CLEAN STREAM ENVIRONMENTAL CONSULTANTS

BASELINE SURFACE WATER AND WATER BALANCE REPORT
FOR SASOL MINING IMPUMELELO
MINE EXTENSION PROJECT

Report No.: JW118/16/F480 - Rev 0

June 2016
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1. INTRODUCTION

1.1 Background

Sasol Mining (Pty) Ltd intends to extend the Sasol Impumelelo mining area to include Farms Mahemsfontein 544 IR, Grootvley 579 IR, Boschmansfontein 523 IR, Paardefontein 584 IR, Wolvenfontein 534 IR, Hartbeesfontein 522 IR as indicated in Figure 1.1(a). The mine is currently under construction and consists of the Impumelelo and Witnek underground coal mines, which are separated by a 25 m thick dolerite sill. The target mineral for the both underground mines are coal from the No. 2 and 4 Seams.

The proposed Mahemsfontein and Grootvley lies to the south west, Boschmansfontein to the north, Paardefontein to the south east and Hartbeesfontein to the north west of the Sasol Impumelelo mine reserve area.

Jones & Wagener (J&W) were appointed by Clean Stream Environmental Consultants in 2007/8 to compile the surface water specialist report for the proposed Sasol Impumelelo and Witnek mining areas. This included baseline surface water hydrology, as well as a mine water balance. Two reports were completed in 2009 and 2011 (J&W Report No. JW68/09/B475 and J&W Report No. JW166/11/B475). The baseline surface water quality monitoring, as well as the surface water users survey was carried out by Clean Stream Scientific Services.

In 2014, Sasol proposed to extend its planned Impumelelo operations to cover the Mahemsfotein area. Because the project, as originally planned, has changed in terms of mine plan since the 2007/8 project, the water balance carried out at the time was no longer relevant. The initial baseline study also did not include the Mahemsfontein area.

Therefore, J&W were appointed by Clean Stream Environmental Consultants to compile a baseline surface water report for the Mahemsfontein area for the Sasol Impumelelo mine and to compile an updated mine water balance for the entire Sasol mining area to include the changes to the mine plan, as well as incorporate the proposed underground mining of 4 Seam at the Mahemsfontein area. This report was issued in June 2014, report number JW80/14/D491 - Rev 0. Since submission, the Mahemsfotein mining was placed on hold and therefore still requires authorisation.
Figure 1.1(a) LOCALITY PLAN

Impumelelo Project
Sasol Mining

REFERENCE

VERKLARING

International Boundary and Reserves
Provincial Boundary
Grens, Nature Reserve & State Forest Boundary
Forest Reserve
Forest Water
Non-potable Water
Dry Water Course
Droop Ponds
Marsh and Wetlands
Floodplains (adjacent ground)
Water Treatment Reservoir: Water Plant
Water Corporation: Water Reservoir
Coastal Flats
Floodplain Rock Outcrop
Erosion, Sediment
Woodland
Cultivated Land
Oxidation Reserves
Reclamation Ground
Row of Trees

Scale 1:150 000 (A4)

Chief Directorate - Surveys and Mapping

Jones & Wagener
Engineering & Environmental Consultants

59 Benav Road, PO Box 1414, Rivonia 2128, South Africa
Tel: 003 11 519 020, www.jwva.co.za, email: jwva@jwva.co.za

Job no: F480-00
Now, Sasol has proposed to further extend its planned operations to cover additional portions of the Mahemsfontein, Grootvley, Boschmansfontein, Paardefontein, Wolvenfontein and Hartbeesfontein. Once again the project mine plan has changed since 2014 and the water balance will need to be updated. Furthermore additional baseline information will be required for the additional areas mentioned above.

1.2 Terms of reference

The objective of the baseline study is to characterise the surface water regime at the proposed development site and the catchments in which it resides, in terms of surface water quality and quantity. The surface water quality and quantity are assessed as follows:

- The water quality upstream and downstream of the proposed development area is characterised prior to the onset of any potential impacts from the activities. The water quality monitoring in the area is carried out by Sasol Mining and is reported as such in this baseline report.
- The water quantity baseline assessment defines the flows in the streams (mean annual runoff and dry weather flows), flood magnitudes and floodlines.
- Updated mine water balance for the entire Sasol Impumelelo and Witnek mining area.

1.3 Approach and methodology

The methodology used to assess the surface water quality and quantity is outlined below:

- Water Quality
  No additional baseline water quality monitoring was undertaken for this study. Results from the monitoring carried out by Sasol Mining carried out from September 2013 to January 2016 for the Impumelelo area were used to characterise the baseline surface water quality of the additional mining areas.

- Water Quantity
  Data from local rainfall stations were obtained and analysed for input to the peak flow calculations, as well as the runoff modelling.
  Catchments were delineated using the 1:50 000 series topographical maps, as well as 5 m contour data. Catchment characteristics were determined from the maps and aerial photography.
  Peak flood flows were estimated using relevant methodologies.

- Mine water balance
  The 2014 mine water balance was updated for the entire Sasol Impumelelo and Witnek mining area to include the changes to the mine plan, as well as to incorporate the proposed underground mining at the additional areas.
  This involved the following work:
    - Re-measuring the updated Life of Mine (LOM) plans.
    - Incorporating the updated groundwater study based on the updated LOM plans as well as assessment of underground storage.
    - Determining the water make and storage requirements.