

# TEP Progress Report

## 1<sup>st</sup> September 2016

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## 1. Purpose

This report addresses the conditions of Schedule 1 of Certificate of Approval (MAN17560).

The water quality data analysis underpinning this report aims to assess if:

1. Water quality of receiving waters was maintained or improved during the period of the TEP (condition 2 of Schedule 1 of Certificate of Approval MAN17560):
2. Identify receiving environmental water quality exceedences during the period of the TEP (condition 4 & 5 of Schedule 1 of Certificate of Approval MAN17560).

## 2. Schedule 1 MAN17560 – TEP Approval Conditions

| Condition No. | Condition                                                                                                                                                                                                                                                                                                                                                                                                            | Capricorn Copper Summary                                                                                                                                                                                                                                                                                              |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1             | All conditions of the EA apply during the period of the TEP unless a condition of this certificate of approval specifies otherwise.                                                                                                                                                                                                                                                                                  | Capricorn Copper understands this condition                                                                                                                                                                                                                                                                           |
| 2             | BMG (CCM) must ensure that the water quality of receiving waters is maintained or improved during the period of the TEP.                                                                                                                                                                                                                                                                                             | Capricorn Copper has worked to maintain and improve the receiving water quality by improving site water drainage, discontinuing discharge, and develop a long term site compliance strategy                                                                                                                           |
| 3             | Contaminant releases may occur from the area defined in Figure 1 as “Old TSF”, subject to condition 2 of this certificate of approval.                                                                                                                                                                                                                                                                               | Capricorn Copper acknowledges that contaminant releases have occurred historically from the area defined as “Old TSF” and is actively working to maintain and improve the receiving water quality through localised drainage earth works, sump maintenance, and implementing a comprehensive site compliance strategy |
| 4             | BMG (CCM) must ensure there is no exceedence of any EA contaminant limit, except for: <ul style="list-style-type: none"> <li>(a) The sulphate contaminant limit within the Section 1 of Gunpowder Creek, subject to condition 2 of this certificate</li> <li>(b) The sulphate contaminant limit within the section of Gunpowder Creek defined in Figure 1 as Section 3 of Gunpowder Creek, which must not</li> </ul> | <p>In the six months since March:</p> <ul style="list-style-type: none"> <li>▪ CCM notes there have been five (5) TEP limit exceedences of the pH parameter in Section 1 of Gunpowder Creek.</li> </ul>                                                                                                               |

|   |                                                                                                                                                                                                                                                |                                                                                                                                                                           |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | exceed 2,000 mg/L during the period of this TEP.                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>CCM notes there have been two (2) TEP exceedances of the pH parameter in Section 3 of Gunpowder Creek.</li> </ul>                  |
| 5 | BMG (CCM) must ensure there is no exceedence of any EA contaminant limit within the section of Magazine Creek defined as 'Section 2: Magazine Ck', except for copper and pH, subject to condition 2 of this certificate of approval.           | <p>In the six months since March:</p> <ul style="list-style-type: none"> <li>CCM notes there have been no TEP limit exceedances in Section 2 of Magazine Creek</li> </ul> |
| 6 | BMG (CCM) must ensure that a review of water quality monitoring data, sufficient to determine compliance and condition 2 of this certificate of approval, is undertaken by an appropriately qualified person at least once per calendar month. | Capricorn Copper will adhere to this condition                                                                                                                            |
| 7 | BMG (CCM) must notify the administering authority within 24 hours of identifying any non-compliance with a condition of this certificate of approval                                                                                           | Capricorn Copper will adhere to this condition                                                                                                                            |
| 8 | The progress of the TEP must be monitored by BMG (CCM) and documented in a report completed at a frequency of once every six months.                                                                                                           | Capricorn Copper will adhere to this condition                                                                                                                            |

### 3. Receiving Environment Water Quality Targets

#### 3.1. Trigger and Contaminant Limits

Since August 2016, CCM has started using site specific trigger and contaminant limits based on reference site percentiles where enough data is available. Prior to this date, both trigger and contaminant limits were based on livestock drinking water guidelines detailed in Schedule C Table 4 of the EA.

The data analysis underpinning this report assesses water quality exceedences in accordance with guideline limit values as noted in the EA, given the time period that the report is analysing.

*Table 1- Receiving water EA Guideline Trigger and Contaminant Limits*

| Parameter        | EA Trigger Limit | EA Contaminant Limit |
|------------------|------------------|----------------------|
| pH (pH units)    | 6 – 8.5          |                      |
| EC (µs/cm)       | 435              | 1000 <sup>1</sup>    |
| Fluoride (mg/L)  | 0.2              | 2                    |
| Sulphate (mg/L)  | 250              | 1000                 |
| Aluminium (mg/L) | 0.055            | 5                    |
| Arsenic (mg/L)   | 0.013            | 0.5                  |
| Boron (mg/L)     | 0.37             | 5                    |
| Cadmium (mg/L)   | 0.0002           | 0.01                 |
| Chromium (mg/L)  | 0.001            | 1                    |
| Cobalt (mg/L)    | -                | 1                    |
| Copper (mg/L)    | 0.0014           | 1                    |
| Lead (mg/L)      | 0.0034           | 0.01                 |
| Manganese (mg/L) | 1.9              | 1.9                  |
| Nickel (mg/L)    | 0.011            | 1                    |
| Uranium (mg/L)   | -                | 0.2                  |
| Zinc (mg/L)      | 0.008            | 20                   |

<sup>1</sup> Electrical conductivity (EC) contaminant limit for receiving waters is TBA at the time this report was written.

