HORIZON ENVIRONMENTAL CONSULTING (PTY) LTD.

WE ARE AN ENVIRONMENTAL AND PROJECT MANAGEMENT CONSULTING COMPANY THAT OFFERS A WIDE RANGE OF SERVICES FOR ENVIRONMENTAL MANAGEMENT

Company Profile

2019
Horizon Environmental Consulting (Pty) Ltd. is an emerging Environmental and Project Management Company, Level 2 BEE Contributor, and is proudly owned and directed by a team who have a wealth of expertise in project management, environmental and waste management, training systems and delivery, communication and business planning.

**What we do**

Pressures are mounting for a move to a greener economy. Climate change, population increases, oil production peaking, resource depletion, carbon taxes, resource conscious consumers, customer preferences and social values are combining to alter the course of economic activity to include environmental and social considerations much more than before. This has resulted in the emergence of sustainability as key driver to a resource intensive industry and the development of preventative measures for environmental and social management.

Horizon offers its services throughout the project lifecycle and develops strategies that are applicable every day, in every facet of the business, for everyone.

**Our Services**

**Environmental Management**

- Strategic Environmental Advice;
- Basic Assessments;
- Scoping and Environmental Impact Assessment;
- Environmental Screening studies;
- Permitting advice;
- Environmental Management Plans;
- Environmental Construction Monitoring.

Horizon underpins all its services with the philosophy of Integrated Environmental Management (IEM). This promotes the integration of the principles of environmental management as set out in the National Environmental Management Act (Act 107 of 1998) (NEMA), which compels finding the right balance between development and the environment. IEM ensures that environmental considerations are taken into account at every stage of the life of a project, process or policy. IEM considers the environmental elements in a 'cradle to grave' concept (i.e. from the inception of the idea right through to the decommissioning or the end of the project).
**Water Management**

- Water Use Licences;
- Water quality assessments;
- Limnological assessments.

Horizon uses a range of tools to interrogate water quality. We use models such as Lake2K to predict water quality in dams and reservoirs.

For industry we set up water and salt balances which detail all water circuits including climatic factors such as evaporation and transpiration and through the solution of load calculations, we can account for non-metered water.

**Waste Management**

- Strategic Waste Advice;
- Integrated Waste Management Plans (Mining, Municipal, Developers);
- Materials Recovery Facilities;
- Waste Minimisation Strategies;
- Waste Licencing;
- Waste registrations
- Waste Classification
Horizon manages waste using our Waste Cycle. This cycle is steered by the Constitution, is held together by the frame of legislation on which sits the seat of implementation. Together they drive the wheels of waste management through goals and the waste hierarchy.
Urban Renewal

The strands that support more than the individual is sustainable development

- Open Space Planning
- Lifestyle Parks
- Recreational Areas
- Rebuilding the natural environment
- Infrastructure
- Rehabilitation of mining areas and borrow pits
- School gardens

Environmental Tools

- Permit tracking systems;
- Database management systems;
- Geographic Information Systems (GIS).

Horizon creates bespoke tracking systems for clients in order to track authorisations, permits and licences daily via a web portal. Any time, anywhere, you can check on the progress of applications, view comments and see deadlines.
Horizon develops a range of tools for clients. We have developed a listed activity tool for a large client which allows employees to search all relevant environmental legislation and regulations to identify what activities trigger the need for authorisations and licences. The system provides application forms, contact details, flowcharts, biodiversity maps and allows for general and specific searches.

Horizon creates dashboards for users to view updated complex information in an easy to read way. Dashboards provide a simple, visual way to review and assess complex data. Data can be displayed as graphs, on maps, as tables, and many other graphics. Dashboards can interrogate a number of data sources and extract data, process the data and present the information in an interactive manner.

Data can be financial, numerical, statistical or text. A full SQL query ability of the dashboard design lets users select data based on criteria and then display the results of the query.
**Constructed wetlands and agricultural systems**

- Constructed wetlands for water treatment, storm water control;
- Recirculating Aquaculture Systems;
- Hydroponic systems.

Horizon designs constructed wetlands focussed on the underlying management need, coupled with increasing the ecological functioning the local environment. We design wetlands for storm water control and for treatment of contaminated streams. Our wetlands can biologically treat a range of contaminants before being released into the natural environment.

Horizon designs stand-alone hydroponic systems to utilise water in a productive way. Water is harvested from effluent, storm water or groundwater and is used to grow a range of produce, from tomatoes and lettuces, to melons and peppers.

