

| BOREHOLE<br>CONSTRUCTION                                                         | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY                                                      | BOREHOLE NUMBER: <b>MSMW51</b> |    | PAGE 3 of 3                              |  |
|----------------------------------------------------------------------------------|--------|------|----------------------|-------------|-----------|--------------------------------------------------------------|--------------------------------|----|------------------------------------------|--|
|                                                                                  | NUMBER | TYPE |                      |             |           |                                                              | START DATE: 17/06/98           |    | DRILLING METHOD: Cable Percussion/Rotary |  |
|                                                                                  |        |      |                      |             |           |                                                              | FINISH DATE: 17/06/98          |    | BOREHOLE DIAMETER: 200/165/115mm         |  |
|                                                                                  |        |      |                      |             |           |                                                              | DRILLER: CP1/R3                |    | SCREEN TYPE & DIAMETER: UPVC 50mm        |  |
|                                                                                  |        |      |                      |             |           |                                                              | LOGGED BY: SG    APPD BY:      |    | SCREEN SLOT SIZE: 0.5mm                  |  |
|                                                                                  |        |      |                      |             |           | DESCRIPTION                                                  | COMMENTS                       |    |                                          |  |
|  |        |      |                      |             |           | 20 Hard blue-grey fine to medium grained SANDSTONE (BEDROCK) |                                | 20 |                                          |  |
|                                                                                  |        |      |                      |             |           | 21                                                           |                                | 21 |                                          |  |
|                                                                                  |        |      |                      |             |           | 22 Borehole terminated at 22.0 mbgl                          |                                | 22 |                                          |  |
|                                                                                  |        |      |                      |             |           | 23                                                           |                                | 23 |                                          |  |
|                                                                                  |        |      |                      |             |           | 24                                                           |                                | 24 |                                          |  |
|                                                                                  |        |      |                      |             |           | 25                                                           |                                | 25 |                                          |  |
|                                                                                  |        |      |                      |             |           | 26                                                           |                                | 26 |                                          |  |
|                                                                                  |        |      |                      |             |           | 27                                                           |                                | 27 |                                          |  |
|                                                                                  |        |      |                      |             |           | 28                                                           |                                | 28 |                                          |  |
|                                                                                  |        |      |                      |             |           | 29                                                           |                                | 29 |                                          |  |
|                                                                                  |        |      |                      |             |           | 30                                                           |                                | 30 |                                          |  |

|                                                                                                                                                                                                                             |  |                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                                                                                                                                                                                                                                      |  |                                                                                                                         |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------|--|
| <b>LOCATION / NOTES:</b><br><br>1. All measurements in m below ground level (mbgl)<br><br>2. Cable percussion to 7.1mbgl , Rotary to 22 mbgl with odex to 14 mbgl<br><br>3. Borehole backfilled with bentonite to 18.0 mbgl |  | <b>LEGEND</b><br><br><input checked="" type="checkbox"/> Disturbed Sample<br><input type="checkbox"/> Undisturbed Sample<br>* Headspace Analysis<br>† Down Borehole Analysis<br> Groundwater Table<br> Perched Water Table |  | <b>BOREHOLE LOG</b><br>Job Title <b>SOIL &amp; GROUNDWATER INVESTIGATION</b><br>Location <b>LLANDARCY REFINERY</b><br>Client <b>BP LLANDARCY</b><br>Appd <b>DRAFT</b><br>Ref. <b>MC/CR/BRS</b><br>Date <b>JUL 98</b><br>Job No. <b>39991-001-401</b> |  |  <b>DAMES &amp; MOORE</b><br>GROUP |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------|--|

| BOREHOLE<br>CONSTRUCTION | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY                                                    | BOREHOLE NUMBER: <b>MSMW50s</b> |                                                  | PAGE 1 of 1                       |                         |  |
|--------------------------|--------|------|----------------------|-------------|-----------|------------------------------------------------------------|---------------------------------|--------------------------------------------------|-----------------------------------|-------------------------|--|
|                          | NUMBER | TYPE |                      |             |           |                                                            | START DATE: 16/06/98            |                                                  | DRILLING METHOD: Cable Percussion |                         |  |
|                          |        |      |                      |             |           |                                                            | FINISH DATE: 16/06/98           |                                                  | BOREHOLE DIAMETER: 200mm          |                         |  |
|                          |        |      |                      |             |           |                                                            | DRILLER: CP1                    |                                                  | SCREEN TYPE & DIAMETER: UPVC 50mm |                         |  |
|                          |        |      |                      |             |           | LOGGED BY: ED                                              |                                 | APPRD BY:                                        |                                   | SCREEN SLOT SIZE: 0.5mm |  |
|                          |        |      |                      |             |           | DESCRIPTION                                                |                                 | COMMENTS                                         |                                   |                         |  |
|                          |        |      |                      |             |           | Loose SILT with clay and rootlets (MADE GROUND)            |                                 | Some black staining and slight hydrocarbon odour |                                   | 0                       |  |
|                          |        |      |                      |             |           | Loose CLAY, with silt, ash and rubble (MADE GROUND)        |                                 | Slight hydrocarbon odour                         |                                   | 1.0                     |  |
|                          |        |      |                      |             |           | Orange-brown CLAY with rubble (MADE GROUND)                |                                 | Slight hydrocarbon odour                         |                                   | 2.0                     |  |
|                          |        |      |                      |             |           | Brown CLAY with sandstone gravel and cobbles (MADE GROUND) |                                 | Dry                                              |                                   | 3.0                     |  |
|                          |        |      |                      |             |           | Borehole terminated at 2.5 mbgl on refusal                 |                                 |                                                  |                                   | 4.0                     |  |
|                          |        |      |                      |             |           |                                                            |                                 |                                                  |                                   | 5.0                     |  |
|                          |        |      |                      |             |           |                                                            |                                 |                                                  |                                   | 6.0                     |  |
|                          |        |      |                      |             |           |                                                            |                                 |                                                  |                                   | 7.0                     |  |
|                          |        |      |                      |             |           |                                                            |                                 |                                                  |                                   | 8.0                     |  |
|                          |        |      |                      |             |           |                                                            |                                 |                                                  |                                   | 9.0                     |  |
|                          |        |      |                      |             |           |                                                            |                                 |                                                  |                                   | 10                      |  |

**LOCATION / NOTES:**

1. All measurements in m below ground level (mbgl)

**LEGEND**

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

**BOREHOLE LOG**

Job Title **SOIL & GROUNDWATER INVESTIGATION**

Location **LLANDARCY REFINERY**

Client **BP LLANDARCY**

Appd **DRAFT**

Ref. **MC/CR/BRS**

Date **JUL 98**

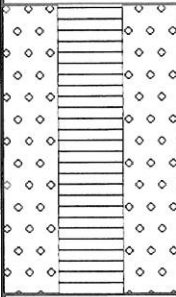
Job No. **39991-001-401**

**DAMES & MOORE**

| BOREHOLE<br>CONSTRUCTION | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH<br>(m) | GEOLOGY       | BOREHOLE NUMBER: <b>MSMW50d</b> |                                                                                       | PAGE 1 of 2                                      |                         |  |  |
|--------------------------|--------|------|----------------------|-------------|--------------|---------------|---------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------|-------------------------|--|--|
|                          | NUMBER | TYPE |                      |             |              |               | START DATE: 17/06/98            |                                                                                       | DRILLING METHOD: Rotary/Odex                     |                         |  |  |
|                          |        |      |                      |             |              |               | FINISH DATE: 17/06/98           |                                                                                       | BOREHOLE DIAMETER: 150mm                         |                         |  |  |
|                          |        |      |                      |             |              |               | DRILLER: R3                     |                                                                                       | SCREEN TYPE & DIAMETER: UPVC 50mm                |                         |  |  |
|                          |        |      |                      |             |              | LOGGED BY: SG |                                 | APPRD BY:                                                                             |                                                  | SCREEN SLOT SIZE: 0.5mm |  |  |
|                          |        |      |                      |             |              |               | DESCRIPTION                     | COMMENTS                                                                              |                                                  |                         |  |  |
|                          |        |      |                      |             |              |               | 0                               | Loose SILT with clay and rootlets (MADE GROUND)                                       | Some black staining and slight hydrocarbon odour |                         |  |  |
|                          |        |      |                      |             |              |               | 1.0                             | Loose CLAY, with silt, ash and rubble (MADE GROUND)                                   |                                                  |                         |  |  |
|                          |        |      |                      |             |              |               | 2.0                             | Orange-brown CLAY with rubble (MADE GROUND)                                           | Moderate hydrocarbon odour                       |                         |  |  |
|                          |        |      |                      |             |              |               | 3.0                             | Brown CLAY with sandstone gravel and cobbles (MADE GROUND)                            |                                                  |                         |  |  |
|                          |        |      |                      |             |              |               | 4.0                             | Grey very sandy gravelly CLAY with cobbles and boulders                               |                                                  |                         |  |  |
|                          |        |      |                      |             |              |               | 7.0                             | ROCKHEAD: Hard blue-grey fine grained SANDSTONE with occasional soft siltstone lenses |                                                  |                         |  |  |
|                          |        |      |                      |             |              |               | 8.0                             |                                                                                       |                                                  |                         |  |  |
|                          |        |      |                      |             |              |               | 9.0                             |                                                                                       |                                                  |                         |  |  |
|                          |        |      |                      |             |              |               | 10                              |                                                                                       |                                                  |                         |  |  |

| LOCATION / NOTES:                                  |  | LEGEND |                        | BOREHOLE LOG                                          |  |
|----------------------------------------------------|--|--------|------------------------|-------------------------------------------------------|--|
| 1. All measurements in m below ground level (mbgl) |  |        | Disturbed Sample       | Job Title <b>SOIL &amp; GROUNDWATER INVESTIGATION</b> |  |
| 2. Water strike at 2 mbgl cased out at 3.3 mbgl    |  |        | Undisturbed Sample     | Location <b>LLANDARCY REFINERY</b>                    |  |
| 3. Water strike at 6.5 mbgl                        |  |        | Headspace Analysis     | Client <b>BP LLANDARCY</b>                            |  |
|                                                    |  |        | Down Borehole Analysis | Appd <b>DRAFT</b>                                     |  |
|                                                    |  |        | Groundwater Table      | Ref. <b>MC/CR/BRS</b>                                 |  |
|                                                    |  |        | Perched Water Table    | Date <b>JUL 98</b>                                    |  |
|                                                    |  |        |                        | Job No. <b>39991-001-401</b>                          |  |
|                                                    |  |        |                        | <b>DAMES &amp; MOORE</b>                              |  |

| BOREHOLE<br>CONSTRUCTION                                                         | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY     | BOREHOLE NUMBER: <b>MSMW50d</b>                                             |  | PAGE 2 of 2                       |  |
|----------------------------------------------------------------------------------|--------|------|----------------------|-------------|-----------|-------------|-----------------------------------------------------------------------------|--|-----------------------------------|--|
|                                                                                  | NUMBER | TYPE |                      |             |           |             | START DATE: 17/06/98                                                        |  | DRILLING METHOD: Rotary           |  |
|                                                                                  |        |      |                      |             |           |             | FINISH DATE: 17/06/98                                                       |  | BOREHOLE DIAMETER: 150mm          |  |
|                                                                                  |        |      |                      |             |           |             | DRILLER: R3                                                                 |  | SCREEN TYPE & DIAMETER: UPVC 50mm |  |
|                                                                                  |        |      |                      |             |           |             | LOGGED BY: SG    APPRD BY:                                                  |  | SCREEN SLOT SIZE: 0.5mm           |  |
|                                                                                  |        |      |                      |             |           | DESCRIPTION | COMMENTS                                                                    |  |                                   |  |
|  |        |      |                      |             |           | 10          | Hard blue-grey fine grained SANDSTONE with occasional soft siltstone lenses |  | 10                                |  |
|                                                                                  |        |      |                      |             |           | 11          |                                                                             |  | 11                                |  |
|                                                                                  |        |      |                      |             |           | 12          | Borehole terminated at 12.0 mbgl                                            |  | 12                                |  |
|                                                                                  |        |      |                      |             |           | 13          |                                                                             |  | 13                                |  |
|                                                                                  |        |      |                      |             |           | 14          |                                                                             |  | 14                                |  |
|                                                                                  |        |      |                      |             |           | 15          |                                                                             |  | 15                                |  |
|                                                                                  |        |      |                      |             |           | 16          |                                                                             |  | 16                                |  |
|                                                                                  |        |      |                      |             |           | 17          |                                                                             |  | 17                                |  |
|                                                                                  |        |      |                      |             |           | 18          |                                                                             |  | 18                                |  |
|                                                                                  |        |      |                      |             |           | 19          |                                                                             |  | 19                                |  |
|                                                                                  |        |      |                      |             |           | 20          |                                                                             |  | 20                                |  |

