Institute of
Natural Resources

ANNUAL REPORT | 2018

2018 ANNUAL REPORT

Visually, this annual report profiles our young professionals, and the botanical and architectural heritage of our offices and surrounding gardens. We are devoted to capacity development and we are an oasis in the urban milieu of Scottsville, Pietermaritzburg. All the photographs in this report were taken on the property. We owe a debt of gratitude to our founding fathers, Dr John Hanks and the late Ernst Taeuber, for locating us here, and to a former Director, Professor Charles Breen and his son, Kenneth, for creating the indigenous gardens which so aptly capture the spirit of what we are. We also acknowledge Deli Sikhakhane who has looked after our offices for six years and Muzi Hlatshwayo who has maintained the gardens for thirteen years.

While taking some photographs in the garden I noticed that our administrative intern, Esinathi Ngcobo, was similarly engaged. Her artistry compared with my amateur efforts caused me some embarrassment so I promptly handed the task to her. We thank her, together with our designer, Tracy Freese, for the visual feast before you. Enjoy.

Duncan Hay
Executive Director

Institute of Natural Resources

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The Institute
AN OVERVIEW

"We are passionate, professional people applying innovative science to catalyse change for a better planet."

This rallying call emerged at a workshop of INR staff in January 2018. It was the start of a process to achieve buy-in from all staff into our overall strategy. Under the patient and creative guidance of Dr Monique Salomon this process has been most successful and rewarding. The foundations of this strategy are excellence in science, management and administration; business growth; transformation; capacity development, and increased visibility.

Who or what is the INR? We are an applied research organisation committed to supporting the resolution of environmental and developmental challenges primarily in southern Africa. We are an independent, non-profit, public benefit organisation with Level 1 B-BBEE accreditation. We comprise 28 highly competent and dedicated scientific professionals, post-graduate interns and students, managers and administrators. We are directed by a Board of eight highly experienced individuals with diverse competencies and expertise. In October 2019 we will celebrate our 40th birthday.

We recognise that effective partnerships are central to our success. Together with government, civil society, the private sector and other leading research organisations we develop cutting edge solutions to and support the resolution of environmental and developmental challenges; we provide advice to practitioners, researchers and policy makers; we integrate effort; we build the capacity of graduate professionals to operate effectively in the workplace; and we advocate an environmentally secure future for all.

Our work is arranged into four interlinked thematic areas: Adaptation and Resilience; Agriculture and Rural Livelihoods; Ecosystem Services (particularly related to catchments, wetlands and water resources, and to environmental monitoring and information systems), and Environmental Governance and Sustainability.

Our key partners, collaborators and clients include, amongst others, the Water Research Commission (WRC), University of KwaZulu-Natal (UKZN), the national Department of Environmental Affairs (DEA), United States Agency for International Development (USAID), United Nations Development Programme (UNDP), European Union (EU), Food and Agricultural Organisation (FAO), South African National Biodiversity Institute (SANBI), Human Sciences Research Council (HSRC), eThekwini Metropolitan Municipality, SA Cities Network, Worldwide Fund For Nature (WWF), Forestry South Africa (FSA), Umgeni Water, the Industrial Development Corporation (IDC), several international universities including Cambridge, Oxford, East Anglia, West of England and Cranfield; several municipalities, and numerous local environmental and developmentally focused organisations.

OUR STRATEGIC DIRECTION

Our central focus is applied research in social, economic and biophysical aspects of environmental science. As researchers we are explorers and we would prefer not to constrain this exploration. Our current themes provide us with sufficient focus. While it is inevitable that, to a certain extent, our work is driven by demand, as 'thought leaders' we focus equally on creating demand for our research. What is critical is that the knowledge that we generate has a positive impact and we are able to demonstrate this impact.

More specifically and building on our current foundations we will:

- Develop our capacity to take on research on urban and peri-urban issues. Supporting eThekwini (Durban) in conducting its Strategic Environmental Assessment and Johannesburg in establishing its Sustainable Development Framework is assisting us in realising this direction.
- Ensure that we have a broad spread of funders/clients. Ideally we would prefer a one third spread each across the private, state and international sectors. It has become apparent that we need to reduce our reliance on funding from government and increase our partnerships with the private sector.
- Position ourselves so that we are recognised internationally for our science.
- Target large, long-term, multi-disciplinary and multi-partner initiatives.
- Integrate more effectively across disciplines through increased team work.
- Through adaptation and refinement, add value to our significant body of existing research.
- Ensure that our research is increasingly participative with clients, partners and stakeholders included as generators of knowledge.
- Increase our competence in communicating science to society. This, together with higher levels of advocacy, will increase our influence in the policy and practice arenas.
- Build our capacity in ICT, GIS and remote sensing. Cohosting an international remote sensing training course in January 2019 provided an invaluable learning experience.
- Diversify our income stream through training, endowments and leveraging existing research.

2018 A YEAR IN REVIEW

Excellence and innovation in science

We continue to be at the forefront of the fields in which we operate. To highlight four initiatives, one from each of our themes.

Adaptation and Resilience: Innovative mechanisms to channel investment into Ecosystem and Community-based Adaptation to climate change

Ecosystems and livelihoods are inextricably linked. This is a fundamental principle that guides our applied research undertaken under the INR's Adaptation and Resilience Theme. Ecosystem-based Adaptation (EbA) and Community-based Adaptation (CbA) are approaches that recognise this link between people and the environment, and aim to make society better able to adapt and more resilient to climate change.

