Appendix H

Wetlands

Scoping Paragraph:
Desktop Wetland Assessment for the Exxaro Leeuwpan Coal Mine Consolidated EIA/EMP, Mpumalanga Province

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1. BACKGROUND INFORMATION

Wetland Consulting Services (Pty) Ltd was appointed by GCS (Pty) Ltd to undertake the wetland assessment for the Exxaro Leeuwpan Coal Mine near Delmas in the Mpumalanga Province as part of the consolidation of the EIA/EMP. The study area is approximately 4 250ha.

This document has been compiled for inclusion in the Scoping Report currently being put together by GCS (Pty) Ltd. This document aims to provide a brief description of the wetlands within the study area and affected by the proposed developments, based on a desktop assessment, while also highlighting some of the potential impacts and proposing a plan of study for the EIA and EMP report. The full wetland assessment report will follow at a later stage.

2. LEGISLATION & GUIDELINES

The following is a brief summary of important legislation of relevance to the wetland assessment study being undertaken for the Exxaro Leeuwpan Coal Mine Project:

- The Constitution of the Republic of South Africa, Act 108 of 1996
- National Water Act (NWA) Act 36 of 1998
    - GNR 704 of 4 June 1999 – Regulations on use of water for mining and related activities aimed at the protection of water resources
    - GN 1199 of 18 December 2009 – Replacement of general authorisation in terms of Section 39 of the National Water Act, 1998
- National Environmental Management Act (NEMA) Act 107 of 1998 and associated GNR detailing listed activities (2010)
- National Environmental Management: Biodiversity Act (NEMBA) Act 10 of 2004
- Conservation of Agricultural Resources Act (CARA) Act 43 of 1983

Additional guidelines utilised within the study include:

- DWAF wetland delineation guidelines, “A practical field procedure for identification and delineation of wetlands and riparian areas”, DWAF, 2005.
- Mpumalanga Biodiversity Assessment Guidelines (MPB)
- GDACE Requirements for Biodiversity Assessments

3. BASELINE DESCRIPTION

3.1 Background Description

The Exxaro Leeuwpan Coal Mine is located to the south east of the town of Delmas in the Mpumalanga Province, and as such falls within the Olifants River Catchment (B), and more specifically within quaternary catchment B20A, which is drained by the Bronkhorstspruit and its tributaries. The Bronkhorstspruit is straddled by the study area. The area receives an average annual rainfall of approximately 661 mm, of which approximately 38mm (5.75 %) ends up as run-off.

Three vegetation types are expected to occur on site (Mucina and Rutherford, 2006), namely Eastern Highveld Grassland, Soweto Highveld Grassland and Eastern Temperate Freshwater Wetlands vegetation, with Eastern Temperate Freshwater Wetlands vegetation always associated with wetland habitats. In addition, the National Wetland Inventory (SANBI, 2011) and the Atlas of

Freshwater Ecosystem Priority Areas in South Africa (Nel *et al*., 2011) indicates a number of valley bottom, hillslope seepage and pan wetlands as occurring on site. None of the wetlands are classed as FEPA's (Freshwater Ecosystem Priority Areas), and no FEPA wetlands occur within 3 km of the study area boundary.

3.2 Wetland Delineation

The wetland delineation undertaken of the Exxaro Leeuwpan Coal Mine in 2007 (Wetland Consulting Services) indicates a number of valley bottom, hillslope seepage and pan wetlands occurring on site. This delineation was extended via a desktop delineation to cover the entire study area and is illustrated in Figure 1 below.

The identified wetlands, based on existing information and a desktop delineation of wetness and greenness signatures visible on Google Earth imagery, are illustrated in Figure 1. All of the areas identified as possibly being wetlands will be further investigated in the field and the presence of wetlands and the wetland boundaries will be verified and existing information updated.