|                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                       |                                                                                                                         |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>LOCATION / NOTES:</b><br><br>1. All measurements in m below ground level (mbgl) | <b>LEGEND</b><br> Disturbed Sample<br> Undisturbed Sample<br> * Headspace Analysis<br> † Down Borehole Analysis<br> Groundwater Table<br> Perched Water Table | <b>BOREHOLE LOG</b>                                   |                                                                                                                         |
|                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Job Title <b>SOIL &amp; GROUNDWATER INVESTIGATION</b> |                                                                                                                         |
|                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Location <b>LLANDARCY REFINERY</b>                    |                                                                                                                         |
|                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Client <b>BP LLANDARCY</b>                            |                                                                                                                         |
|                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Appd <b>DRAFT</b>                                     |  <b>DAMES &amp; MOORE</b><br>GROUP |
|                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Ref. <b>MC/CR/BRS</b>                                 |                                                                                                                         |
| Date <b>JUL 98</b>                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                       |                                                                                                                         |
| Job No. <b>39991-001-401</b>                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                       |                                                                                                                         |

| BOREHOLE<br>CONSTRUCTION | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY       | BOREHOLE NUMBER: <b>MSMW49s</b> |                                                           | PAGE 1 of 1                       |                         |  |     |  |
|--------------------------|--------|------|----------------------|-------------|-----------|---------------|---------------------------------|-----------------------------------------------------------|-----------------------------------|-------------------------|--|-----|--|
|                          | NUMBER | TYPE |                      |             |           |               | START DATE: 25/06/98            |                                                           | DRILLING METHOD: Cable Percussion |                         |  |     |  |
|                          |        |      |                      |             |           |               | FINISH DATE: 25/06/98           |                                                           | BOREHOLE DIAMETER: 200mm          |                         |  |     |  |
|                          |        |      |                      |             |           |               | DRILLER: CP1                    |                                                           | SCREEN TYPE & DIAMETER: UPVC 50mm |                         |  |     |  |
|                          |        |      |                      |             |           | LOGGED BY: SG |                                 | APPRD BY:                                                 |                                   | SCREEN SLOT SIZE: 0.5mm |  |     |  |
|                          |        |      |                      |             |           | DESCRIPTION   |                                 | COMMENTS                                                  |                                   |                         |  |     |  |
|                          |        |      |                      |             |           | 0             |                                 | Loose black sandy ASH (MADE GROUND)                       |                                   |                         |  | 0   |  |
|                          |        |      |                      |             |           | 1.0           |                                 | Firm light grey-brown gravelly CLAY with frequent cobbles |                                   |                         |  | 1.0 |  |
|                          |        |      |                      |             |           | 2.0           |                                 | Firm light brown clayey GRAVEL                            |                                   |                         |  | 2.0 |  |
|                          |        |      |                      |             |           | 3.0           |                                 |                                                           |                                   |                         |  | 3.0 |  |
|                          |        |      |                      |             |           | 4.0           |                                 | Borehole terminated at 3.7 mbgl on refusal                |                                   |                         |  | 4.0 |  |
|                          |        |      |                      |             |           | 5.0           |                                 |                                                           |                                   |                         |  | 5.0 |  |
|                          |        |      |                      |             |           | 6.0           |                                 |                                                           |                                   |                         |  | 6.0 |  |
|                          |        |      |                      |             |           | 7.0           |                                 |                                                           |                                   |                         |  | 7.0 |  |
|                          |        |      |                      |             |           | 8.0           |                                 |                                                           |                                   |                         |  | 8.0 |  |
|                          |        |      |                      |             |           | 9.0           |                                 |                                                           |                                   |                         |  | 9.0 |  |
|                          |        |      |                      |             |           | 10            |                                 |                                                           |                                   |                         |  | 10  |  |

| LOCATION / NOTES:                                  |  | LEGEND                                                                                                                             |  | BOREHOLE LOG                                                                                                              |  |
|----------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------|--|
| 1. All measurements in m below ground level (mbgl) |  | Disturbed Sample<br>Undisturbed Sample<br>Headspace Analysis<br>Down Borehole Analysis<br>Groundwater Table<br>Perched Water Table |  | Job Title <b>SOIL &amp; GROUNDWATER INVESTIGATION</b><br>Location <b>LLANDARCY REFINERY</b><br>Client <b>BP LLANDARCY</b> |  |
| 2. Water strike at 1.9 mbgl                        |  |                                                                                                                                    |  | Appd <b>DRAFT</b><br>Ref. <b>MC/CR/BRs</b><br>Date <b>JUL 98</b><br>Job No. <b>39991-001-401</b>                          |  |
|                                                    |  |                                                                                                                                    |  | <b>DAMES &amp; MOORE</b><br>GROUP                                                                                         |  |

| BOREHOLE<br>CONSTRUCTION | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH<br>(m) | GEOLOGY | BOREHOLE NUMBER: MSMW49d                                  |           | PAGE 1 of 1                                       |  |
|--------------------------|--------|------|----------------------|-------------|--------------|---------|-----------------------------------------------------------|-----------|---------------------------------------------------|--|
|                          | NUMBER | TYPE |                      |             |              |         | START DATE: 25/06/98                                      |           | DRILLING METHOD: Rotary/Odex                      |  |
|                          |        |      |                      |             |              |         | FINISH DATE: 26/06/98                                     |           | BOREHOLE DIAMETER: 165mm                          |  |
|                          |        |      |                      |             |              |         | DRILLER: R3                                               |           | SCREEN TYPE & DIAMETER: UPVC 50mm                 |  |
|                          |        |      |                      |             |              |         | LOGGED BY: SG                                             | APPRD BY: | SCREEN SLOT SIZE: 0.5mm                           |  |
|                          |        |      |                      |             |              |         | DESCRIPTION                                               |           | COMMENTS                                          |  |
|                          |        |      |                      |             | 0            |         | Loose black sandy ASH (MADE GROUND)                       |           |                                                   |  |
|                          |        |      |                      |             | 1.0          |         | Firm light grey-brown gravelly CLAY with frequent cobbles |           |                                                   |  |
|                          |        |      |                      |             | 2.0          |         | Firm light brown clayey GRAVEL                            |           |                                                   |  |
|                          |        |      |                      |             | 3.0          |         |                                                           |           |                                                   |  |
|                          |        |      |                      |             | 4.0          |         |                                                           |           | Strong hydrocarbon odour - sheen on water surface |  |
|                          |        |      |                      |             | 5.0          |         |                                                           |           |                                                   |  |
|                          |        |      |                      |             | 6.0          |         | ROCKHEAD: Strong blue-grey medium grained SANDSTONE       |           |                                                   |  |
|                          |        |      |                      |             | 7.0          |         |                                                           |           |                                                   |  |
|                          |        |      |                      |             | 8.0          |         |                                                           |           |                                                   |  |
|                          |        |      |                      |             | 9.0          |         | Borehole terminated at 9.0 mbgl                           |           |                                                   |  |
|                          |        |      |                      |             | 10           |         |                                                           |           |                                                   |  |

**LOCATION / NOTES:**

- All measurements in m below ground level (mbgl)

**LEGEND**

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

**BOREHOLE LOG**

Job Title   **SOIL & GROUNDWATER INVESTIGATION**

Location     **LLANDARCY REFINERY**

Client        **BP LLANDARCY**

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App'd          **DRAFT**

Ref.           MC/CR/BRS

Date           JUL 98

Job No.       39991-001-401

**DAMES & MOORE**



| BOREHOLE<br>CONSTRUCTION | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY                                                         | BOREHOLE NUMBER: <b>MSMW42</b> |                                                                                                | PAGE 1 of 1                       |     |
|--------------------------|--------|------|----------------------|-------------|-----------|-----------------------------------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------|-----|
|                          | NUMBER | TYPE |                      |             |           |                                                                 | START DATE: 15/06/98           |                                                                                                | DRILLING METHOD: Cable Percussion |     |
|                          |        |      |                      |             |           |                                                                 | FINISH DATE: 15/06/98          |                                                                                                | BOREHOLE DIAMETER: 200mm          |     |
|                          |        |      |                      |             |           | DRILLER: CP1                                                    |                                | SCREEN TYPE & DIAMETER: UPVC 50mm                                                              |                                   |     |
|                          |        |      |                      |             |           | LOGGED BY: MC/RC APPR'D BY:                                     |                                | SCREEN SLOT SIZE: 0.5mm                                                                        |                                   |     |
|                          |        |      |                      |             |           | DESCRIPTION                                                     |                                | COMMENTS                                                                                       |                                   |     |
|                          |        |      |                      |             |           | Soft, loose black clayey GRAVEL with ash (MADE GROUND)          |                                | Hydrocarbon odour and black staining                                                           |                                   | 0   |
|                          |        |      |                      |             |           | Soft, light brown-grey CLAY with some large sub-angular cobbles |                                | Damp at 1.9m                                                                                   |                                   | 1.0 |
|                          |        |      |                      |             |           | becoming more gravelly and cobbly at 3m                         |                                | Strong hydrocarbon odour and some staining drilling very hard - casing and auger stuck at 3.6m |                                   | 2.0 |
|                          |        |      |                      |             |           | Borehole terminated at 3.6 mbgl on refusal                      |                                |                                                                                                |                                   | 3.0 |
|                          |        |      |                      |             |           |                                                                 |                                |                                                                                                |                                   | 4.0 |
|                          |        |      |                      |             |           |                                                                 |                                |                                                                                                |                                   | 5.0 |
|                          |        |      |                      |             |           |                                                                 |                                |                                                                                                |                                   | 6.0 |
|                          |        |      |                      |             |           |                                                                 |                                |                                                                                                |                                   | 7.0 |
|                          |        |      |                      |             |           |                                                                 |                                |                                                                                                |                                   | 8.0 |
|                          |        |      |                      |             |           |                                                                 |                                |                                                                                                |                                   | 9.0 |
|                          |        |      |                      |             |           |                                                                 |                                |                                                                                                |                                   | 10  |

|                                                                                    |  |                                                                                                                                                     |  |                                                                                                                                                                                                                                                       |  |                              |  |
|------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------|--|
| <b>LOCATION / NOTES:</b><br><br>1. All measurements in m below ground level (mbgl) |  | <b>LEGEND</b><br>Disturbed Sample<br>Undisturbed Sample<br>Headspace Analysis<br>Down Borehole Analysis<br>Groundwater Table<br>Perched Water Table |  | <b>BOREHOLE LOG</b><br>Job Title <b>SOIL &amp; GROUNDWATER INVESTIGATION</b><br>Location <b>LLANDARCY REFINERY</b><br>Client <b>BP LLANDARCY</b><br>App'd <b>DRAFT</b><br>Ref. <b>MC/CR/BRS</b><br>Date <b>JUL 98</b><br>Job No. <b>39991-001-401</b> |  | <br><b>DAMES &amp; MOORE</b> |  |
|------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------|--|

