CLEAN STREAM
BIOLOGICAL SERVICES (PTY) LTD

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COMPANY PROFILE OF CLEAN STREAM BIOLOGICAL SERVICES (PTY) LTD

CONTACT DETAILS

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BUSINESS SUMMARY

Clean Stream Biological Services specializes in biological monitoring of aquatic ecosystems, biodiversity assessments and bioaccumulation studies.

MAIN ACTIVITIES

Various rapid assessment techniques involving bio-indicators are used by Clean Stream Biological Services to assess the condition or health of aquatic ecosystems, as well as the biological diversity. These industry-accepted and scientifically credible biomonitoring technologies are applied in bioassessments, toxicity bioassays, behavioural bioassays, bioaccumulation studies, fish health studies and biodiversity assessments.

Long-term datasets are being amassed to define normal limits of variation in ecosystems so that changes can be identified and interpreted. Baseline data are also being amassed from suitable reference localities that represent the desired or ideal condition of ecosystems. Assessment results can then be used as early warning systems that enable our clients to take preventative actions before severe environmental degradation occurs.

Clean Stream Biological Services furthermore specialises in biodiversity assessments and the compilation of biodiversity management plans.

COMPANY STRATEGY

Purpose: To become a leading and respected service provider in all biomonitoring and biodiversity monitoring techniques.

Vision: To apply existing and develop innovative new or customised environmental measurement technologies, so that anthropogenic impacts can be accurately identified, mitigated or prevented.

Mission statement: To build long-term relationships with our clients and become experts on the particular risks that their operations may pose to the environment. To assist with the management of these risks through exceptional customer service, innovation, creativity, integrity and ethical behaviour so that our service exceeds all expectations. To build long-term relationships with the regulatory authorities and affected parties so that our scientific findings and recommendations are trustworthy and legally compliant as required from independent environmental practitioners.

Goals: We aim to develop site-specific environmental monitoring technologies with which each client can manage their particular impact on the environment in a manner that withstands national and international scrutiny. We aim to utilise advances in computer technology to optimise the interpretation and processing of large datasets in conjunction with other monitoring technologies and techniques. Scientifically credible findings will then be conveyed to our clients in logical and understandable reports that will satisfy government expectations and also ensure legal compliance.

OUR TEAM

Clean Stream Biological Services is home to a number of postgraduate scientists with an in-depth scientific understanding of each field of specialization. All employees share in the company's profit, resulting in a very low staff turnover. The company currently employs scientists with a range of postgraduate qualifications that include a Ph.D. degree, six M.Sc. degrees, six B.Sc. Honours degrees, as well as a diploma in nature conservation and a B.Tech. degree. Field workers are DWA-certified SASS5 practitioners (Sasseta). Our management team, with a combined experience of over 40 years in the field of environmental monitoring, has a hands-on approach and perform much of the field work themselves.

ECOSYSTEM INDICATOR APPROACH

An understanding of the condition of environmental systems can only be reached if appropriate measurements are made and interpreted correctly. The difficulty is that the various components of the environment cannot be viewed in isolation, as they act together as part of an integrated whole. We can therefore not manage the environment without first understanding this integrated unity and our interactions with it.

Ecosystem condition or health can be understood by investigating the interaction between all of its physical, chemical and biological components. However, due to ecosystem complexity, high costs and

incomplete knowledge, it is usually not feasible to investigate all ecosystem components for an understanding of its integrated unity.

Ecosystem indicators, which may include macro-invertebrate, fish and diatom indices, can thus be applied as indicators of overall ecosystem health. A range of additional indicators and specialised survey techniques are also applied to investigate biological diversity.

These indicators, or rapid assessment techniques, can be used in addition to, and in concert with, physical and chemical measurements to gain an understanding of the processes involved in environmental degradation.

BIOMONITORING ASSESSMENTS

The structure of every ecosystem has a living component (the organisms themselves) and a non-living (environmental or habitat) component. Biomonitoring is primarily used to gain an understanding of the living components.

Site- and ecosystem-specific habitat assessments are applied at monitoring localities, along with a range of supporting physical and chemical measurements, to describe the non-living component.

Where possible, baseline surveys are performed at desired-state reference localities to gain an understanding of what the ecosystem health should be like in its pristine, unmodified state.

Data pertaining to the living and non-living components can then be assessed in an integrated manner for its use by decision makers in environmental management.

The range of biomonitoring assessments applied by Clean Stream Biological Services include the following:

- **Bioassessments** that include ecological surveys of the functional and structural aspects of biological communities.
- **Toxicity bioassays** that involve laboratory-based methodologies to investigate and predict the effect of compounds on test organisms.
- **Behavioural bioassays** to explore in-stream sub-lethal effects on fish and macro-invertebrates, when exposed to contaminants.
- **Fish health studies** to provide an accurate indication of overall ecosystem health.
- **Bioaccumulation studies** that involve investigations into the increase of chemical concentrations in biological organisms over time.

BIODIVERSITY ASSESSMENTS

Clean Stream Biological Services has developed an innovative methodology for the assessment and management of biodiversity within the highly modified landscapes that are frequently associated with large mining operations.

This methodology includes the application of a number of techniques for the repeated observation of the various components of biological diversity.

Environmental pressures are simultaneously investigated in an integrated way by conducting biodiversity threat audits.

Various biodiversity management units are then identified and presented on interactive maps, together with management actions specific to each unit.

We specialise in biodiversity assessments and the compilation of biodiversity management plans using a number of associated specialist sub-contractors. These specialist studies may include botanical surveys, alien plant control programs, terrestrial fauna studies (mammals, birds, reptiles, amphibians), aquatic fauna studies (fish and invertebrates) and biodiversity threat audits.

The main objective of such a biodiversity management plan is to provide our clients with recommendations for integrated biodiversity management.