On 22 July 2014, Barrick (Cowal) Pty Ltd (Barrick) was granted approval by the NSW Minister for Planning to modify the Development Consent (DA 14/98) for the Cowal Gold Mine (CGM) Extension Modification under Section 75W of the Environmental Planning and Assessment Act, 1979. The CGM Extension Modification involves the continuation and extension of open pit mining and processing operations at the CGM for an additional operational life of approximately 5 years (i.e. to 2024).

As described in the Cowal Gold Mine Extension Modification Environmental Assessment (Barrick, 2013), the extension of the open pit has been designed to maximise ore recovery, while maintaining appropriate offset distances to the existing lake isolation system and processing facilities. As such, the CGM Extension Modification would not change the existing isolation system that currently separates the open pit from Lake Cowal (comprising the temporary isolation bund, lake protection bund and perimeter waste rock emplacement).

Additionally, Condition 4.5(c) of the Development Consent remained fundamentally unchanged (i.e. the changes were limited to editorial changes and revision of regulatory agency names).

Notwithstanding, the following key components of the modified layout of the CGM are relevant to the Monitoring Programme for the Detection of any Movement of the Lake Protection Bund, Water Storage and Tailings Structures and Pit/Void Walls:

- the modified design of the open pit;
- the construction of a new water supply storage (D10); and
- the modified design of contained water storage D5 to accommodate for the extension of the open pit.

Accordingly, this Addendum has been prepared to incorporate these components associated with the approved CGM (and to include other key administrative revisions).
COWAL GOLD PROJECT

ADDITION TO THE MONITORING PROGRAMME FOR THE DETECTION OF ANY MOVEMENT OF THE LAKE PROTECTION BUND, WATER STORAGE AND TAILINGS STRUCTURES AND PIT/VOID WALLS

APRIL 2015
Project No. HAL-02-07
Document No. 00656655
ADDENDUM
Monitoring Programme for the Detection of any Movement of the Lake Protection Bund, Water Storage and Tailings Structures and Pit/Void Walls

1. Replace Figure 2 with Figure 2 attached.

2. Replace the text in Section 4.1.2 with the following:

The proposed mining method is a conventional open pit, occurring in stages as the pit is widened and progressively deepened. At the end of mining, the open pit would have a maximum depth at approximately -263 m Australian height datum (AHD) (i.e. approximately 470 m below the natural surface level) and a surface area of approximately 131 ha (Barrick, 2013).

Set back from the void on three sides will be the revegetated slope of the mine waste rock emplacements, comprising the northern waste rock emplacement, southern waste rock emplacement and perimeter waste rock emplacement (Figure 2).

Based on findings of geotechnical investigations, and consistent with existing operations, the pit slope design criteria of the approved/extended open pit have been developed in consideration of maintaining factors of safety appropriate for operating conditions and the long-term stability of the lake isolation system. The geotechnical modelling and analysis undertaken to determine suitable pit slope design criteria considered historical slope performance and geotechnical data gained over previous and current studies for the existing open pit for both surficial (soil/highly weathered rock) and hard rock material.

Single benches will be used for the oxide rock, with berms approximately 9 to 13 m in width, batter angles at 45 degrees (°) and with an inter-ramp angle of 23 to 36° (variable according to open pit sector).

Primary rock will be mined in multiple benches, with berms up to 13 m in width, batter angles between 60 to 75° and with an inter-ramp angle of 40 to 60° (variable according to open pit sector).

The berm widths and slope angles will continue to be reviewed and monitored through ongoing geotechnical studies and data collection during mine development.

The final void would likely fill slowly reaching an equilibrium water level between approximately RL 125 m and RL 135 m (i.e. approximately 80 m below spill level) over several hundred years (Gilbert & Associates, 2013). This is lower than the original predictions (North Limited, 1998) due to lower groundwater inflows and higher evaporation rates from the larger void surface area (Gilberts & Associates, 2013). The void water is not predicted to spill and would be hydrogeologically isolated from and lower than water in Lake Cowal, even allowing for adverse future climate change predictions (Gilbert & Associates, 2013).