| BOREHOLE<br>CONSTRUCTION | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY                                                                                                                             | BOREHOLE NUMBER: <b>MSMW6</b> |                                            | PAGE 1 of 1           |                                  |
|--------------------------|--------|------|----------------------|-------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------------------|-----------------------|----------------------------------|
|                          | NUMBER | TYPE |                      |             |           |                                                                                                                                     | START DATE: 28/05/98          | DRILLING METHOD: Cable Percussion / Rotary | FINISH DATE: 28/05/98 | BOREHOLE DIAMETER: 200mm / 165mm |
|                          |        |      | *0                   |             | 0         | Loose light brown silty SAND with fine gravel to cobbles of blue sandstone with some iron staining<br>Rotary drilling from 0.7 mbgl | No odour                      | 0                                          |                       |                                  |
|                          |        |      |                      |             | 1.0       | Loose light brown silty sandy angular GRAVEL with some sub-angular to sub-rounded gravel and cobbles                                |                               | 1.0                                        |                       |                                  |
|                          |        |      |                      |             | 2.0       | becoming darker brown with grey -light grey sandstone GRAVEL and occasional rounded quartzite gravel                                | No odour                      | 2.0                                        |                       |                                  |
|                          |        |      |                      |             | 3.0       | Water strike at 2.8 m                                                                                                               | 3.0                           |                                            |                       |                                  |
|                          |        |      |                      |             | 4.0       |                                                                                                                                     |                               |                                            | 4.0                   |                                  |
|                          |        |      |                      |             | 5.0       |                                                                                                                                     | No odour                      | 5.0                                        |                       |                                  |
|                          |        |      |                      |             | 6.0       |                                                                                                                                     |                               |                                            | 6.0                   |                                  |
|                          |        |      |                      |             | 7.0       | Borehole terminated at 7.0 mbgl                                                                                                     |                               | 7.0                                        |                       |                                  |
|                          |        |      |                      |             | 8.0       |                                                                                                                                     |                               | 8.0                                        |                       |                                  |
|                          |        |      |                      |             | 9.0       |                                                                                                                                     |                               | 9.0                                        |                       |                                  |
|                          |        |      |                      |             | 10        |                                                                                                                                     |                               | 10                                         |                       |                                  |

| LOCATION / NOTES:                                           | LEGEND                 | BOREHOLE LOG             |                                             |
|-------------------------------------------------------------|------------------------|--------------------------|---------------------------------------------|
| 1. All measurements in m below ground level (mbgl)          | Disturbed Sample       | Job Title                | <b>SOIL &amp; GROUNDWATER INVESTIGATION</b> |
| 2. Cable Percussion to 0.7 mbgl, Rotary with odex to 7 mbgl | Undisturbed Sample     | Location                 | <b>LLANDARCY REFINERY</b>                   |
| 3. No bedrock                                               | Headspace Analysis     | Client                   | <b>BP LLANDARCY</b>                         |
|                                                             | Down Borehole Analysis | App'd                    | DRAFT                                       |
|                                                             | Groundwater Table      | Ref.                     | MC/CR/BR5                                   |
|                                                             | Perched Water Table    | Date                     | JUL 98                                      |
|                                                             |                        | Job No.                  | 39991-001-401                               |
|                                                             |                        | <b>DAMES &amp; MOORE</b> |                                             |

| BOREHOLE<br>CONSTRUCTION | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY | BOREHOLE NUMBER: <b>MSMW5</b>                                                                                                                                                             |                                                                                        | PAGE 1 of 1                                |  |
|--------------------------|--------|------|----------------------|-------------|-----------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------|--|
|                          | NUMBER | TYPE |                      |             |           |         | START DATE: 28/05/98                                                                                                                                                                      |                                                                                        | DRILLING METHOD: Cable Percussion / Rotary |  |
|                          |        |      |                      |             |           |         | FINISH DATE: 28/05/98                                                                                                                                                                     |                                                                                        | BOREHOLE DIAMETER: 200mm / 165mm           |  |
|                          |        |      |                      |             |           |         | DRILLER: CP2/R2                                                                                                                                                                           |                                                                                        | SCREEN TYPE & DIAMETER: UPVC 50mm          |  |
|                          |        |      |                      |             |           |         | LOGGED BY: SG/MC APPR'D BY:                                                                                                                                                               |                                                                                        | SCREEN SLOT SIZE: 0.5mm                    |  |
|                          |        |      |                      |             |           |         | DESCRIPTION                                                                                                                                                                               | COMMENTS                                                                               |                                            |  |
|                          |        |      |                      |             |           |         | Loose brown very gravelly SILT with some sand and frequent cobbles of moderately strong blue-grey medium sandstone (MADE GROUND)<br>brick fragments at 0.5m<br>Rotary drilling from 1mbgl | No odour                                                                               | 0                                          |  |
|                          |        |      |                      |             |           |         | Loose brown silty sandy angular GRAVEL with some rounded gravel<br><br>Gravel becoming coarse at 2m with rounded cobbles                                                                  | Cable at 0.8m<br>Hydrocarbon odour at 2.5m<br><br>Productive and water bearing at 2.5m | 1.0<br>2.0<br>3.0                          |  |
|                          |        |      |                      |             |           |         | ROCKHEAD: Very hard light grey medium SANDSTONE                                                                                                                                           | Drilling very hard                                                                     | 4.0<br>5.0<br>6.0                          |  |
|                          |        |      |                      |             |           |         | Borehole terminated at 7.0 mbgl                                                                                                                                                           |                                                                                        | 7.0<br>8.0<br>9.0<br>10.0                  |  |
|                          |        |      |                      |             |           |         |                                                                                                                                                                                           |                                                                                        |                                            |  |

**LOCATION / NOTES:**

- All measurements in m below ground level (mbgl)
- Cable Percussion to 1 mbgl, Rotary with odex to 7 mbgl
- Rotary odex hole had to be re-drilled 1 metre from original location due to obstruction

**LEGEND**

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

**BOREHOLE LOG**

Job Title **SOIL & GROUNDWATER INVESTIGATION**

Location **LLANDARCY REFINERY**

Client **BP LLANDARCY**

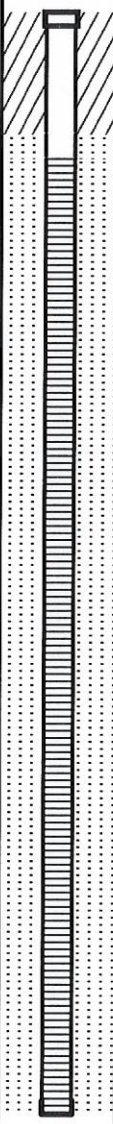
App'd **DRAFT**

Ref. **MC/CR/BR5**

Date **JUL 98**

Job No. **39991-001-401**

**DAMES & MOORE**  
GROUP

| BOREHOLE<br>CONSTRUCTION                                                           | SAMPLE |      | SOIL VAPOUR (ppm) | GROUNDWATER | DEPTH (m)       | GEOLOGY                                                                                             | BOREHOLE NUMBER: RFSW001   |     | PAGE 1 of 1                   |  |
|------------------------------------------------------------------------------------|--------|------|-------------------|-------------|-----------------|-----------------------------------------------------------------------------------------------------|----------------------------|-----|-------------------------------|--|
|                                                                                    | NUMBER | TYPE |                   |             |                 |                                                                                                     | DRILLING DATES: 10/10/2000 |     | DRILLING METHODS : Percussive |  |
|                                                                                    |        |      |                   |             |                 |                                                                                                     | DRILLER : Geotechnical     |     | BOREHOLE DIAMETER : 128mm     |  |
|                                                                                    |        |      |                   |             |                 |                                                                                                     | LOGGED BY : JG             |     | SCREEN TYPE & DIAM: 50mm HDPE |  |
|                                                                                    |        |      |                   |             |                 |                                                                                                     | CHECKED BY :               |     | SCREEN SLOT SIZE: 1mm         |  |
|  |        |      |                   |             | 0.0             | MADE GROUND<br>Loose, dark grey, silty gravel                                                       | Dry                        | 0.0 |                               |  |
|                                                                                    |        |      |                   |             | 0.5             | MADE GROUND<br>Soft, dark redsilt                                                                   | Dry                        | 0.5 |                               |  |
|                                                                                    |        |      |                   |             | 1.0             | CLAY<br>Firm, brown clay with fine to coarse sand and gravel                                        | Moist                      | 1.0 |                               |  |
|                                                                                    |        |      |                   |             | 1.5             | No returns from 1.25 - 1.5m                                                                         |                            | 1.5 |                               |  |
|                                                                                    |        |      |                   |             | 2.0             | CLAY<br>Soft clay with gravel                                                                       |                            | 2.0 |                               |  |
|                                                                                    |        |      |                   |             | 2.5             | GRAVEL<br>Poorly graded fine to coarse gravel with medium plastic clay                              | Moist                      | 2.5 |                               |  |
|                                                                                    |        |      |                   |             | 3.0             | CLAY<br>Grey, medium plastic clay with some fine sand                                               | Wet                        | 3.0 |                               |  |
|                                                                                    |        |      |                   |             | 3.5             |                                                                                                     | Product staining           | 3.5 |                               |  |
|                                                                                    |        |      |                   |             | 4.0             |                                                                                                     | Hydrocarbon odour          | 4.0 |                               |  |
|                                                                                    |        |      |                   |             | 4.5             | GRAVEL<br>Poorly graded fine to coarse gravel with fine to coarse sand and some medium plastic clay | Moist to wet               | 4.5 |                               |  |
|                                                                                    |        |      |                   | 5.0         | End of Borehole |                                                                                                     | 5.0                        |     |                               |  |

| LOCATION / NOTES:                          | LEGEND                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | BOREHOLELOG                                                                          |                                                                                                                           |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| NVO = No visual or field activity evidence |  Disturbed Sample<br> Undisturbed Sample<br> Headspace Analysis<br> Down Borehole Analysis<br> Groundwater Table<br> Perched Water Table | Job Title: Sentinel Wells<br>Location: BP Llandarcy Refinery<br>Client: BP Oil UK    |                                                                                                                           |
|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  | App'd: _____ Date: August 2002<br>Drawn: NML Ref: _____<br>Scale: _____ Job No: 39991-016<br>Drg. Size: _____ BOREHOLELOG |

| BOREHOLE<br>CONSTRUCTION | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY | BOREHOLE NUMBER: <b>RHRW049</b> |                                                                                                                           | PAGE 1 of 1                       |      |
|--------------------------|--------|------|----------------------|-------------|-----------|---------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------|------|
|                          | NUMBER | TYPE |                      |             |           |         | START DATE: 05/02/01            |                                                                                                                           | DRILLING METHOD: WINDOW SAMPLER   |      |
|                          |        |      |                      |             |           |         | FINISH DATE: 05/02/01           |                                                                                                                           | BOREHOLE DIAMETER: 80-60 mm       |      |
|                          |        |      |                      |             |           |         | DRILLER: GEOTECHNICAL           |                                                                                                                           | SCREEN TYPE & DIAMETER: HDPE 30mm |      |
|                          |        |      |                      |             |           |         | LOGGED BY: NL APPR'D BY:        |                                                                                                                           | SCREEN SLOT SIZE: 0.5 mm          |      |
|                          |        |      |                      |             |           |         | DESCRIPTION                     | COMMENTS                                                                                                                  |                                   |      |
|                          |        |      |                      |             |           |         | 0                               | Brown SILT with organic matter and grass and reeds at surface                                                             | Wet                               | 0    |
|                          |        |      |                      |             |           |         | 0.5                             | Firm, light grey (with orange, yellow and tan mottling in places) SILT with some clay and fine sand and occasional gravel | Odour and sheen noted             | 0.5  |
|                          |        |      |                      |             |           |         | 1.0                             | Soft, blue-grey (with dark blue-grey streaks) clayey SILT with some gravel clasts                                         | Moderate odour and sheen          | 1.0  |
|                          |        |      |                      |             |           |         | 1.5                             | Soft to firm, dark brown-grey SILT with dark streaks and occasional gravel and cobbles                                    | Very strong odour and sheen. Wet  | 1.5  |
|                          |        |      |                      |             |           |         | 2.0                             | Firm, light grey (with yellow mottling) silty CLAY with occasional gravel                                                 |                                   | 2.0  |
|                          |        |      |                      |             |           |         | 2.45                            | Borehole terminated at 2.45 mbgl                                                                                          |                                   | 2.45 |
|                          |        |      |                      |             |           |         | 3.0                             |                                                                                                                           |                                   | 3.0  |
|                          |        |      |                      |             |           |         | 3.5                             |                                                                                                                           |                                   | 3.5  |
|                          |        |      |                      |             |           |         | 4.0                             |                                                                                                                           |                                   | 4.0  |
|                          |        |      |                      |             |           |         | 4.5                             |                                                                                                                           |                                   | 4.5  |
|                          |        |      |                      |             |           |         | 5.0                             |                                                                                                                           |                                   | 5.0  |