Table 2- Interim TEP contaminant limits.

| Parameter | Site | TEP contaminant Limit (mg/L) |
|-----------|------|------------------------------|
| Sulphate  | GPU1 | No Limit <sup>2</sup>        |
|           | GPA2 |                              |
|           | GPA5 |                              |
|           | GPA7 |                              |
|           | GPD1 | 2000                         |
| pH        | MGA1 | No Limit <sup>2</sup>        |
|           | GS2  | No Limit <sup>2</sup>        |
| Copper    | MGA1 | No Limit <sup>2</sup>        |
|           | GS2  | No Limit <sup>2</sup>        |

<sup>2</sup> No contaminant limit is applied for this parameter in these locations for the duration of the TEP, subject to Condition 2 of the TEP Approval Certificate.

#### 4. TEP Action Program Update

| Birla Objective No. | Birla TEP Objective                                                             | Action Item Number | Birla TEP Action                                                                                                                               | Action Status to Date                                                                                                                                                                                       | TEP Nominated Due Date |
|---------------------|---------------------------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| 1)                  | Prevent unauthorised contaminant release from Old TSF area to GP Creek          | 1-6                | Management of Old TSF from a final closure perspective to cease seepage through the facility.                                                  |                                                                                                                                                                                                             |                        |
| 1a)                 | Cease surface seepage expression downstream of Old TSF                          | 1                  | Removal of equipment hardstand (including old gen-set), which may have induced consolidation.                                                  | Noted in May-14 TEP Report as completed.                                                                                                                                                                    | 22-Aug-14              |
|                     |                                                                                 | 2                  | Associated earthworks to ensure surface of Mammoth TSF cannot pool water.                                                                      | Noted in Sep-15 TEP Report:<br><i>Completed before due date.</i><br><br>CCM will continue to monitor the shape of the TSF surface and perform grading works if necessary.                                   | 14-Nov-14              |
|                     |                                                                                 | 3                  | Improve drainage to shed water and no external catchment. Including interception of any surface run-off from the Concentrate Shed.             | Further drainage works and re-shaping of surface of Old TSF will be conducted by CCM where necessary before the 2016/17 wet season.<br><br>Noted in Sep-15 TEP Report:<br><i>Completed before due date.</i> | 14-Nov-14              |
| 1b)                 | Define and implement an appropriate final landform and cover design for Old TSF | 4                  | Develop "Old TSF Final Landform and Cover Design" including engineering drawing to construction specifications for cover.                      | Noted in Sep-15 TEP Report:<br><i>TSF final landform and cover design completed by EMM. Final report received.</i>                                                                                          | 21-Aug-15              |
|                     |                                                                                 | 5                  | Physical earthworks required to execute Old TSF - Final Landform and Cover Design report, including construction of a cover if so recommended. |                                                                                                                                                                                                             | 7-Mar-17               |
| 1c)                 | Interim management of Old TSF seepage                                           | 6                  | Continuation of the sump 6 seepage interception & monitoring system.                                                                           | Noted in Sep-15 TEP Report:<br><i>Sump 6 seepage recover system was upgraded to include a secondary contingency pump and alarm. Continue to operate the system for seepage recovery.</i><br>Ongoing.        | Term of the TEP        |

| Birla Objective No. | Birla TEP Objective                                                                               | Action Item Number | Birla TEP Action                                                                                                                                                                                                                                                                                                                                                                               | Action Status to Date                                                                                                                                                                                                                        | TEP Nominated Due Date |
|---------------------|---------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| 2)                  | Return to compliance with water quality contaminant limits of Table C-4 for Magazine Creek.       | 7-11               | Remediate known point sources for contaminant inflows, resulting in a return to compliance of surface flows.                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                              |                        |
| 2a)                 | Remediate all known point sources of contaminant generation impacting Magazine and Greenstone Cr. | 7                  | Decommission the Heap Leach Evaporation Pan #2 (HELP), by undertaking associated earthworks to ensure surface of HELP#2 cannot pool water.                                                                                                                                                                                                                                                     | Noted as completed in May-14 TEP Report on 8-Nov-13.                                                                                                                                                                                         | 14-Nov-14              |
|                     |                                                                                                   | 8                  | Develop "HELP#2 Final Landform and Cover Design" including engineering drawings to construction specifications for cover.                                                                                                                                                                                                                                                                      | Noted in Sep-15 TEP Report: <i>TSF final landform and cover design completed by EMM. Final report received.</i>                                                                                                                              | 21-Aug-15              |
|                     |                                                                                                   | 9                  | Physical earthworks required to execute HELP#2 - Final Landform and Cover Design report, including construction of a cover if so recommended.                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                              | 7-Mar-17               |
| 2b)                 | Investigate if any additional point sources of contamination.                                     | 10                 | <p>Continue the monitoring program</p> <p>Stage 1 - existing monitoring program (water quality at Mammoth Portal, HELP#2, WC03, sediment transect along Magazine Cr) and monitoring of accumulated contaminated soil in Magazine Creek by annual sediment sampling (before end of July each year - 1st qtr of dry season).</p> <p>Stage 2 - additional investigation sampling if required.</p> | <p>Noted in Sep-15 TEP Report:<br/> <u>Sediment monitoring:</u> completed as per EA<br/> <u>Surface waters:</u> completed as per EA<br/> <u>Ground waters:</u> completed as per EA</p> <p>Monitoring programs ongoing as per TEP and EA.</p> | Term of the TEP        |
| 2c)                 | Minimise risk of contaminated flows occurring past Mammoth Portal Sump                            | 11                 | Capture contaminated water before it reports to Greenstone Creek (prior to completion of actions 7-9).                                                                                                                                                                                                                                                                                         | Additional sump installed at junction of east and west Magazine Creeks. Refer Appendix I, figures 1 & 2                                                                                                                                      | 7-Mar-17               |

