



INTEGRATED WATER AND WASTE MANAGEMENT PLANS (IWWMP)

The Integrated Water and Waste Management Plan (IWWMP) has been compiled to assist mines and industries who apply for a Water Use License (WUL) in terms of Section 40 (1) of the National Water Act, 1998 (Act No. 36 of 1998) (NWA). The IWWMP acts as a management plan and requires approval in conjunction with the WUL by the Department of Water and Sanitation (DWS). The aim of the IWWMP is to:

- Provide the regulatory authorities with focused and structured information, not only to meet their general information needs, but also to articulate the required management measures and actions to achieve the water and waste related performance on an ongoing basis; and
- Provide direction and guidance to the water user on water and waste management of any activity.

GCS has the required expertise to develop IWWMPs and has gained extensive experience in the compilation of IWWMPs across a variety of mining sectors, which includes but is not limited to coal, gold, iron and platinum mining. GCS is also able to provide IWWMPs for all industries, golf courses, residential developments, municipal water supply projects and bottled water plants should they be required by DWS.

GCS adopts a holistic approach to the compilation of IWWMPs, aiming to provide the client with an integrated management plan that optimally addresses water and waste management issues applicable to the project area. This involves the identification of all water and waste sources and the interaction between such sources. The most appropriate management measures and key performance measures are then determined. GCS utilises the IWWMP Operational Guideline as well as the Best Practice Guidelines published by DWS. The Water Quality Management Hierarchy of decision-taking forms the basis of integrated water and waste management. This hierarchy is based on a precautionary principle and sets the following order of priority for mine water and waste management decisions and/or actions:

1. Pollution Prevention;
2. Water Reuse or Reclamation;
3. Water Treatment; and
4. Discharge or Disposal of Waste.

A typical IWWMP for an operation or site contains the following:

- Assessment of regulatory requirements in terms of existing and required authorisations for all water and waste aspects on a particular site;
- Identification of any existing Reserve Determination and Water Quality Objectives for the relevant catchment;
- Detailed description of all operations and infrastructure on site;
- Water and salt balance;
- Stormwater management plan;
- Impact assessment and gap analysis with regard to water and waste aspects during the Construction, Operational and Decommissioning phases of an operation or site;
- Surface water and groundwater monitoring programme;
- Description and assessment of support functions e.g. data management, performance reporting and auditing, emergency preparedness and response, training and environmental awareness, and the communication strategy; and
- Key Performance Areas (KPAs), strategies and action plans.

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INTEGRATED WATER AND WASTE MANAGEMENT PLANS (IWWMP) - GCS PROJECT DATA

YEAR	CLIENT	PROJECT	OPERATION
2014	Total Coal South Africa	Tumelo IWWMP Update DCM	Tumelo Coal Mine
2014	Total Coal South Africa	West IWWMP Update Tumelo	Dorstfontein Coal Mine
2013	Total Coal South Africa	IWWMP Update Forzando South	Tumelo
2013	Total Coal South Africa	IWWMP Update IWULA and IWWMP	Forzando South
2013	OSHO Ventures	Forzando North IWWMP Update	Port Elizabeth
2013	Total Coal South Africa	IWWMP Update	Forzando North
2013	Total Coal South Africa	Update of IWWMP	Dorstfontein Coal Mine
2012	Total Coal South Africa	IWULA and IWWMP	Tumelo
2012	Scanza Properties (Pty) Ltd	Water Use Licence Application & IWWMP	Dreamland Piggery
2012	Kangra Coal (Pty) Ltd	West End Brickworks	Maquasa
2012	Ezendalo Legal Solutions CC	IWULA & IWWMP	Cullinan
2011	Newtown Landscape Architects CC	IWULA & IWWMP	Magaliesburg Waste Water Treatment Works
2011	Marsh Africa (Pty) Ltd	IWULA & IWWMP Assistance	NBC Belfast Project
2011	Shanduka Coal (Pty) Ltd	IWULA & IWWMP Follow-Up	Middelburg Townland s Colliery
2011	Shanduka Coal (Pty) Ltd	IWULA & IWWMP Follow-Up	Graspan Colliery
2011	Mine Waste Solutions	IWWMP Update	Chemwes (Pty) Ltd
2010	Shanduka Coal (Pty) Ltd	IWWMP for Springlake Colliery	Springlake Colliery
2010	Lonmin Platinum	WULA and IWWMP	Pandora
2010	Cabanga Concepts Sekoko Coal	WULA, IWWMP follow up	Project management
2010	Madibeng Local Municipality (Brits)	4 x Sewage Works -IWULAs and IWWMPs	Madibeng, Lethlabile, Rietfontein & Mothutlung
2010	Cabanga Concepts (for Coal of Africa)	Mooiplaats Colliery IWULA & IWWMP Follow-Up	Mooiplaats



Greater flamingo (*Phoenicopterus roseus*) within a Waste Water Treatment Works, Western Cape Province