**Climate Change**

- Greenhouse Gas Emissions Inventories;
- GHG Emissions from dams
- Capacity Building for Climate Change

Horizon uses the IPCC Inventory Software to estimate GHG emissions. The software however does not critically evaluate the GHG emissions from dams. For this Horizon uses G-Res Toolkit. We interrogate all input data to ensure it is valid according to latest estimates of sources and inventories.

**Sustainable Risk / Asset Management**

- Conducting of risk assessments / surveys / audits (both “Field and Book” auditing) covering all aspects of Risk / Asset Management.
- Compilation and development of Risk / Asset related operational procedures for appropriate and consistent implementation.
The promotion and conceptualization of industry asset and related risks and threats.
Setting in motion the required interventions and measures to address the identified threats and risks.

**Environmental Due Diligence Audits**

All companies operating within the South African environmental context have an obligation to adhere to all the respective legal obligations, norms, standards, principles and guidelines as specified in South Africa’s multifaceted network of environmental legislation.

Taking into account the relevant environmental legislation that companies have to contend with, almost on a daily basis, it has become imperative for them to obtain strategic and professional environmental legal advice in this very unique sector of the industry.

*We at Horizon*, have the knowledge and expertise to undertake a comprehensive environmental due diligence audit. Our services include, but not limited to:

- An extensive range of environmental site assessments and studies to support our investigations, backed up with technical reports and data services designed to help your business.
- We offer innovative solutions to the challenges of site decontamination and we ensure your business plans are treated with the utmost *integrity and confidentiality*.
- Our environmental assessment will provide an understanding of a site’s contamination issues and will help the client to take into account a site’s liabilities when determining its true value.
- We also examine the potential for any legal / civil damages that could eventuate, and we look at options for a clean-up plan if needed.
- Benefit from our unrivalled knowledge of environmental legislation and experience in the fields of environmental auditing, certification, sampling and analysis.

The objective of an environmental due diligence audit is to:

“Identify potential environmental liabilities prior to purchasing a new property and or developing / expanding current mining activities, and to provide the necessary independent assessment advice needed”.
Our Environmental due diligence assessments include:

- Phase 1: Environmental site assessment
- Phase 2: Characterization study
- Inventory of recognized environmental, health and safety issues
- Exterior and interior inspection of properties
- Interviews with owners, occupants and government officials
- Physical sampling and laboratory analysis
- Exploratory soil and groundwater investigation

“We at Horizon, are convinced and take pride in that we have the capability and capacity to offer our client/s a comprehensive environmental due diligence exercise, whereby our client/s can be assured of any sub-standard / non-compliant environmental condition before taking over a potential contaminated mining site or a property with a history that could include pollution”.

HEALTH, SAFETY, ENVIRONMENTAL AND QUALITY MANAGEMENT

Horizon offers Health, Safety, Environmental and Quality Management services to its clients. Our key services are:

- Site HSE compliance audits and inspections.
- Short-term on site HSE Management.
- Accident and Incident Investigations.
- Development of HSE Plans in line with Client HSE Plans.
- Compiling of site specific Construction Safety Files.
- HIRA (Hazard Identification and Risk assessment).
- Supplier Evaluations and Audits.
- Business Development Processes in terms of Six Sigma

Mining Rehabilitation Planning, Design and Implementation

- Rehabilitation / decommissioning of mine shafts with associated infrastructure.
- Removal and “footprint rehabilitation” of defunct mine shafts and related areas.
- The promotion and conceptualization of mine wide environmental related risks and threats.
- Setting in motion the required interventions and measures to address the identified threats and risks.
- Involved in detailed localized and/or project specific analysis and environmental matters.
- Co-ordinate EIA / EMP projects with the purpose to obtain regulatory approvals and associated licences and permits in accordance with Environmental legislation of the Republic of South Africa.
- Active intervention with the regulatory authorities in obtaining the above authorizations as well as to resolve concerns and matters as these arise.
- Compilation / Development and implementation of Environmental related operational procedures for appropriate and consistent implementation.
- Rehabilitation and on-site clean-up & creation of general awareness of environmental matters ("Environmental Ownership");
- Directing and implementing on-going care and maintenance on rehabilitated areas for successful handover to local third parties and communities for beneficial reuse;
- Initiation and control of mine closure costs and related liabilities.

