | 8.46              | 0.77         | 0.41        | 0.4         | 0.5            | 0.4         | 0.5        | 0.3            |
| Boron                       | mg/l                    | N/A                                 | N/A                             |                   |              |             | 0.056       |                |             |            | <0.012         |
| Cadmium                     | mg/l                    | 0.005                               | 0.004                           | <0.00003          |              |             | <0.0005     |                |             |            | <0.0005        |
| Chromium, Total             | mg/l                    | 0.05                                | N/A                             | 0.0018            |              |             | <0.0015     |                |             |            | <0.0015        |
| Coliforms, Faecal           | cfus/100ml              | 0                                   | N/A                             |                   |              |             | 0           |                |             |            | 0              |
| Coliforms, Total            | cfus/100ml              | 0                                   | N/A                             |                   |              |             | 0           |                |             |            | 0              |
| Copper                      | mg/l                    | 2                                   | 0.5                             | <0.003            |              |             | <0.007      |                |             |            | <0.007         |
| Cyanide                     | mg/l                    | 0.05                                | N/A                             |                   |              | <0.04       | <0.01       |                |             |            | <0.01          |
| Fluoride                    | mg/l                    | 1.5                                 | N/A                             |                   |              |             | <0.3        |                |             |            | <0.3           |
| Lead                        | mg/l                    | 0.01                                | N/A                             | 0.001             |              |             | <0.005      |                |             |            | <0.005         |
| List I and II Substances    | mg/l                    | N/A                                 | N/A                             |                   |              |             | <0.01       |                |             |            | <0.01          |
| Magnesium                   | mg/l                    | N/A                                 | N/A                             | 4.1               |              |             | 0.7         |                |             |            | 0.7            |
| Mercury                     | mg/l                    | 0.001                               | N/A                             | <0.0005           |              |             | <0.001      |                |             |            | <0.001         |
| Orthophosphates             | mg/l                    | N/A                                 | N/A                             |                   |              |             | <0.06       |                |             |            | <0.03          |
| PAHs, Total 6/16/17 (Note1) | mg/l                    | 0.0001                              | N/A                             | <0.001            |              |             |             | <0.0003        |             |            | <0.0001        |
| Phosphorus, Total           | mg/l                    | N/A                                 | N/A                             |                   |              |             | 0.511       |                |             |            | <0.005         |
| Total Solids                | mg/l                    | N/A                                 | N/A                             |                   |              |             | 358         |                |             |            | 64             |
| Zinc                        | mg/l                    | N/A                                 | N/A                             | 0.003             |              |             | 0.006       |                |             |            | 0.005          |

## Groundwater Quality

Table 16: Groundwater monitoring results for BH-13, Quarter 2, 2010 – Quarter 1, 2012

| Parameter                   | Units                   | Drinking Water Directive (98/83/EC) | EPA Trigger Levels for W0129-02 | Q2, 2010          | Q3, 2010       | Q4, 2010   | Q1, 2011   | Q2, 2011   | Q3, 2011                   | Q4, 2011   | Q1, 2012       |
|-----------------------------|-------------------------|-------------------------------------|---------------------------------|-------------------|----------------|------------|------------|------------|----------------------------|------------|----------------|
| Date of Sampling:           |                         |                                     |                                 | 17/06/2010        | 27/09/2010     | 14/12/2010 | 22/02/2011 | 27/06/2011 | 14/09/2011                 | 01/12/2011 | 23/03/2012     |
| Ammoniacal Nitrogen         | mg/l NH <sub>4</sub> -N | 0.39                                | N/A                             | 0.05              | 0.04           | 0.03       | 0.04       | 0.03       | 0.05                       | 0.05       | 0.04           |
| Arsenic                     | mg/l                    | 0.01                                | N/A                             | 0.0025            |                |            | 0.0025     | <0.0025    | 0.008                      | <0.0025    | <0.0025        |
| Barium                      | mg/l                    | N/A                                 | N/A                             | 0.008             |                |            | 0.008      | 0.009      | 0.016                      | 0.005      | 0.008          |