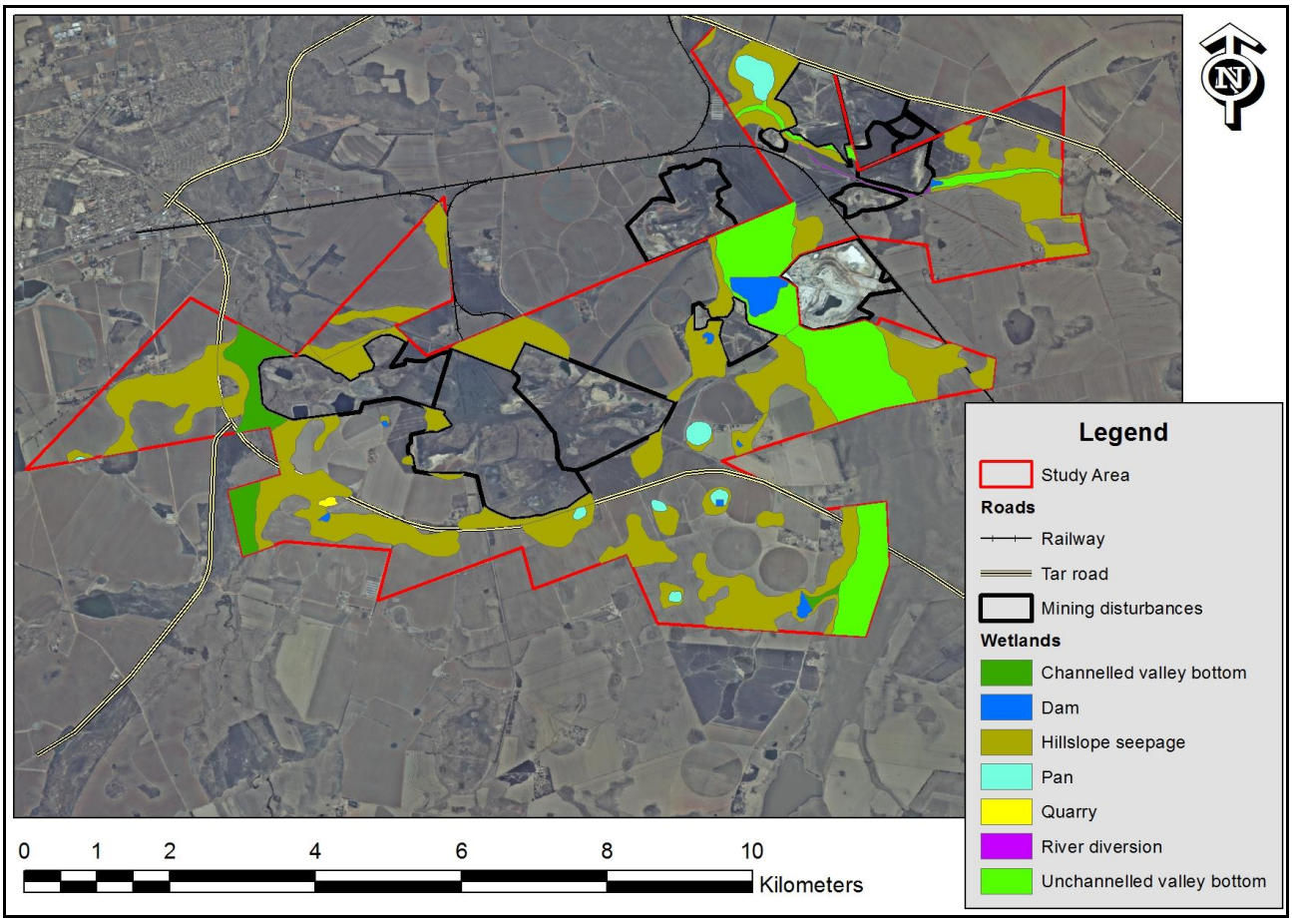

Figure 1. Map showing wetland areas as identified during the desktop delineation.

Based on the desktop mapping, approximately 33.5 % (just over 1 420 ha) of the study area is suspected to be covered by wetlands, consisting mostly of hillslope seepage wetlands (947 ha) and unchannelled valley bottom wetlands (326 ha). A total of 7 pans are expected to occur on site.

Table 1. Extent of the various wetlands types expected to occur on site.

Wetland Type	Area (ha)	% of wetland area	% of study area
Channelled valley bottom	75.69	5.32%	1.78%
Dam	33.27	2.34%	0.78%
Hillslope seepage	947.16	66.55%	22.29%
Pan	37.39	2.63%	0.88%
River diversion	3.15	0.22%	0.07%
Unchannelled valley bottom	326.66	22.95%	7.69%
TOTAL	**1423.32**	**100.00%**	**33.49%**

4. POTENTIAL IMPACTS

As part of the impact assessment phase of the wetland assessment, all potential impacts expected during the construction, operational, decommissioning and closure phases of the proposed mining project will be identified and assessed as per the impact significance rating scale supplied by GCS. Some of the potential impacts expected to arise from the mine expansions include:

- Loss of wetland vegetation and habitat within the footprints of the proposed developments;
- Increased sediment movement off the site, particularly during the construction phase and also from any dumps and stock pile areas during the operational phase;
- Erosion at storm water discharge points;
- Deterioration of water quality due to release of storm water into the wetlands;
- Soil compaction in areas traversed by trucks and heavy machinery resulting in decreased infiltration and increased run-off;
- Increase in the occurrence of alien invasive vegetation within the wetlands due to disturbances brought about by the proposed activities and the changes to the supporting hydrology of the wetlands; and
- Deterioration of water quality due to decanting of low pH, high metal and sulphate rich water from the mine post closure, as well as seepage from any remaining tailings dams.
- Loss of sensitive biota from aquatic ecosystems.

5. PLAN OF STUDY

Following on from the desktop assessment, a site visit will be undertaken in April 2012 to ground truth all potential wetland areas within the affected area and verify the existence and extent of all wetland areas. Wetland boundaries will be delineated using both soil wetness indicators (mottling and gleying) and vegetation indicators according to the method prescribed in the document "*A practical field procedure for identification and delineation of wetland and riparian areas*" (DWAF, 2005). During the site visit, information regarding impacts on, and condition of, the wetlands will be collected enabling an evaluation of both the ecological health (PES) and the ecological importance and sensitivity (EIS) of the wetlands using standard tools such as WET-Health (Macfarlane, 2009).

Based on the information collected in the field and experience from working on other EIA and EMP processes, potential impacts will be identified and appropriate mitigation measures recommended where the impact on the wetlands is unavoidable. Where applicable, suitable management measures will also be recommended, and a biomonitoring plan compiled.

The findings of the study will be collated and a wetland assessment report will be compiled, which will also include appropriate sections for inclusion in the EMP.

6. REFERENCES

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