|                                                                                                                                         |  |                                                                                                                                                     |  |                                                                                                                                                                                                                             |  |                                                                                                        |  |
|-----------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------|--|
| <b>LOCATION / NOTES:</b><br>1. All measurements in m below ground level (mbgl)<br>2. Hole collapsed to 0.7m<br>3. Screen pushed to 1.8m |  | <b>LEGEND</b><br>Disturbed Sample<br>Undisturbed Sample<br>Headspace Analysis<br>Down Borehole Analysis<br>Groundwater Table<br>Perched Water Table |  | <b>BOREHOLE LOG</b><br>Job Title <b>WESTERN MARGIN INVESTIGATION</b><br>Location <b>TRIANGLE SEPARATOR AREA</b><br>Client <b>BP LLANDARCY REFINERY LTD</b><br><br>Dames & Moore<br>O'Brien Kreitzberg<br>Thorburn Colquhoun |  | <b>DRAFT</b><br>App'd<br>Ref. <b>NL/CR/BR5</b><br>Date <b>APR 2001</b><br>Job No. <b>39991-016-402</b> |  |
|-----------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------|--|

| BOREHOLE<br>CONSTRUCTION | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER              | DEPTH (m) | GEOLOGY                  | BOREHOLE NUMBER: <b>RHRW048b</b>                                            |                                     | PAGE 1 of 1                       |     |
|--------------------------|--------|------|----------------------|--------------------------|-----------|--------------------------|-----------------------------------------------------------------------------|-------------------------------------|-----------------------------------|-----|
|                          | NUMBER | TYPE |                      |                          |           |                          | START DATE: 05/02/01                                                        |                                     | DRILLING METHOD: WINDOW SAMPLER   |     |
|                          |        |      |                      |                          |           |                          | FINISH DATE: 05/02/01                                                       |                                     | BOREHOLE DIAMETER: 80-60 mm       |     |
|                          |        |      |                      |                          |           |                          | DRILLER: GEOTECHNICAL                                                       |                                     | SCREEN TYPE & DIAMETER: HDPE 50mm |     |
|                          |        |      |                      | LOGGED BY: NL APPR'D BY: |           | SCREEN SLOT SIZE: 0.5 mm |                                                                             |                                     |                                   |     |
|                          |        |      |                      |                          |           |                          | DESCRIPTION                                                                 | COMMENTS                            |                                   |     |
|                          |        |      |                      |                          | 0         |                          | Leaf litter and rootlets (TOPSOIL)                                          | Dry. No odour or staining.<br>Damp. |                                   | 0   |
|                          |        |      |                      |                          |           |                          | Loose, dark brown SILT with rootlets and organic matter                     |                                     |                                   |     |
|                          |        |      |                      |                          |           |                          | Soft to firm, brown, sandy SILT with occasional gravel                      |                                     |                                   |     |
|                          |        |      | *2158                |                          | 0.5       |                          | Very soft, yellow-brown fine silty SAND with occasional sub-rounded cobbles | Wet<br><br>No odour or staining     |                                   | 0.5 |
|                          |        |      |                      |                          |           |                          | Becomes firmer with depth                                                   |                                     |                                   |     |
|                          |        |      |                      |                          |           |                          | Firm at 1m                                                                  |                                     |                                   |     |
|                          |        |      |                      |                          | 1.0       |                          | Becomes grey from 1.2m                                                      |                                     |                                   | 1.0 |
|                          |        |      | *5232                |                          | 1.5       |                          |                                                                             | Moderate sheen.<br>Strong odour     |                                   | 1.5 |
|                          |        |      |                      |                          |           |                          | Borehole terminated at 1.7 mbgl                                             |                                     |                                   |     |
|                          |        |      |                      |                          | 2.0       |                          |                                                                             |                                     |                                   | 2.0 |
|                          |        |      |                      |                          | 2.5       |                          |                                                                             |                                     |                                   | 2.5 |
|                          |        |      |                      |                          | 3.0       |                          |                                                                             |                                     |                                   | 3.0 |
|                          |        |      |                      |                          | 3.5       |                          |                                                                             |                                     |                                   | 3.5 |
|                          |        |      |                      |                          | 4.0       |                          |                                                                             |                                     |                                   | 4.0 |
|                          |        |      |                      |                          | 4.5       |                          |                                                                             |                                     |                                   | 4.5 |
|                          |        |      |                      |                          | 5.0       |                          |                                                                             |                                     |                                   | 5.0 |

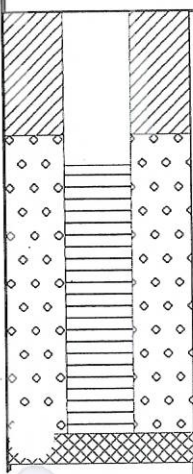
  

| LOCATION / NOTES:                                  | LEGEND                                                                                                                                                                                                     | BOREHOLE LOG                                                  |                                 |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------|
| 1. All measurements in m below ground level (mbgl) | <div></div> Disturbed Sample<br><div></div> Undisturbed Sample<br><div></div> Headspace Analysis<br><div></div> Down Borehole Analysis<br><div></div> Groundwater Table<br><div></div> Perched Water Table | Job Title<br><b>WESTERN MARGIN INVESTIGATION</b>              |                                 |
|                                                    |                                                                                                                                                                                                            | Location<br><b>TRIANGLE SEPARATOR AREA</b>                    |                                 |
|                                                    |                                                                                                                                                                                                            | Client<br><b>BP LLANDARCY REFINERY LTD</b>                    |                                 |
|                                                    |                                                                                                                                                                                                            | <br>Dames & Moore<br>O'Brien Kreitzberg<br>Thorburn Colquhoun | App'd<br><b>DRAFT</b>           |
|                                                    |                                                                                                                                                                                                            |                                                               | Ref.<br><b>NL/CR/BRS</b>        |
|                                                    |                                                                                                                                                                                                            |                                                               | Date<br><b>APR 2001</b>         |
|                                                    |                                                                                                                                                                                                            |                                                               | Job No.<br><b>39991-016-402</b> |

| BOREHOLE<br>CONSTRUCTION | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY     | BOREHOLE NUMBER: <b>RHRW048a</b>                                                          |                              | PAGE 1 of 1                       |  |
|--------------------------|--------|------|----------------------|-------------|-----------|-------------|-------------------------------------------------------------------------------------------|------------------------------|-----------------------------------|--|
|                          | NUMBER | TYPE |                      |             |           |             | START DATE: 06/02/01                                                                      |                              | DRILLING METHOD: WINDOW SAMPLER   |  |
|                          |        |      |                      |             |           |             | FINISH DATE: 06/02/01                                                                     |                              | BOREHOLE DIAMETER: 80-60 mm       |  |
|                          |        |      |                      |             |           |             | DRILLER: GEOTECHNICAL                                                                     |                              | SCREEN TYPE & DIAMETER: HDPE 50mm |  |
|                          |        |      |                      |             |           |             | LOGGED BY: NL APPR'D BY:                                                                  |                              | SCREEN SLOT SIZE: 0.5 mm          |  |
|                          |        |      |                      |             |           | DESCRIPTION | COMMENTS                                                                                  |                              |                                   |  |
|                          |        |      |                      |             |           | 0           | Leaf litter and rootlets (TOPSOIL)                                                        |                              | 0                                 |  |
|                          |        |      |                      |             |           | 0.5         | Loose, black sandy ASH with some gravel and organic matter (MADE GROUND)                  | No odour or staining         |                                   |  |
|                          |        |      |                      |             |           | 0.5         | Soft, grey-brown SILT with some fine sand and occasional gravel .                         | Damp                         |                                   |  |
|                          |        |      |                      |             |           | 0.5         | Becomes gradually lighter brown with depth with occasional rounded to sub-rounded cobbles | No odour. Sheen on water     |                                   |  |
|                          |        |      |                      |             |           | 1.0         | Becomes softer                                                                            | Wet                          |                                   |  |
| *2225<br>*4959<br>*>9999 |        |      |                      |             |           | 1.5         | Gravel and cobble rich layer from 1.4-1.5m                                                | No odour or staining         | 1.5                               |  |
|                          |        |      |                      |             |           | 1.5         | Stiff grey SILT with fine sand with light grey to dark grey laminations                   | Strong odour, moderate sheen |                                   |  |
|                          |        |      |                      |             |           | 2.0         | Borehole terminated at 1.7 mbgl on refusal                                                |                              |                                   |  |
|                          |        |      |                      |             |           | 2.5         |                                                                                           |                              |                                   |  |
|                          |        |      |                      |             |           | 3.0         |                                                                                           |                              |                                   |  |
|                          |        |      |                      |             |           | 3.5         |                                                                                           |                              | 3.5                               |  |
|                          |        |      |                      |             |           | 4.0         |                                                                                           |                              | 4.0                               |  |
|                          |        |      |                      |             |           | 4.5         |                                                                                           |                              | 4.5                               |  |
|                          |        |      |                      |             |           | 5.0         |                                                                                           |                              | 5.0                               |  |

|                                                                                                                                        |  |                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>LOCATION / NOTES:</b><br><br>1. All measurements in m below ground level (mbgl)<br><br>2. Borehole backfilled to 1.1m with arisings |  | <b>LEGEND</b><br><br>Disturbed Sample<br>Undisturbed Sample<br>Headspace Analysis<br>Down Borehole Analysis<br>Groundwater Table<br>Perched Water Table | <b>BOREHOLE LOG</b><br><br>Job Title <b>WESTERN MARGIN INVESTIGATION</b><br><br>Location <b>TRIANGLE SEPARATOR AREA</b><br><br>Client <b>BP LLANDARCY REFINERY LTD</b><br><br><div> <div>             App'd<br/>             Ref. NL/CR/BRS<br/>             Date APR 2001<br/>             Job No. 39991-016-402           </div> </div> <div>             DRAFT           </div> |
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| BOREHOLE<br>CONSTRUCTION                                                         | SAMPLE |                          | SOIL VAPOUR<br>(ppm) | GROUNDWATER              | DEPTH (m) | GEOLOGY | BOREHOLE NUMBER: <b>RHRW047</b>                                   |                                             | PAGE 1 of 1                       |  |
|----------------------------------------------------------------------------------|--------|--------------------------|----------------------|--------------------------|-----------|---------|-------------------------------------------------------------------|---------------------------------------------|-----------------------------------|--|
|                                                                                  |        |                          |                      |                          |           |         |                                                                   |                                             |                                   |  |
|                                                                                  | NUMBER | TYPE                     |                      |                          |           |         | START DATE: 05/02/01                                              |                                             | DRILLING METHOD: WINDOW SAMPLER   |  |
|                                                                                  |        |                          |                      |                          |           |         | FINISH DATE: 05/02/01                                             |                                             | BOREHOLE DIAMETER: 80-60 mm       |  |
|                                                                                  |        |                          |                      |                          |           |         | DRILLER: GEOTECHNICAL                                             |                                             | SCREEN TYPE & DIAMETER: HDPE 50mm |  |
|                                                                                  |        | LOGGED BY: NL APPR'D BY: |                      | SCREEN SLOT SIZE: 0.5 mm |           |         |                                                                   |                                             |                                   |  |
|                                                                                  |        |                          |                      |                          |           |         | DESCRIPTION                                                       | COMMENTS                                    |                                   |  |
|  |        |                          |                      |                          |           |         | Leaf litter and rootlets (TOPSOIL)                                | Wet. No staining. Slight odour              | 0                                 |  |
|                                                                                  |        |                          |                      |                          |           |         | Loose, black ASH with some gravel clasts (MADE GROUND)            |                                             |                                   |  |
|                                                                                  |        |                          |                      |                          |           |         | Firm brown SILT, with some fine sand and occasional gravel clasts | No odour or staining. Damp                  | 0.5                               |  |
|                                                                                  |        |                          |                      |                          |           |         | Soft green-grey SILT with occasional gravel and cobbles           | Very strong odour<br>No sheen noted<br>Damp | 1.0                               |  |
|                                                                                  |        |                          |                      |                          |           |         | Becomes firmer from 1.1m                                          | Very heavy black staining and strong odour  | 1.5                               |  |
|                                                                                  |        |                          |                      |                          |           |         | Borehole terminated at 1.5 mbgl on collapse                       |                                             | 1.5                               |  |
|                                                                                  |        |                          |                      |                          |           |         |                                                                   |                                             | 2.0                               |  |
|                                                                                  |        |                          |                      |                          |           |         |                                                                   |                                             | 2.5                               |  |
|                                                                                  |        |                          |                      |                          |           |         |                                                                   |                                             | 3.0                               |  |
|                                                                                  |        |                          |                      |                          |           |         |                                                                   |                                             | 3.5                               |  |
|                                                                                  |        |                          |                      |                          |           |         |                                                                   |                                             | 4.0                               |  |
|                                                                                  |        |                          |                      |                          |           |         |                                                                   |                                             | 4.5                               |  |
|                                                                                  |        |                          |                      |                          |           |         |                                                                   |                                             | 5.0                               |  |