| Calcium                     | mg/l                    | N/A                                 | N/A                             | 59.6              | 51.7           | 49         | 54.8       | 60.8       | 44.9                       | 43.5       | 42.8           |
| Chloride                    | mg/l                    | 250                                 | 75                              | 37.4              | 35.3           | 40.1       | 35.3       | 39.8       | 35.7                       | 34.5       | 32.9           |
| Colour                      | N/A                     | N/A                                 | N/A                             | Dark colour/muddy | Brown Sediment | Dark brown | Very brown | Brown      | Dark brown - high sediment | sediment   | Brown sediment |
| Conductivity                | mS/cm                   | 2.5                                 | 1                               | 0.42              | 0.39           | 0.44       | 0.44       | 0.41       | 0.35                       | 0.34       | 0.3            |
| Dissolved Oxygen            | mg/l                    | N/A                                 | N/A                             |                   |                | 10.44      | 1.35       | 11         | 3.19                       | 3.07       | 2.38           |
| Iron                        | mg/l                    | 0.2                                 | N/A                             | 0.024             | <0.02          | <0.02      | <0.02      | <0.02      | <0.02                      | <0.02      | <0.02          |
| Level, Water                | mOD Malin               | N/A                                 | N/A                             | 108.38            | 108.78         | 111.39     | 112.86     | 111.7      | 111.61                     | 112.67     | 113.51         |
| Manganese                   | mg/l                    | 0.05                                | N/A                             | <0.0015           | 0.005          | <0.002     | <0.002     | <0.002     | <0.002                     | <0.002     | <0.002         |
| Odour                       | N/A                     | N/A                                 | N/A                             | None              | None           | None       | None       | None       | None                       | None       | None           |
| pH                          | pH                      | 6.5<pH<9.5                          | 6<pH<9                          | 7.1               | 7.2            | 7.5        | 7.3        | 7.5        | 8                          | 7.4        | 7.7            |
| Phenols, Total              | mg/l                    | N/A                                 | 0.1                             | <0.18             | <0.18          | <0.15      | 0.0028     | <0.15      | <0.15                      | <0.1       | <0.1           |
| Potassium                   | mg/l                    | N/A                                 | N/A                             | 2                 | 2.1            | 2          | 2.1        | 2.1        | 1.6                        | 1.7        | 1.6            |
| Sodium                      | mg/l                    | 200                                 | 80                              | 17.1              | 16.5           | 14.7       | 17.7       | 18.5       | 16.6                       | 16.8       | 16.2           |
| Sulphate                    | mg/l                    | 250                                 | 150                             | 10.3              | 12.2           | 12.8       | 9.65       | 10.37      | 17.44                      | 9.75       | 15.53          |
| Temperature                 | °C                      | N/A                                 | N/A                             | 12.6              | 12.5           | 7.2        | 10.1       | 11.4       | 11.3                       | 9.2        | 10.2           |
| Total Organic Carbon        | mg/l                    | N/A                                 | 50                              | <2                | 4              | 10         | 3          | 10         | 6                          | 6          | 9              |
| Total Oxidized Nitrogen     | mg/l                    | N/A                                 | N/A                             | 11.48             | 9.81           | 11.75      | 10.3       | 10.8       | 7.9                        | 7.8        | 8.9            |
| Boron                       | mg/l                    | N/A                                 | N/A                             |                   |                |            | <0.012     |            |                            |            | <0.0012        |
| Cadmium                     | mg/l                    | 0.005                               | 0.004                           | 0.0001            |                |            | <0.0005    |            |                            |            | <0.0005        |
| Chromium, Total             | mg/l                    | 0.05                                | N/A                             | 0.0017            |                |            | <0.0015    |            |                            |            | <0.0015        |
| Coliforms, Faecal           | cfus/100ml              | 0                                   | N/A                             |                   |                |            | 0          |            |                            |            | 0              |
| Coliforms, Total            | cfus/100ml              | 0                                   | N/A                             |                   |                |            | 0          |            |                            |            | 0              |
| Copper                      | mg/l                    | 2                                   | 0.5                             | <0.003            |                |            | <0.007     |            |                            |            | <0.007         |