The predicted maximum water volume held in the modified open pit in all simulated climatic sequences was 1,441 ML (Gilberts & Associates, 2013). However, the risk of such a large water volume is low (Gilberts & Associates, 2013). Model results indicate that there is only a 5% risk of exceeding a pit water volume of 706 ML, and a 20% risk of exceeding a pit water volume of 112 ML at any time during the remaining mine life (Gilberts & Associates, 2013).
3. Replace paragraph two of Section 4.1.4 with the following:

The mine water management system includes some nine collection and containment storages which together provide for control of site water. The function, design criteria and approximate capacity of these contained water storages is summarised in Table 4. The location of these water storages is shown on Figure 2.

4. Replace Table 4 with:

<table>
<thead>
<tr>
<th>Storage Number</th>
<th>Catchment/Function</th>
<th>Design Criteria</th>
<th>Approximate Storage Capacity (ML)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1 (Existing)</td>
<td>Runoff from the northern perimeter of the northern waste rock emplacement. Collected water is pumped to D6.</td>
<td>Runoff from contributing catchment resulting from a 1 in 100 year ARI rainfall event of 48 hours duration</td>
<td>57</td>
</tr>
<tr>
<td>D2 (Existing)</td>
<td>Runoff/seepage from ROM and low grade stockpile areas from the northern waste rock emplacement area, the batters of the northern tailings storage facility and other areas within the ICDS. Collected water is pumped to D6 or D9.</td>
<td>Runoff from contributing catchment resulting from a 1 in 100 year ARI rainfall event of 48 hours duration</td>
<td>195</td>
</tr>
<tr>
<td>D3 (Existing)</td>
<td>Runoff from perimeter catchment surrounding the open pit and the perimeter waste rock emplacement areas. Collected water is pumped to D6.</td>
<td>Runoff from contributing catchment resulting from a 1 in 100 year ARI rainfall event of 48 hours duration</td>
<td>39</td>
</tr>
<tr>
<td>D4 (Existing)</td>
<td>Runoff from the southern perimeter of the southern waste rock emplacement. Collected water is pumped to D6 or D9.</td>
<td>Runoff from contributing catchment resulting from a 1 in 100 year ARI rainfall event of 48 hours duration</td>
<td>69</td>
</tr>
<tr>
<td>D5 (as modified for the CGM Extension Modification approved on 22 July 2014)</td>
<td>Process plant area drainage collection. Water is pumped to D6.</td>
<td>Runoff from a 1 in 1,000 year ARI storm of 48 hours duration</td>
<td>92</td>
</tr>
<tr>
<td>D6 (Existing)</td>
<td>Process water supply storage. Main source of process plant make-up water requirements.</td>
<td>1 in 1,000 year ARI storm of 48 hours duration above normal operating level</td>
<td>10</td>
</tr>
<tr>
<td>D8B (Existing)</td>
<td>Runoff from the southern waste rock emplacement, the batters of the southern tailings storage facility and other areas within the ICDS. Water is pumped to D9.</td>
<td>Runoff from contributing catchment resulting from a 1 in 100 year ARI rainfall event of 48 hours duration</td>
<td>43</td>
</tr>
<tr>
<td>D9 (Existing)</td>
<td>Process water supply storage. Storage for raw water. Water is pumped to D6. Some water used for tailings storage facilities lift construction.</td>
<td>1 in 1,000 year ARI storm of 48 hours duration above normal operating level</td>
<td>726</td>
</tr>
<tr>
<td>D10 (additional storage for the CGM Extension Modification approved on 22 July 2014)</td>
<td>Process water supply storage. Storage for raw water. Water is pumped to D9.</td>
<td>1 in 1,000 year ARI storm of 5 days duration above normal operating level</td>
<td>1,500</td>
</tr>
</tbody>
</table>

Source: After Barrick (2013)

5. Remove the paragraph underneath Table 4.
6. Remove the text under Section 5 heading and insert a new Section 5.1 as follows:

### 5.1 OPEN PIT STABILITY MONITORING

The following monitoring/recording measures will be used to monitor and assess pit wall stability:

- a prism monitoring system which includes placement of prisms on each bench of the open pit at approximately 50 m intervals and data analysis software;
- monitoring of pore water pressure in the open pit walls, using a number of vibrating wire piezometers;
- development of a hydrogeological database to record the results of the open pit dewatering programme; and
- weekly geotechnical engineering team inspections.