Mine rehabilitation is the last aspect of a mining development to be considered, because of its very nature. Planning for closure however, needs to begin at the same time as planning to operate a mine. Our approach is to engage with clients early on in the mine development process to ensure that during operations, each facility is designed for closure and rehabilitation. Where this is not possible, our integrated approach still allows us to address various long-term liabilities together into a single package. Thus our acid mine drainage expertise feeds into our rehabilitation planning, which feeds into the closure costing and which feeds into the licence process.

With the emergence of more emphasis on the sustainable use of resources, end land use for rehabilitated areas is critically important. Large tracts of rehabilitated land given over to veld is no longer the optimum use of a valuable resource. Consideration needs to be made for sustainable use of the land post closure and thus options such as agriculture, waste landfill development, recreation and tourism and industry parks need to be investigated. Our team plans for end land use and this drives our modelling service which balances the needs to move large amounts of material on closure to a more cost effective minimum movement of material to achieve a sustainable end land use objective.

Examples of typical “before” and “after” images of rehabilitation projects where our rehabilitation practitioner was involved are presented below:
Mine Surveying and modelling

Our professional survey team has significant experience in complex and challenging projects and access to a wide range of sophisticated survey and mapping equipment.

Services include the following;

- Surveying and modelling
- Feasibility Studies.
- Droning Services under licence
- Aerial Photos under licence
- Digital Terrain Mapping (DTM)
- Mine Lay Out and Scheduling
- Limited and Hazardous Access Surveys
- Defunct / Abandoned and Recovery Mine Surveying
- Stockpile Volume Surveys for rehabilitation
- Void/Cavity Monitoring Surveys

Acid Mine Drainage

- Identification of Acid Mine Drainage (AMD) risk areas
- Development of AMD risk reduction mechanisms for life of mine
- Development of integrated rehabilitation / AMD closure plans to minimise AMD liability in to the future
- Develop passive and active treatment systems

Acid Mine Drainage is a by-product of coal and gold mining. The inevitable nature of AMD results in a potentially significant environmental liability both during operations and post-closure. Our team understands the AMD process and are thus able to identify the key pathways for water ingress and thus manage at the source. Where the AMD has already taken hold, options to limit the movement of AMD can be developed. On egress of AMD, passive and active treatment systems can be designed to limit the exposure of AMD. Our integrated approach allows us to further address AMD through our rehabilitation service, where we can provide for long term solutions to AMD.

Environmental Awareness and Training

Our Environmental and Awareness Training Courses are aimed at specific sectors in the mining industry. We customises our courses to focus on the trainee and thus can offer basic courses in environmental awareness through to more complex courses for managers and supervisors. We also undertake training for communities and affected parties to assist in the dialogue process between mine and community. Our courses all offer the same basic content:

- Meaning of Environment
- Energy Circle
- Ecosystems
- Mining / Industrial Environment
• What is an aspect
• What is an Impact
• Environmental Management (Definition)
• Why do we need to manage the Environment
• What YOU can do!
• Examples of pollution
• Rules to protect the Environment
• Laws which protect the Environment in RSA
• Environmental Legislation

Our Clients

Horizon’s Directors have worked for National, Provincial and Local Government. For the private sector, we have worked with mines, industry, commercial and retail, property developers and consulting engineers. We are proud that many of our clients return to us for future work. A testament to our ethic of delivering technically, scientifically and peer reviewed work, within time and on budget.

Our Team

**Mr. Walter Tshegofatso Senne** is an Environmental Health Practitioner by Profession, with 15 years of experience in the local government specifically the environmental management sector. He started working for local government in 1997. His experience ranges from Health Inspector, Senior Meat Inspector, Section Manager Landfills and Unit Head of Waste Management at the Rustenburg Local Municipality. He is passionate about the realisation of the green economy and job creation through the empowerment of youth, woman and communities, at the same time delivering sustainable solutions.

**Mike Howard** (Project Manager) is an Environmental Management Specialist. He has a long catalogue of over 37 years environmental, waste and project management experience. He has worked for both the public and private sector, in research and consulting. In his consulting experience, he has worked for National, Provincial and Local Government, private Waste Companies, Mining companies, property Developers and the Motor Industry. He is a strategic advisor, mentor and problem solver using his wide experience to come up with innovative and sustainable solutions. He has over 10 years experience in mine water research and AMD pathway analysis and is a strategic technical advisor to country’s biggest AMD treatment project.
We protect the environment in everything we do, so we leave nothing more behind than we found.

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