|                                                                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                        |              |
|-------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>LOCATION / NOTES:</b><br><br>1. All measurements in m below ground level (mbgl)<br><br>2. Borehole collapsed to 1.4m |  | <b>LEGEND</b><br><br> Disturbed Sample<br> Undisturbed Sample<br> Headspace Analysis<br> Down Borehole Analysis<br> Groundwater Table<br> Perched Water Table | <b>BOREHOLE LOG</b><br><br>Job Title <b>WESTERN MARGIN INVESTIGATION</b><br><br>Location <b>TRIANGLE SEPARATOR AREA</b><br><br>Client <b>BP LLANDARCY REFINERY LTD</b> |              |
|                                                                                                                         |  | <br>Dames & Moore<br>O'Brien Kreitzberg<br>Thorburn Colquhoun                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | App'd<br>Ref. <b>NL/CR/BRS</b><br>Date <b>APR 2001</b><br>Job No. <b>39991-016-402</b>                                                                                 | <b>DRAFT</b> |

| BOREHOLE<br>CONSTRUCTION | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY | BOREHOLE NUMBER: <b>RHRW046</b>                                                       |                                          | PAGE 1 of 1                       |  |
|--------------------------|--------|------|----------------------|-------------|-----------|---------|---------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------|--|
|                          | NUMBER | TYPE |                      |             |           |         | START DATE: 05/02/01                                                                  |                                          | DRILLING METHOD: WINDOW SAMPLER   |  |
|                          |        |      |                      |             |           |         | FINISH DATE: 05/02/01                                                                 |                                          | BOREHOLE DIAMETER: 80-60 mm       |  |
|                          |        |      |                      |             |           |         | DRILLER: GEOTECHNICAL                                                                 |                                          | SCREEN TYPE & DIAMETER: HDPE 50mm |  |
|                          |        |      |                      |             |           |         | LOGGED BY: NL APPR'D BY:                                                              |                                          | SCREEN SLOT SIZE: 0.5 mm          |  |
|                          |        |      |                      |             |           |         | DESCRIPTION                                                                           | COMMENTS                                 |                                   |  |
|                          |        |      |                      |             |           |         | Leaf litter and rootlets (TOPSOIL)                                                    | Slight sheen<br>Slight odour             | 0                                 |  |
|                          |        |      |                      |             |           |         | Loose, black-brown sand and gravel sized ASH with some cobbles and silt (MADE GROUND) |                                          |                                   |  |
|                          |        |      |                      |             |           |         | Soft grey-brown SILT with some fine sand.                                             | Strong odour and sheen                   | 0.5                               |  |
|                          |        |      |                      |             |           |         | Rounded to sub-rounded cobbles observed                                               |                                          |                                   |  |
|                          |        |      |                      |             |           |         | Borehole terminated at 1.0 mbgl                                                       | Very strong odour and sheen<br>Saturated | 1.0                               |  |
|                          |        |      |                      |             |           |         |                                                                                       |                                          | 1.5                               |  |
|                          |        |      |                      |             |           |         |                                                                                       |                                          | 2.0                               |  |
|                          |        |      |                      |             |           |         |                                                                                       |                                          | 2.5                               |  |
|                          |        |      |                      |             |           |         |                                                                                       |                                          | 3.0                               |  |
|                          |        |      |                      |             |           |         |                                                                                       |                                          | 3.5                               |  |
|                          |        |      |                      |             |           |         |                                                                                       |                                          | 4.0                               |  |
|                          |        |      |                      |             |           |         |                                                                                       |                                          | 4.5                               |  |
|                          |        |      |                      |             |           |         |                                                                                       |                                          | 5.0                               |  |

|                                                                                    |  |                                                                                                                                                     |  |                                                                                                                                                                                                                         |  |                                                                                                     |  |
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| <b>LOCATION / NOTES:</b><br><br>1. All measurements in m below ground level (mbgl) |  | <b>LEGEND</b><br>Disturbed Sample<br>Undisturbed Sample<br>Headspace Analysis<br>Down Borehole Analysis<br>Groundwater Table<br>Perched Water Table |  | <b>BOREHOLE LOG</b><br>Job Title <b>WESTERN MARGIN INVESTIGATION</b><br>Location <b>TRIANGLE SEPARATOR AREA</b><br>Client <b>BP LLANDARCY REFINERY LTD</b><br>Dames & Moore<br>O'Brien Kreitzberg<br>Thorburn Colquhoun |  | App'd <b>DRAFT</b><br>Ref. <b>NL/CR/BRS</b><br>Date <b>APR 2001</b><br>Job No. <b>39991-016-402</b> |  |
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| BOREHOLE<br>CONSTRUCTION | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER              | DEPTH (m) | GEOLOGY                                     | BOREHOLE NUMBER: <b>RHRW045</b> |                                                                        | PAGE 1 of 1                     |                                         |     |
|--------------------------|--------|------|----------------------|--------------------------|-----------|---------------------------------------------|---------------------------------|------------------------------------------------------------------------|---------------------------------|-----------------------------------------|-----|
|                          | NUMBER | TYPE |                      |                          |           |                                             | START DATE: 05/02/01            |                                                                        | DRILLING METHOD: WINDOW SAMPLER |                                         |     |
|                          |        |      |                      |                          |           |                                             | FINISH DATE: 05/02/01           |                                                                        | BOREHOLE DIAMETER: 80-60 mm     |                                         |     |
|                          |        |      |                      | DRILLER: GEOTECHNICAL    |           | SCREEN TYPE & DIAMETER: HDPE 35mm           |                                 |                                                                        |                                 |                                         |     |
|                          |        |      |                      | LOGGED BY: NL APPR'D BY: |           | SCREEN SLOT SIZE: 0.5 mm                    |                                 |                                                                        |                                 |                                         |     |
|                          |        |      |                      |                          |           | DESCRIPTION                                 |                                 | COMMENTS                                                               |                                 |                                         |     |
|                          |        |      |                      |                          |           | 0                                           |                                 | Leaf litter and rootlets (TOPSOIL)                                     |                                 | No odour or staining                    | 0   |
|                          |        |      |                      |                          |           | 0.5                                         |                                 | Loose black, gravel sized clasts of ASH with some gravel (MADE GROUND) |                                 | Hydrocarbon sheen and odour             | 0.5 |
|                          |        |      |                      |                          |           | 0.7                                         |                                 | Cobble size clasts at 0.7m                                             |                                 |                                         |     |
|                          |        |      |                      |                          |           | 1.0                                         |                                 | Soft grey, silty SAND with black streaks in clasts of up to 10cm       |                                 | Strong solvent odour and black staining | 1.0 |
|                          |        |      |                      |                          |           | 1.5                                         |                                 | Becomes firmer with depth                                              |                                 | Less product. Moderate odour.           | 1.5 |
|                          |        |      |                      |                          |           | Sub-rounded sandstone cobbles observed      |                                 |                                                                        |                                 |                                         |     |
|                          |        |      |                      |                          |           | Borehole terminated at 1.65 mbgl on refusal |                                 |                                                                        |                                 |                                         |     |
|                          |        |      |                      |                          |           | 2.0                                         |                                 |                                                                        |                                 |                                         |     |
|                          |        |      |                      |                          |           | 2.5                                         |                                 |                                                                        |                                 |                                         |     |
|                          |        |      |                      |                          |           | 3.0                                         |                                 |                                                                        |                                 |                                         |     |
|                          |        |      |                      |                          |           | 3.5                                         |                                 |                                                                        |                                 |                                         |     |
|                          |        |      |                      |                          |           | 4.0                                         |                                 |                                                                        |                                 |                                         |     |
|                          |        |      |                      |                          |           | 4.5                                         |                                 |                                                                        |                                 |                                         |     |
|                          |        |      |                      |                          |           | 5.0                                         |                                 |                                                                        |                                 |                                         |     |

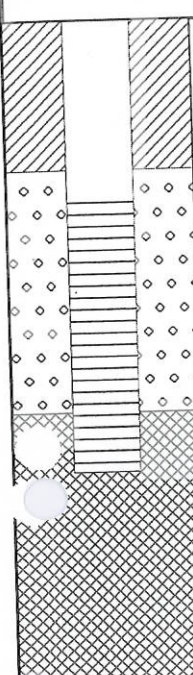
  

| LOCATION / NOTES:                                  | LEGEND                                                                                                                             | BOREHOLE LOG                                                  |                       |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-----------------------|
| 1. All measurements in m below ground level (mbgl) | Disturbed Sample<br>Undisturbed Sample<br>Headspace Analysis<br>Down Borehole Analysis<br>Groundwater Table<br>Perched Water Table | Job Title<br><b>WESTERN MARGIN INVESTIGATION</b>              |                       |
|                                                    |                                                                                                                                    | Location<br><b>TRIANGLE SEPARATOR AREA</b>                    |                       |
|                                                    |                                                                                                                                    | Client<br><b>BP LLANDARCY REFINERY LTD</b>                    |                       |
|                                                    |                                                                                                                                    | <br>Dames & Moore<br>O'Brien Kreitzberg<br>Thorburn Colquhoun | App'd<br><b>DRAFT</b> |
|                                                    |                                                                                                                                    | Ref.<br><b>NL/CR/BRS</b>                                      |                       |
|                                                    |                                                                                                                                    | Date<br><b>APR 2001</b>                                       |                       |
|                                                    |                                                                                                                                    | Job No.<br><b>39991-016-402</b>                               |                       |