Survey of slope design is conducted once slope construction is complete to confirm consistency with design criteria. Survey/topographical results are compiled weekly for analysis by the Geotechnical Department.

**Geotechnical Analysis and Review of Ongoing Open Pit Development**

Analysis of pit stability involves review of weekly monitoring results, inspection reports and survey results by the Senior Geotechnical Engineer and Long-term Mine Planning Engineer.

Weekly geotechnical reports are prepared which include targeted Trigger Action Response Plans (TARPs) for relevant trigger events. Trigger events include tension crack movements, prism movement, radar deformation/wall movement and visual inspection observations (e.g. rockfalls, bench cracking). Levels of trigger events are also defined within the TARP including first indication of instability (Trigger Level 1), onset of movement (Trigger Level 2), continuous movement (Trigger Level 3) and failure imminent (Trigger Level 4). Each TARP includes contingency measures, planned response procedures (including evacuation control procedures), required reporting and role responsibilities relevant to each trigger event and trigger level.

Slope design parameters are developed for each pit sector which are reviewed and incorporated into the pit/mine design developed by the Long-term Mine Planning Engineer. Any open pit design changes must be in accordance with Barrick’s open pit design standards/guidelines.

A periodic review of slope design parameters and their effects on phased pit designs, lithology and groundwater is undertaken by the Senior Geotechnical Engineer. Revised pit/mine plans and the final pit design are developed based on the outcome of this review and modelled geology. Potential risk areas are identified and investigated during this review process. Long and short term mine designs are then developed to ensure compatibility with Barrick’s open pit design standards/guidelines.
7. Re-number Sections 5.1 (Visual Assessments) and 5.2 (Survey Assessment), to Sections 5.2 and 5.3 respectively.

8. Insert the following after the second paragraph of Section 9:

**Review of this LPBMP**

In accordance with Condition 9.1(c) of the Development Consent (as modified on 22 July 2014), this LPBMP will be reviewed, within three months of the submission of:

- an Annual Review under Condition 9.1(b);
- an incident report under Condition 9.3(a);
- an audit under Condition 9.2(a);
- an Annual State of the Environment Report under Condition 9.2(b);
- the approval of any modification to the conditions of the Development Consent; or
- any direction of the Secretary under Condition 1.1(c).

Where this review leads to revisions of the LPBMP, then within four weeks of the review, the revised LPBMP will be submitted for the approval of the Secretary of the Department of Planning and Environment (unless otherwise agreed with the Secretary).

This LPBMP will be made publicly available on Barrick's website (www.barrick.com), in accordance with Condition 9.4(a)(iii) of the Development Consent (as modified on 22 July 2014). A hard copy of the LPBMP will also be kept at the CGM.

9. Insert the following references into Section 10 (References):


10. Insert the following Revision Status Register to the front page of the Monitoring Programme for the Detection of any Movement of the Lake Protection Bund, Water Storage and Tailings Structures and Pit/Void Walls:

**Revision Status Register**

<table>
<thead>
<tr>
<th>Section/Page/Annexure</th>
<th>Revision Number</th>
<th>Amendment/Addition</th>
<th>Distribution</th>
<th>DP&amp;E Approval Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addendum</td>
<td>Addendum dated April 2015</td>
<td>Revised to reflect relevant components of the CGM Extension Modification approved by NSW Minister for Planning on 22 July 2014.</td>
<td>NOW, DRE and DP&amp;E</td>
<td>TBC</td>
</tr>
</tbody>
</table>