| Cyanide                     | mg/l                    | 0.05                                | N/A                             |                   |                |            | <0.01      |            |                            |            | <0.01          |
| Fluoride                    | mg/l                    | 1.5                                 | N/A                             |                   |                |            | <0.3       |            |                            |            | <0.3           |
| Lead                        | mg/l                    | 0.01                                | N/A                             | 0.002             |                |            | <0.005     |            |                            |            | <0.005         |
| List I and II Substances    | mg/l                    | N/A                                 | N/A                             |                   |                |            | <0.01      |            |                            |            | <0.01          |
| Magnesium                   | mg/l                    | N/A                                 | N/A                             | 4                 |                |            | 3.9        |            |                            |            | 4.1            |
| Mercury                     | mg/l                    | 0.001                               | N/A                             | <0.0005           |                |            | <0.001     |            |                            |            | <0.001         |
| Orthophosphates             | mg/l                    | N/A                                 | N/A                             |                   |                |            | 0.81       |            |                            |            | 0.13           |
| PAHs, Total 6/16/17 (Note1) | mg/l                    | 0.0001                              | N/A                             | <0.0001           |                |            |            | <0.0003    |                            |            | <0.0001        |
| Phosphorus, Total           | mg/l                    | N/A                                 | N/A                             |                   |                |            | 6.415      |            |                            |            | 0.194          |
| Total Solids                | mg/l                    | N/A                                 | N/A                             |                   |                |            | 4669       |            |                            |            | 187            |
| Zinc                        | mg/l                    | N/A                                 | N/A                             | 0.003             |                |            | <0.003     |            |                            |            | 0.005          |



## Groundwater Quality

Table 17: Groundwater monitoring results for BH-14, Quarter 2, 2010 – Quarter 1, 2012

| Parameter                   | Units                   | Drinking Water Directive (98/83/EC) | EPA Trigger Levels for W0129-02 | Q2, 2010   | Q3, 2010   | Q4, 2010   | Q1, 2011    | Q2, 2011   | Q3, 2011   | Q4, 2011   | Q1, 2012   |
|-----------------------------|-------------------------|-------------------------------------|---------------------------------|------------|------------|------------|-------------|------------|------------|------------|------------|
| Date of Sampling:           |                         |                                     |                                 | 17/06/2010 | 27/09/2010 | 14/12/2010 | 22/02/2011  | 27/06/2011 | 14/09/2011 | 01/12/2011 | 23/03/2012 |
| Ammoniacal Nitrogen         | mg/l NH <sub>4</sub> -N | 0.39                                | N/A                             | 0.03       | <0.03      | 0.03       | 0.03        | <0.03      | 0.04       | 0.07       | <0.03      |
| Arsenic                     | mg/l                    | 0.01                                | N/A                             | <0.0009    |            |            | <0.0025     | <0.0025    | 0.0026     | <0.0025    | <0.0025    |
| Barium                      | mg/l                    | N/A                                 | N/A                             | 0.011      |            |            | 0.033       | 0.022      | 0.018      | 0.018      | 0.027      |
| Calcium                     | mg/l                    | N/A                                 | N/A                             | 41.1       | 35.5       | 18.5       | 20          | 32.2       | 29         | 24.8       | 24.7       |
| Chloride                    | mg/l                    | 250                                 | 75                              | 25.5       | 18.8       | 12.9       | 11.4        | 22         | 30.5       | 21.8       | 21.8       |
| Colour                      | N/A                     | N/A                                 | N/A                             | Clear      |            |            | Light brown | Clear      | Clear      | clear      | Clear      |
| Conductivity                | mS/cm                   | 2.5                                 | 1                               | 0.35       | 0.31       | 0.18       | 0.18        | 0.27       | 0.28       | 0.22       | 0.22       |
| Dissolved Oxygen            | mg/l                    | N/A                                 | N/A                             |            | 6.51       | 8.56       | 1.38        | 8          | 1.79       | 3          | 2.55       |
| Iron                        | mg/l                    | 0.2                                 | N/A                             | 0.008      | <0.020     | <0.020     | <0.02       | <0.02      | <0.02      | <0.02      | <0.02      |
| Level, Water                | mOD Malin               | N/A                                 | N/A                             | 98.81      | 98.73      | 98.09      | 99.65       | 99.03      | 98.5       | 98.83      | 99.1       |
| Manganese                   | mg/l                    | 0.05                                | N/A                             | 0.012      | 0.01       | 0.017      | 0.02        | 0.01       | 0.007      | 0.007      | 0.007      |