| BOREHOLE<br>CONSTRUCTION | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY                                                                  | BOREHOLE NUMBER: <b>RHRW044</b>                                                                         |     | PAGE 1 of 1                       |  |
|--------------------------|--------|------|----------------------|-------------|-----------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----|-----------------------------------|--|
|                          | NUMBER | TYPE |                      |             |           |                                                                          | START DATE: 05/02/01                                                                                    |     | DRILLING METHOD: WINDOW SAMPLER   |  |
|                          |        |      |                      |             |           |                                                                          | FINISH DATE: 05/02/01                                                                                   |     | BOREHOLE DIAMETER: 80-60 mm       |  |
|                          |        |      |                      |             |           |                                                                          | DRILLER: GEOTECHNICAL                                                                                   |     | SCREEN TYPE & DIAMETER: HDPE 50mm |  |
|                          |        |      |                      |             |           |                                                                          | LOGGED BY: NL APPR'D BY:                                                                                |     | SCREEN SLOT SIZE: 0.5 mm          |  |
|                          |        |      |                      |             |           | DESCRIPTION                                                              | COMMENTS                                                                                                |     |                                   |  |
|                          |        |      |                      |             |           | Leaf litter and rootlets (TOPSOIL)                                       | Hydrocarbon sheen and odour from 0.6m<br><br>Wet.<br>Strong hydrocarbon odour and sheen<br>Strong odour | 0   |                                   |  |
|                          |        |      |                      |             |           | Loose black, sand and gravel sized ASH with organic matter (MADE GROUND) |                                                                                                         | 0.5 |                                   |  |
|                          |        |      |                      |             |           | Less organic matter with depth                                           |                                                                                                         |     |                                   |  |
|                          |        |      |                      |             |           | Becoming looser with depth                                               |                                                                                                         |     |                                   |  |
|                          |        |      |                      |             |           | More gravel sized clasts with depth                                      |                                                                                                         | 1.0 |                                   |  |
| *9999                    |        |      |                      |             |           | Borehole terminated at 1.5 mbgl on refusal                               |                                                                                                         | 1.5 |                                   |  |
|                          |        |      |                      |             |           |                                                                          |                                                                                                         | 2.0 |                                   |  |
|                          |        |      |                      |             |           |                                                                          |                                                                                                         | 2.5 |                                   |  |
|                          |        |      |                      |             |           |                                                                          |                                                                                                         | 3.0 |                                   |  |
|                          |        |      |                      |             |           |                                                                          |                                                                                                         | 3.5 |                                   |  |
|                          |        |      |                      |             |           |                                                                          |                                                                                                         | 4.0 |                                   |  |
|                          |        |      |                      |             |           |                                                                          |                                                                                                         | 4.5 |                                   |  |
|                          |        |      |                      |             |           |                                                                          |                                                                                                         | 5.0 |                                   |  |

|                                                                                    |  |                                                                                                                                                     |  |                                                                                                                                                                                                                             |  |                                                                                                     |  |
|------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------|--|
| <b>LOCATION / NOTES:</b><br><br>1. All measurements in m below ground level (mbgl) |  | <b>LEGEND</b><br>Disturbed Sample<br>Undisturbed Sample<br>Headspace Analysis<br>Down Borehole Analysis<br>Groundwater Table<br>Perched Water Table |  | <b>BOREHOLE LOG</b><br>Job Title <b>WESTERN MARGIN INVESTIGATION</b><br>Location <b>TRIANGLE SEPARATOR AREA</b><br>Client <b>BP LLANDARCY REFINERY LTD</b><br><br>Dames & Moore<br>O'Brien Kreitzberg<br>Thorburn Colquhoun |  | App'd <b>DRAFT</b><br>Ref. <b>NL/CR/BR5</b><br>Date <b>APR 2001</b><br>Job No. <b>39991-016-402</b> |  |
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| BOREHOLE<br>CONSTRUCTION                                                          | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER              | DEPTH (m) | GEOLOGY                           | BOREHOLE NUMBER: <b>RHRW043</b>                            |                                                         | PAGE 1 of 1                     |  |
|-----------------------------------------------------------------------------------|--------|------|----------------------|--------------------------|-----------|-----------------------------------|------------------------------------------------------------|---------------------------------------------------------|---------------------------------|--|
|                                                                                   | NUMBER | TYPE |                      |                          |           |                                   | START DATE: 05/02/01                                       |                                                         | DRILLING METHOD: WINDOW SAMPLER |  |
|                                                                                   |        |      |                      |                          |           |                                   | FINISH DATE: 05/02/01                                      |                                                         | BOREHOLE DIAMETER: 80-60 mm     |  |
|                                                                                   |        |      |                      | DRILLER: GEOTECHNICAL    |           | SCREEN TYPE & DIAMETER: HDPE 50mm |                                                            |                                                         |                                 |  |
|                                                                                   |        |      |                      | LOGGED BY: NL APPR'D BY: |           | SCREEN SLOT SIZE: 0.5 mm          |                                                            |                                                         |                                 |  |
|                                                                                   |        |      |                      |                          |           | DESCRIPTION                       | COMMENTS                                                   |                                                         |                                 |  |
|  |        |      |                      |                          |           | 0                                 | Leaf litter and rootlets (TOPSOIL)                         | Damp                                                    | 0                               |  |
|                                                                                   |        |      |                      |                          |           |                                   | Loose black, sandy ASH with some brown silt. (MADE GROUND) |                                                         |                                 |  |
|                                                                                   |        |      |                      |                          |           | 0.5                               | Becoming looser at 0.5m                                    | Wet                                                     | 0.5                             |  |
|                                                                                   |        |      |                      |                          |           | 1.0                               | Less ash with depth<br>Silt content increases with depth   | Water strike at 0.9m<br>Moderate odour, no staining     | 1.0                             |  |
|                                                                                   |        |      |                      |                          |           | 1.5                               |                                                            |                                                         | 1.5                             |  |
|                                                                                   |        |      |                      |                          |           | 2.0                               | Firm, grey, silty CLAY with yellow streaks                 |                                                         | 2.0                             |  |
|                                                                                   |        |      |                      |                          |           | 2.0                               | Fine sandy SILT with very frequent grey-brown gravel       | Strong heavy hydrocarbon odour and staining and product | 2.0                             |  |
|                                                                                   |        |      |                      |                          |           |                                   | Borehole terminated at 2.2 mbgl on collapse                |                                                         | 2.5                             |  |
|                                                                                   |        |      |                      |                          |           | 2.5                               |                                                            |                                                         | 2.5                             |  |
|                                                                                   |        |      |                      |                          |           | 3.0                               |                                                            |                                                         | 3.0                             |  |
|                                                                                   |        |      |                      |                          |           | 3.5                               |                                                            |                                                         | 3.5                             |  |
|                                                                                   |        |      |                      |                          |           | 4.0                               |                                                            |                                                         | 4.0                             |  |
|                                                                                   |        |      |                      |                          |           | 4.5                               |                                                            |                                                         | 4.5                             |  |
|                                                                                   |        |      |                      |                          |           | 5.0                               |                                                            |                                                         | 5.0                             |  |

| LOCATION / NOTES:                                                                                                                        |  | LEGEND                                                                                                                                         |  | BOREHOLE LOG                                                                                              |  |
|------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------|--|
| 1. All measurements in m below ground level (mbgl)<br>2. Borehole collapsed to 1.3 m, casing pushed into sludge at base of hole to 1.5 m |  | ☒ Disturbed Sample<br>■ Undisturbed Sample<br>* Headspace Analysis<br>† Down Borehole Analysis<br>▽ Groundwater Table<br>▽ Perched Water Table |  | <b>WESTERN MARGIN INVESTIGATION</b><br><b>TRIANGLE SEPARATOR AREA</b><br><b>BP LLANDARCY REFINERY LTD</b> |  |
|                                                                                                                                          |  | <b>URS</b><br>Dames & Moore<br>O'Brien Kreitzberg<br>Thorburn Colquhoun                                                                        |  | App'd: <b>DRAFT</b><br>Ref: <b>NL/CR/BR5</b><br>Date: <b>APR 2001</b><br>Job No: <b>39991-016-402</b>     |  |

| BOREHOLE<br>CONSTRUCTION | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY | BOREHOLE NUMBER: <b>RHRW042</b>                                                                                                                                                                                  |                                                               | PAGE 1 of 1                       |     |
|--------------------------|--------|------|----------------------|-------------|-----------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-----------------------------------|-----|
|                          | NUMBER | TYPE |                      |             |           |         | START DATE: 05/02/01                                                                                                                                                                                             |                                                               | DRILLING METHOD: WINDOW SAMPLER   |     |
|                          |        |      |                      |             |           |         | FINISH DATE: 05/02/01                                                                                                                                                                                            |                                                               | BOREHOLE DIAMETER: 80-60 mm       |     |
|                          |        |      |                      |             |           |         | DRILLER: GEOTECHNICAL                                                                                                                                                                                            |                                                               | SCREEN TYPE & DIAMETER: HDPE 50mm |     |
|                          |        |      |                      |             |           |         | LOGGED BY: NL APPR'D BY:                                                                                                                                                                                         |                                                               | SCREEN SLOT SIZE: 0.5 mm          |     |
|                          |        |      |                      |             |           |         | DESCRIPTION                                                                                                                                                                                                      | COMMENTS                                                      |                                   |     |
|                          |        |      |                      |             |           |         | 0 Leaf litter and rootlets (TOPSOIL)<br>Loose black-brown (with some orange mottling), silt and sand sized ASH with occasional gravel. (MADE GROUND)<br>Becoming stiffer with depth, compacted and more cohesive | Heavy hydrocarbon odour and sheen<br><br>Water strike at 0.9m | 0                                 |     |
|                          |        |      |                      |             |           |         |                                                                                                                                                                                                                  |                                                               |                                   | 0.5 |
|                          |        |      |                      |             |           |         |                                                                                                                                                                                                                  |                                                               |                                   | 1.0 |
|                          |        |      |                      |             |           |         |                                                                                                                                                                                                                  |                                                               |                                   | 1.5 |
|                          |        |      |                      |             |           |         | Borehole terminated at 1.2 mbgl on refusal                                                                                                                                                                       |                                                               | 2.0                               |     |
|                          |        |      |                      |             |           |         |                                                                                                                                                                                                                  |                                                               | 2.5                               |     |
|                          |        |      |                      |             |           |         |                                                                                                                                                                                                                  |                                                               | 3.0                               |     |
|                          |        |      |                      |             |           |         |                                                                                                                                                                                                                  |                                                               | 3.5                               |     |
|                          |        |      |                      |             |           |         |                                                                                                                                                                                                                  |                                                               | 4.0                               |     |
|                          |        |      |                      |             |           |         |                                                                                                                                                                                                                  |                                                               | 4.5                               |     |
|                          |        |      |                      |             |           |         |                                                                                                                                                                                                                  |                                                               | 5.0                               |     |

|                                                                                    |  |                                                                                                                                                     |  |                                                                                                                                                                                                                             |  |                                                                                                     |  |
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| <b>LOCATION / NOTES:</b><br><br>1. All measurements in m below ground level (mbgl) |  | <b>LEGEND</b><br>Disturbed Sample<br>Undisturbed Sample<br>Headspace Analysis<br>Down Borehole Analysis<br>Groundwater Table<br>Perched Water Table |  | <b>BOREHOLE LOG</b><br>Job Title <b>WESTERN MARGIN INVESTIGATION</b><br>Location <b>TRIANGLE SEPARATOR AREA</b><br>Client <b>BP LLANDARCY REFINERY LTD</b><br><br>Dames & Moore<br>O'Brien Kreitzberg<br>Thorburn Colquhoun |  | App'd <b>DRAFT</b><br>Ref. <b>NL/CR/BRS</b><br>Date <b>APR 2001</b><br>Job No. <b>39991-016-402</b> |  |
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| BOREHOLE<br>CONSTRUCTION | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY                                                                             | BOREHOLE NUMBER: <b>RHRW040</b>      |                      | PAGE 1 of 1                       |  |
|--------------------------|--------|------|----------------------|-------------|-----------|-------------------------------------------------------------------------------------|--------------------------------------|----------------------|-----------------------------------|--|
|                          | NUMBER | TYPE |                      |             |           |                                                                                     | START DATE: 05/02/01                 |                      | DRILLING METHOD: WINDOW SAMPLER   |  |
|                          |        |      |                      |             |           |                                                                                     | FINISH DATE: 05/02/01                |                      | BOREHOLE DIAMETER: 80-60 mm       |  |
|                          |        |      |                      |             |           |                                                                                     | DRILLER: GEOTECHNICAL                |                      | SCREEN TYPE & DIAMETER: HDPE 50mm |  |
|                          |        |      |                      |             |           |                                                                                     | LOGGED BY: NL APPR'D BY:             |                      | SCREEN SLOT SIZE: 0.5 mm          |  |
|                          |        |      |                      |             |           | DESCRIPTION                                                                         | COMMENTS                             |                      |                                   |  |
|                          |        |      |                      |             |           | Leaf litter and vegetation (TOPSOIL)                                                | Damp                                 | 0                    |                                   |  |
|                          |        |      |                      |             |           | Black-brown, sandy and gravelly ASH (MADE GROUND)                                   |                                      | Water strike at 0.5m | 0.5                               |  |
|                          |        |      |                      |             |           | Well sorted, loose brown SILT with some fine sand, some organic matter and rootlets | Hydrocarbon sheen and moderate odour | 1.0                  |                                   |  |
|                          |        |      |                      |             |           | Soft, grey silty CLAY with occasional gravel                                        |                                      | 1.5                  |                                   |  |
|                          |        |      |                      |             |           | Borehole terminated at 1.15 mbgl on refusal                                         |                                      | 2.0                  |                                   |  |
|                          |        |      |                      |             |           |                                                                                     |                                      | 2.5                  |                                   |  |
|                          |        |      |                      |             |           |                                                                                     |                                      | 3.0                  |                                   |  |
|                          |        |      |                      |             |           |                                                                                     |                                      | 3.5                  |                                   |  |
|                          |        |      |                      |             |           |                                                                                     |                                      | 4.0                  |                                   |  |
|                          |        |      |                      |             |           |                                                                                     |                                      | 4.5                  |                                   |  |
|                          |        |      |                      |             |           |                                                                                     |                                      | 5.0                  |                                   |  |