| Birla Objective No. | Birla TEP Objective                                                                                                | Action Item Number | Birla TEP Action                                                                                                                                                                | Action Status to Date                                                                                                                                                                                                                                                                              | TEP Nominated Due Date           |
|---------------------|--------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| 3)                  | Return to compliance with water quality contaminant limits of Table C-4 for Gunpowder Creek.                       | 12-15              | Reduction of the sulphate and metal contamination load entering Gunpowder Creek to a point whereby no exceedences of receiving water contamination limits occurs (EA Table C4). |                                                                                                                                                                                                                                                                                                    |                                  |
| 3a)                 | Improved Esperanza TSF seepage management                                                                          | 12                 | Operation of the Esperanza TSF in accordance with the EA condition G9-1 "Esperanza TSF Master Seepage Report"                                                                   | Noted in Sep-15 TEP Report:<br><i>Site under C&amp;M and Esperanza TSF is not in use.</i><br><br>No site water is pumped to the TSF. There are two pumps located in the decant pond, which operate whenever rain events cause water to pool in the pond, reporting the water to the Esperanza Pit. | As per EA requirements           |
|                     |                                                                                                                    | 13                 | Continuous operation of North Waste Rock Dump, Saddle Dam #2 & Saddle Dam #3 seepage pump systems                                                                               | Noted in Sep-15 TEP Report:<br><i>In compliance and operating the seepage system at SD2 and SD3 as and when seepage occurs.</i><br><i>General trend of decreasing seepage rates has been observed.</i><br><br>Ongoing.                                                                             | Term of the TEP                  |
| 3b)                 | Ensure that discharge does not unnecessarily increase sulphate load in Gunpowder Creek at beginning of dry season. | 14                 | Discharge in accordance with Court Order #3267 of 2013 (i.e. when creek flowing >1.1m <sup>3</sup> /s for sufficient dilution and movement)                                     | No discharge since last progress report.<br><br>Noted in Sep-15 TEP Report:<br><i>Water discharge occurred as per Court Order conditions only.</i><br><i>Preparations continue for the upcoming 2015-16 wet season.</i>                                                                            | Term of the TEP or Court Order   |
| 3c)                 | Reduce groundwater and soils contamination (from Sump 6), to reduce the contamination load entering                | 15                 | Annual scalping of visually evident seepage induced efflorescence in the area known as Sump 6 (immediately downstream of Old TSF)                                               | Scalping of Sump 6 and surrounding area to be conducted in first week of Nov-16.                                                                                                                                                                                                                   | 31 October each year if required |



TEP Progress Report  
Capricorn Copper Mine

|  |                     |  |  |  |  |
|--|---------------------|--|--|--|--|
|  | Gunpowder<br>Creek. |  |  |  |  |
|--|---------------------|--|--|--|--|

## 5. Conclusions

In observing the data, it was commonly found across the monitoring sites that most 2016 metal peak outlier samples were of a smaller magnitude when compare to 2015; and thus can be observed as improved. Generally, the averaged readings have lessened slightly or remained similar to last year.

Sulphates in Gunpowder Creek have shown a clear improvement in the current year, as the increasing concentration gradient at GPA2 appears less steep than in the 2015 dry season.

An assessment of Magazine Creek West performance is difficult due to lack of data. A lack of rainfall last wet season provided less opportunities to complete monitoring. This lack of sampling conditions was added to by CCM's water management which aims to reduce water flows past the MGA1 section of the creek, and thus reduce copper contaminant flows. In order to better control and assess performances additional water sampling in the upstream section of Magazine Creek West has been reinstated.

The majority of exceedences over the past six months have been pH readings which in all cases, except for one at MGA1, have been alkaline exceedences. Alkaline exceedences are common in drying ponds of water around site at this time of year, and occur even at the MGU1 reference site, upstream of the mine.