| Odour                       | N/A                     | N/A                                 | N/A                             | None       |            |            | None        | None       | None       | None       | None       |
| pH                          | pH                      | 6.5<pH<9.5                          | 6<pH<9                          | 6.1        | 6.6        | 7.5        | 6.3         | 7.8        | 6.3        | 7.7        | 6.8        |
| Phenols, Total              | mg/l                    | N/A                                 | 0.1                             | <0.18      | <0.18      | 0.15       | 0.0025      | <0.15      | <0.15      | <0.1       | <0.1       |
| Potassium                   | mg/l                    | N/A                                 | N/A                             | 2.2        | 2.7        | 3.8        | 3.2         | 2.3        | 1.8        | 2.9        | 3.2        |
| Sodium                      | mg/l                    | 200                                 | 80                              | 12.7       | 11.5       | 6          | 6.1         | 11.3       | 13.9       | 10.7       | 10.5       |
| Sulphate                    | mg/l                    | 250                                 | 150                             | 59.98      | 51.99      | 34         | 26.44       | 39.04      | 23.68      | 25.62      | 29.9       |
| Temperature                 | °C                      | N/A                                 | N/A                             | 12.6       | 11.4       | 8.5        | 10.1        | 12.6       | 10.9       | 9.1        | 12.2       |
| Total Organic Carbon        | mg/l                    | N/A                                 | 50                              | <2         | 3          | 11         | 7           | 9          | 7          | 11         | 9          |
| Total Oxidized Nitrogen     | mg/l                    | N/A                                 | N/A                             | 7.31       | 5.55       | 3.91       | 3.2         | 6.7        | 9.8        | 6.3        | 7.5        |
| Boron                       | mg/l                    | N/A                                 | N/A                             |            |            |            | 0.069       |            |            |            | 0.028      |
| Cadmium                     | mg/l                    | 0.005                               | 0.004                           | 0.004      |            |            | 0.0006      |            |            |            | 0.0015     |
| Chromium, Total             | mg/l                    | 0.05                                | N/A                             | 0.0009     |            |            | 0.0018      |            |            |            | <0.0015    |
| Coliforms, Faecal           | cfus/100ml              | 0                                   | N/A                             |            |            |            | 1           |            |            |            | 0          |
| Coliforms, Total            | cfus/100ml              | 0                                   | N/A                             |            |            |            | 24          |            |            |            | 0          |
| Copper                      | mg/l                    | 2                                   | 0.5                             | 0.007      |            |            | 0.011       |            |            |            | 0.012      |
| Cyanide                     | mg/l                    | 0.05                                | N/A                             |            |            |            | <0.01       |            |            |            | <0.01      |
| Fluoride                    | mg/l                    | 1.5                                 | N/A                             |            |            |            | <0.3        |            |            |            | <0.3       |
| Lead                        | mg/l                    | 0.01                                | N/A                             | 0.002      |            |            | <0.005      |            |            |            | <0.005     |
| List I and II Substances    | mg/l                    | N/A                                 | N/A                             |            |            |            | <0.01       |            |            |            | <0.01      |
| Magnesium                   | mg/l                    | N/A                                 | N/A                             | 4.8        |            |            | 1.8         |            |            |            | 3          |
| Mercury                     | mg/l                    | 0.001                               | N/A                             | <0.0005    |            |            | <0.001      |            |            |            | <0.001     |
| Orthophosphates             | mg/l                    | N/A                                 | N/A                             |            |            |            | 0.37        |            |            |            | 0.1        |
| PAHs, Total 6/16/17 (Note1) | mg/l                    | 0.0001                              | N/A                             | <0.0001    |            |            |             | <0.0003    |            |            | <0.0001    |
| Phosphorus, Total           | mg/l                    | N/A                                 | N/A                             |            |            |            | 0.124       |            |            |            | 0.073      |
| Total Solids                | mg/l                    | N/A                                 | N/A                             |            |            |            | 315         |            |            |            | 187        |
| Zinc                        | mg/l                    | N/A                                 | N/A                             | 0.025      |            |            | 0.027       |            |            |            | 0.026      |