|                                                                                    |  |                                                                                                                                                     |                                                                                                                                                                                                                             |                                                                                                     |
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| <b>LOCATION / NOTES:</b><br><br>1. All measurements in m below ground level (mbgl) |  | <b>LEGEND</b><br>Disturbed Sample<br>Undisturbed Sample<br>Headspace Analysis<br>Down Borehole Analysis<br>Groundwater Table<br>Perched Water Table | <b>BOREHOLE LOG</b><br>Job Title <b>WESTERN MARGIN INVESTIGATION</b><br>Location <b>TRIANGLE SEPARATOR AREA</b><br>Client <b>BP LLANDARCY REFINERY LTD</b><br><br>Dames & Moore<br>O'Brien Kreitzberg<br>Thorburn Colquhoun | App'd <b>DRAFT</b><br>Ref. <b>NL/CR/BRS</b><br>Date <b>APR 2001</b><br>Job No. <b>39991-016-402</b> |
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| BOREHOLE<br>CONSTRUCTION | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY                                    | BOREHOLE NUMBER: <b>RHRW032</b> |                                    | PAGE 1 of 1                          |     |
|--------------------------|--------|------|----------------------|-------------|-----------|--------------------------------------------|---------------------------------|------------------------------------|--------------------------------------|-----|
|                          | NUMBER | TYPE |                      |             |           |                                            | START DATE: 08/01/01            |                                    | DRILLING METHOD: DYNAMIC SAMPLING    |     |
|                          |        |      |                      |             |           |                                            | FINISH DATE: 08/01/01           |                                    | BOREHOLE DIAMETER: 143/128/113/98 mm |     |
|                          |        |      |                      |             |           |                                            | DRILLER: Geotechnical           |                                    | SCREEN TYPE & DIAMETER: HDPE 1 mm    |     |
|                          |        |      |                      |             |           |                                            | LOGGED BY: SG APPR'D BY:        |                                    | SCREEN SLOT SIZE: 1 mm               |     |
|                          |        |      |                      |             |           | DESCRIPTION                                |                                 | COMMENTS                           |                                      |     |
|                          |        |      |                      |             |           | 0                                          |                                 | No odour or staining               |                                      | 0   |
|                          |        |      |                      |             |           | Borehole terminated at 3.0 mbgl on refusal |                                 |                                    |                                      |     |
|                          |        |      |                      |             |           | 0.5                                        |                                 | No odour or staining               |                                      | 0.5 |
|                          |        |      |                      |             |           | 1.0                                        |                                 | No odour or staining               |                                      | 1.0 |
|                          |        |      |                      |             |           | 1.5                                        |                                 | No odour or staining. Dry          |                                      | 1.5 |
|                          |        |      |                      |             |           | 2.0                                        |                                 | Damp. Slight hydrocarbon odour     |                                      | 2.0 |
|                          |        |      |                      |             |           | 2.5                                        |                                 | Slight hydrocarbon dour            |                                      | 2.5 |
|                          |        |      |                      |             |           | 3.0                                        |                                 | Very strong hydrocarbon odour. Wet |                                      | 3.0 |
|                          |        |      |                      |             |           | 3.5                                        |                                 | Very strong hydrocarbon odour      |                                      | 3.5 |
|                          |        |      |                      |             |           | 4.0                                        |                                 | Very strong hydrocarbon odour      |                                      | 4.0 |
| 4.5                      |        |      |                      | 4.5         |           |                                            |                                 |                                    |                                      |     |
| 5.0                      |        |      |                      | 5.0         |           |                                            |                                 |                                    |                                      |     |

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

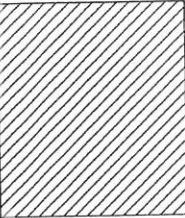
**BOREHOLE LOG**

|                                                               |                                     |               |  |
|---------------------------------------------------------------|-------------------------------------|---------------|--|
| Job Title                                                     | <b>WESTERN MARGIN INVESTIGATION</b> |               |  |
| Location                                                      | <b>BP LLANDARCY REFINERY</b>        |               |  |
| Client                                                        | <b>BP LLANDARCY LTD</b>             |               |  |
| <br>Dames & Moore<br>O'Brien Kreitzberg<br>Thorburn Colquhoun | App'd                               | DRAFT         |  |
|                                                               | Ref.                                | SG/CR/BRS     |  |
|                                                               | Date                                | MAR 2001      |  |
|                                                               | Job No.                             | 39991-016-402 |  |

| BOREHOLE<br>CONSTRUCTION | SAMPLE |                                            | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY                  | BOREHOLE NUMBER: <b>RHRW031B</b>                                                   |                                 | PAGE 1 of 1                          |  |
|--------------------------|--------|--------------------------------------------|----------------------|-------------|-----------|--------------------------|------------------------------------------------------------------------------------|---------------------------------|--------------------------------------|--|
|                          | NUMBER | TYPE                                       |                      |             |           |                          | START DATE: 08/01/01                                                               |                                 | DRILLING METHOD: DYNAMIC SAMPLING    |  |
|                          |        |                                            |                      |             |           |                          | FINISH DATE: 08/01/01                                                              |                                 | BOREHOLE DIAMETER: 143/128/113/98 mm |  |
|                          |        |                                            |                      |             |           |                          | DRILLER: Geotechnical                                                              |                                 | SCREEN TYPE & DIAMETER: HDPE 1 mm    |  |
|                          |        |                                            |                      |             |           | LOGGED BY: sc APPR'D BY: |                                                                                    | SCREEN SLOT SIZE: 1 mm          |                                      |  |
|                          |        |                                            |                      |             |           | DESCRIPTION              |                                                                                    | COMMENTS                        |                                      |  |
|                          |        |                                            |                      |             |           | 0                        | Soft, dark brown, sandy, silty GRAVEL with frequent wood fragments (TOPSOIL)       | Damp. No odour or staining      | 0                                    |  |
|                          |        |                                            |                      |             |           |                          | Loose, light brown-yellow, very sandy GRAVEL                                       | Damp. No odour or staining      |                                      |  |
|                          |        |                                            |                      |             |           | 0.5                      | Soft, brown, slightly sandy SILT with occasional gravel with rootlets              | Dry. No odour or staining       | 0.5                                  |  |
|                          |        |                                            |                      |             |           |                          | Loose, light brown, very silty, sandy GRAVEL with some cobbles                     | Dry. No odour or staining       |                                      |  |
|                          |        |                                            |                      |             |           | 1.0                      | Loose, light to mid-orange-brown, sandy, cobbly, sub-rounded to sub-angular GRAVEL | Dry. No odour or staining       | 1.0                                  |  |
|                          |        |                                            |                      |             |           |                          |                                                                                    |                                 |                                      |  |
|                          |        |                                            |                      |             |           | 1.5                      |                                                                                    |                                 | 1.5                                  |  |
|                          |        |                                            |                      |             |           |                          | Loose, grey, sandy, cobbly fine to coarse sub-angular GRAVEL                       | Moist. Slight to moderate odour |                                      |  |
|                          |        |                                            |                      |             |           | 2.0                      |                                                                                    |                                 | 2.0                                  |  |
|                          |        |                                            |                      |             |           |                          | Very cobbly from 2.2m                                                              | Staining from 2.2m              |                                      |  |
|                          |        |                                            |                      |             |           |                          |                                                                                    |                                 |                                      |  |
|                          | 2.5    | Fractured SANDSTONE (BEDROCK)              | Wet. Slight odour    | 2.5         |           |                          |                                                                                    |                                 |                                      |  |
|                          |        | Borehole terminated at 2.7 mbgl on refusal |                      |             |           |                          |                                                                                    |                                 |                                      |  |
|                          | 3.0    |                                            |                      | 3.0         |           |                          |                                                                                    |                                 |                                      |  |
|                          | 3.5    |                                            |                      | 3.5         |           |                          |                                                                                    |                                 |                                      |  |
|                          | 4.0    |                                            |                      | 4.0         |           |                          |                                                                                    |                                 |                                      |  |
|                          | 4.5    |                                            |                      | 4.5         |           |                          |                                                                                    |                                 |                                      |  |
|                          | 5.0    |                                            |                      | 5.0         |           |                          |                                                                                    |                                 |                                      |  |

| LOCATION / NOTES:                                  |  | LEGEND             |                        | BOREHOLE LOG                                                                                       |  |
|----------------------------------------------------|--|--------------------|------------------------|----------------------------------------------------------------------------------------------------|--|
| 1. All measurements in m below ground level (mbgl) |  | Disturbed Sample   | Undisturbed Sample     | Job Title <b>WESTERN MARGIN INVESTIGATION</b>                                                      |  |
|                                                    |  | Headspace Analysis | Down Borehole Analysis | Location <b>BP LLANDARCY REFINERY</b>                                                              |  |
|                                                    |  | Groundwater Table  | Perched Water Table    | Client <b>BP LLANDARCY LTD</b>                                                                     |  |
|                                                    |  |                    |                        |                                                                                                    |  |
|                                                    |  |                    |                        | App'd _____ DRAFT<br>Ref. <b>SG/CR/BRS</b><br>Date <b>MAR 2001</b><br>Job No. <b>39991-016-402</b> |  |

| BOREHOLE<br>CONSTRUCTION                                                         | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER              | DEPTH (m) | GEOLOGY               | BOREHOLE NUMBER: <b>RHRW031</b> |                                                                                          | PAGE 1 of 1                       |                            |  |      |  |
|----------------------------------------------------------------------------------|--------|------|----------------------|--------------------------|-----------|-----------------------|---------------------------------|------------------------------------------------------------------------------------------|-----------------------------------|----------------------------|--|------|--|
|                                                                                  | NUMBER | TYPE |                      |                          |           |                       | START DATE: 08/01/01            |                                                                                          | DRILLING METHOD: DYNAMIC SAMPLING |                            |  |      |  |
|                                                                                  |        |      |                      |                          |           |                       | FINISH DATE: 08/01/01           |                                                                                          | BOREHOLE DIAMETER: 128/113/98 mm  |                            |  |      |  |
|                                                                                  |        |      |                      |                          |           |                       | DRILLER: Geotechnical           |                                                                                          | SCREEN TYPE & DIAMETER: N/A       |                            |  |      |  |
|                                                                                  |        |      |                      | LOGGED BY: SC APPR'D BY: |           | SCREEN SLOT SIZE: N/A |                                 |                                                                                          |                                   |                            |  |      |  |
|                                                                                  |        |      |                      |                          |           | DESCRIPTION           |                                 | COMMENTS                                                                                 |                                   |                            |  |      |  |
|  |        |      |                      |                          |           | 0                     |                                 | Soft, loose, dark brown, sandy, silty GRAVEL with rootlets (TOPSOIL)                     |                                   | Damp. No odour or staining |  | 0    |  |
|                                                                                  |        |      |                      |                          |           | 0.25                  |                                 | Loose, light brown-yellow, very sandy, sub-angular to sub-rounded, fine to medium GRAVEL |                                   | Damp. No odour or staining |  | 0.25 |  |
|                                                                                  |        |      |                      |                          |           | 0.5                   |                                 | Soft, brown, slightly sandy SILT with occasional gravel with rootlets                    |                                   | Dry. No odour or staining  |  | 0.5  |  |
|                                                                                  |        |      |                      |                          |           | 0.75                  |                                 | Soft, orange-brown, slightly clayey, slightly sandy SILT                                 |                                   | Damp. No odour or staining |  | 0.75 |  |
|                                                                                  |        |      |                      |                          |           | 1.0                   |                                 | Boulder at base                                                                          |                                   |                            |  | 1.0  |  |
|                                                                                  |        |      |                      |                          |           | 1.0                   |                                 | Borehole terminated at 0.7 mbgl on refusal                                               |                                   |                            |  | 1.0  |  |
|                                                                                  |        |      |                      |                          |           | 1.5                   |                                 |                                                                                          |                                   |                            |  | 1.5  |  |
|                                                                                  |        |      |                      |                          |           | 2.0                   |                                 |                                                                                          |                                   |                            |  | 2.0  |  |
|                                                                                  |        |      |                      |                          |           | 2.5                   |                                 |                                                                                          |                                   |                            |  | 2.5  |  |
|                                                                                  |        |      |                      |                          |           | 3.0                   |                                 |                                                                                          |                                   |                            |  | 3.0  |  |
|                                                                                  |        |      |                      |                          |           | 3.5                   |                                 |                                                                                          |                                   |                            |  | 3.5  |  |
|                                                                                  |        |      |                      |                          |           | 4.0                   |                                 |                                                                                          |                                   |                            |  | 4.0  |  |
|                                                                                  |        |      |                      |                          |           | 4.5                   |                                 |                                                                                          |                                   |                            |  | 4.5  |  |
|                                                                                  |        |      |                      |                          |           | 5.0                   |                                 |                                                                                          |                                   |                            |  | 5.0  |  |

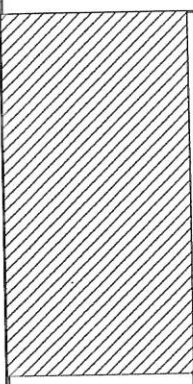
  

| LOCATION / NOTES:                                   |  | LEGEND                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | BOREHOLE LOG                                                                                                                                      |  |                                                                                                     |  |
|-----------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------|--|
| 1. All measurements in m below ground level (mbgl)  |  |  Disturbed Sample<br> Undisturbed Sample<br> Headspace Analysis<br> Down Borehole Analysis<br> Groundwater Table<br> Perched Water Table |  | Job Title <b>WESTERN MARGIN INVESTIGATION</b><br>Location <b>BP LLANDARCY REFINERY</b><br>Client <b>BP LLANDARCY LTD</b>                          |  |                                                                                                     |  |
| 2. Borehole backfilled with bentonite on completion |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  | <br>Dames & Moore<br>O'Brien Kreitzberg<br>Thorburn Colquhoun |  | App'd <b>DRAFT</b><br>Ref. <b>SG/CR/BR5</b><br>Date <b>MAR 2001</b><br>Job No. <b>39991-016-402</b> |  |

| BOREHOLE<br>CONSTRUCTION | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY | BOREHOLE NUMBER: <b>RHRW030C</b>                                                                                            |                            | PAGE 1 of 1                       |  |
|--------------------------|--------|------|----------------------|-------------|-----------|---------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------------|--|
|                          | NUMBER | TYPE |                      |             |           |         | START DATE: 08/01/01                                                                                                        |                            | DRILLING METHOD: DYNAMIC SAMPLING |  |
|                          |        |      |                      |             |           |         | FINISH DATE: 08/01/01                                                                                                       |                            | BOREHOLE DIAMETER: 128/113/98 mm  |  |
|                          |        |      |                      |             |           |         | DRILLER: Geotechnical                                                                                                       |                            | SCREEN TYPE & DIAMETER: N/A       |  |
|                          |        |      |                      |             |           |         | LOGGED BY: sc APPR'D BY:                                                                                                    |                            | SCREEN SLOT SIZE: N/A             |  |
|                          |        |      |                      |             |           |         | DESCRIPTION                                                                                                                 | COMMENTS                   |                                   |  |
|                          |        |      |                      |             |           |         | Soft, dark brown, sandy SILT with rootlets and occasional gravel (TOPSOIL)                                                  | Wet. No odour or staining  | 0                                 |  |
|                          |        |      |                      |             |           |         | Medium soft, brown, sandy SILT with occasional gravel                                                                       | Damp. No odour or staining |                                   |  |
|                          |        |      |                      |             |           |         | Loose, orange-brown, sandy SILT with occasional fine to medium, sub-rounded and cobbles                                     | Damp. No odour or staining | 0.5                               |  |
|                          |        |      |                      |             |           |         | Soft to firm, light brown, gravelly, very sandy SILT with rounded sandstone cobbles<br>Becomes siltier towards base of unit | Damp. No odour or staining |                                   |  |
|                          |        |      |                      |             |           |         | Light grey-brown, cobbly (sub-angular to sub-rounded), gravelly, silty SAND                                                 | Damp. No odour or staining | 1.0                               |  |
|                          |        |      |                      |             |           |         | Fractured SANDSTONE (BEDROCK)                                                                                               | Dry. No odour or staining  | 1.5                               |  |
|                          |        |      |                      |             |           |         | Borehole terminated at 2.0 mbgl on refusal                                                                                  |                            | 2.0                               |  |
|                          |        |      |                      |             |           |         |                                                                                                                             |                            | 2.5                               |  |
|                          |        |      |                      |             |           |         |                                                                                                                             |                            | 3.0                               |  |
|                          |        |      |                      |             |           |         |                                                                                                                             |                            | 3.5                               |  |
|                          |        |      |                      |             |           |         |                                                                                                                             |                            | 4.0                               |  |
|                          |        |      |                      |             |           |         |                                                                                                                             |                            | 4.5                               |  |
|                          |        |      |                      |             |           |         |                                                                                                                             |                            | 5.0                               |  |

|                                                                                                                                               |  |                                                                                                                                                     |  |                                                                                                                                                 |  |                                                                                                     |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------|--|
| <b>LOCATION / NOTES:</b><br><br>1. All measurements in m below ground level (mbgl)<br><br>2. Borehole backfilled with bentonite on completion |  | <b>LEGEND</b><br>Disturbed Sample<br>Undisturbed Sample<br>Headspace Analysis<br>Down Borehole Analysis<br>Groundwater Table<br>Perched Water Table |  | <b>BOREHOLE LOG</b><br>Job Title <b>WESTERN MARGIN INVESTIGATION</b><br>Location <b>BP LLANDARCY REFINERY</b><br>Client <b>BP LLANDARCY LTD</b> |  |                                                                                                     |  |
|                                                                                                                                               |  |                                                                                                                                                     |  |                                                                                                                                                 |  | App'd <b>DRAFT</b><br>Ref. <b>SG/CR/BRs</b><br>Date <b>MAR 2001</b><br>Job No. <b>39991-016-402</b> |  |

| BOREHOLE<br>CONSTRUCTION                                                         | SAMPLE |      | SOIL VAPOUR<br>(ppm) | GROUNDWATER | DEPTH (m) | GEOLOGY                                                                                                                                | BOREHOLE NUMBER: <b>RHRW030B</b> |     | PAGE 1 of 1                       |  |
|----------------------------------------------------------------------------------|--------|------|----------------------|-------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----|-----------------------------------|--|
|                                                                                  | NUMBER | TYPE |                      |             |           |                                                                                                                                        | START DATE: 08/01/01             |     | DRILLING METHOD: DYNAMIC SAMPLING |  |
|                                                                                  |        |      |                      |             |           |                                                                                                                                        | FINISH DATE: 08/01/01            |     | BOREHOLE DIAMETER: 128/113/98 mm  |  |
|                                                                                  |        |      |                      |             |           |                                                                                                                                        | DRILLER: Geotechnical            |     | SCREEN TYPE & DIAMETER: N/A       |  |
|                                                                                  |        |      |                      |             |           |                                                                                                                                        | LOGGED BY: sc APPR'D BY:         |     | SCREEN SLOT SIZE: N/A             |  |
|                                                                                  |        |      |                      |             |           | DESCRIPTION                                                                                                                            | COMMENTS                         |     |                                   |  |
|  |        |      |                      |             |           | Soft, dark brown, sandy SILT with rootlets (TOPSOIL)                                                                                   | Wet. No odour or staining        | 0   |                                   |  |
|                                                                                  |        |      |                      |             |           | Medium soft, brown, sandy SILT with occasional gravel                                                                                  | Damp. No odour or staining       |     |                                   |  |
|                                                                                  |        |      |                      |             |           | Soft, orange, slightly sandy, SILT with rootlets, occasional gravel and rare cobbles                                                   | Dry. No odour or staining        | 0.5 |                                   |  |
|                                                                                  |        |      |                      |             |           | Soft to firm, light brown, very gravelly (sub-angular), and very sandy SILT with rootlets and occasional sub-rounded sandstone cobbles | Damp. No odour or staining       |     |                                   |  |
|                                                                                  |        |      |                      |             |           | Becomes siltier and more orange-brown at 0.9m                                                                                          |                                  | 1.0 |                                   |  |
|                                                                                  |        |      |                      |             |           | Light grey-brown cobbly, gravelly (sub-rounded to sub-angular), silty SAND                                                             | Damp. No odour or staining       |     |                                   |  |
|                                                                                  |        |      |                      |             |           | Borehole terminated at 1.2 mbgl on refusal                                                                                             |                                  |     |                                   |  |
|                                                                                  |        |      |                      |             |           |                                                                                                                                        |                                  | 1.5 |                                   |  |
|                                                                                  |        |      |                      |             |           |                                                                                                                                        |                                  | 2.0 |                                   |  |
|                                                                                  |        |      |                      |             |           |                                                                                                                                        |                                  | 2.5 |                                   |  |
|                                                                                  |        |      |                      |             |           |                                                                                                                                        |                                  | 3.0 |                                   |  |
|                                                                                  |        |      |                      |             |           |                                                                                                                                        |                                  | 3.5 |                                   |  |
|                                                                                  |        |      |                      |             |           |                                                                                                                                        |                                  | 4.0 |                                   |  |
|                                                                                  |        |      |                      |             |           |                                                                                                                                        |                                  | 4.5 |                                   |  |
|                                                                                  |        |      |                      |             |           |                                                                                                                                        |                                  | 5.0 |                                   |  |

|                                                                                                                                               |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                 |              |
|-----------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>LOCATION / NOTES:</b><br><br>1. All measurements in m below ground level (mbgl)<br><br>2. Borehole backfilled with bentonite on completion |  | <b>LEGEND</b><br> Disturbed Sample<br> Undisturbed Sample<br> Headspace Analysis<br> Down Borehole Analysis<br> Groundwater Table<br> Perched Water Table | <b>BOREHOLE LOG</b><br>Job Title <b>WESTERN MARGIN INVESTIGATION</b><br>Location <b>BP LLANDARCY REFINERY</b><br>Client <b>BP LLANDARCY LTD</b> |              |
|                                                                                                                                               |  | <br>Dames & Moore<br>O'Brien Kreitzberg<br>Thorburn Colquhoun                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | App'd <b>SG/CR/BRs</b><br>Ref. <b>MAR 2001</b><br>Date <b>39991-016-402</b><br>Job No.                                                          | <b>DRAFT</b> |