Over the past year we have successfully undertaken a number of projects to design and pilot innovative investment and incentive mechanisms to support EbA and CbA. These include a USAID funded multi-year project to design and develop financing tools that generate opportunities for up-scaling EbA and CbA interventions in the mountain highlands of Lesotho; *Conservation based enterprises* provide catalysts that help to reconnect communities and their environment, thereby providing incentives for communities to invest in building a resilient environment. The *Inland Water Related Tourism in South Africa by 2030 - In the Light Of Global Change* Project (funded by the Water Research Commission) investigates the links between natural capital, tourism and global change, and the influence this has on the development potential of the tourism sector and its contribution to supporting SMME development.

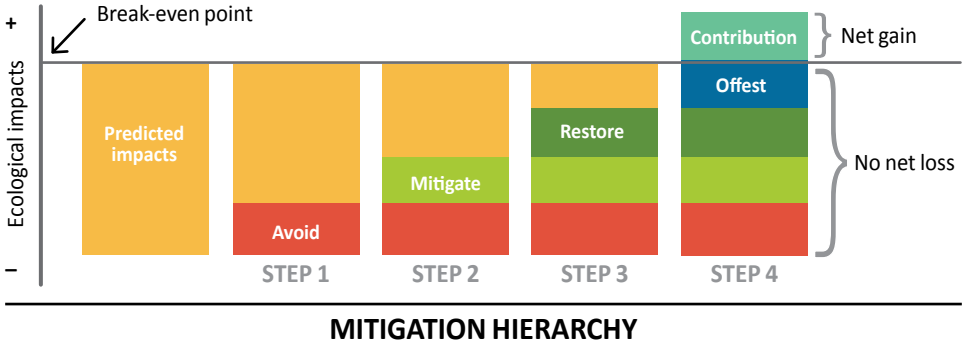
The lessons from these projects collectively help to shed light on a number of key issues related to enhancing adaptation and resilience building. The most significant barriers to upscaling EbA is not so much culture or traditions, but rather practical issues such as a lack of financial resources, or the cost of increased input requirements. Innovative investment and financing mechanisms are therefore critical for upscaling and mainstreaming EbA and supporting climate change adaptation by communities. The roll-out of community and ecosystem-based climate change adaptation needs partners across all sectors.

Adaptation is not the responsibility only of donors and governments. It requires partnerships with the private sector and communities themselves, who all have a role to play. Building partnerships and gaining support is a time consuming iterative process that needs to be done before any on-the-ground activity can even be initiated. Donor funding for these facilitation and partnership building processes can be a critical catalyst for effective and sustainable financing of adaptation.

Environmental Governance and Sustainability: Biodiversity Offsets

Biodiversity offsets involve the restoration and long-term protection via formal mechanisms, to offset the residual impact of a project once all other measures in the mitigation hierarchy (avoid, minimise and onsite restoration), have been exhausted. This mechanism therefore addresses the longstanding issue of cumulative erosion of our natural capital by achieving no-net loss. Certain countries have gone a step further by setting goals of net gain. The concept has gained popularity globally and there has been significant uptake by governments, business and the international financial institutions which have made it a condition for financing projects. Biodiversity offsets have however been applied in a relatively ad hoc manner in South Africa over the last 10-15 odd years and implementation to date has been woeful.

The recent initiation of a process to develop a National Offsets Policy has elevated the need to improve practice and the biodiversity outcomes. The INR has been at the forefront of moving Biodiversity offsets forward. The organisation was invited to participate in the National Policy Development Process, and addressed the significant gap in understanding by designing and running three national training events via the contract to support SANBI in the GEF 5: Biodiversity Land-Use Programme. The capacity building effort has also been extended through the running of a technical tour and panel session at the International Association for Impact Assessment (IAIA) Conference in May 2018, and designing and running a biodiversity offsets themed National Biodiversity and Business Network event in November 2018. The INR also facilitated a session at the KZN IAIASA branch event and locally has presented a seminar to University of KwaZulu-Natal graduate students. The policy and capacity building efforts are grounded in practical experiences gained through the successful offset planning process for projects such as Spring Grove Dam, which is one of the few offsets to have been secured on private land through the stewardship process.



MITIGATION HIERARCHY

Biodiversity offsets also interface with protected area (PA) expansion and provide an avenue for increased investment in ecological infrastructure. The INR presented at the KZN Conservation Symposium on the potential for a conservation bank to support PA expansion and is working with the provincial conservation authority to take this thinking forward practically. The INR also supported the Department of Environmental Affairs: Natural Resources Management Programme as part of our ongoing contract by participating in a conference focused on alternatives sources of finance for the NRM sector.

The scope for this mechanism to support various aspects of the environmental management, conservation and natural resources management sectors is significant. The INR will therefore continue to operate at the centre of the activity to support the development and responsible implementation of Biodiversity offsets in South Africa.

2018 | A YEAR IN REVIEW

Ecosystems: Wetland Resource Quality Objectives (RQOs)

There is a clear challenge with respect to the link between development and sustainable wetland management. The challenge is to maintain and reinstate the functions of South Africa's wetlands in order to ensure that the per capita ecosystem service levels provided by wetlands keep pace with a developing population and its growing demands on the resource base. This can only be achieved by giving effect to the National Water Act (No. 36 of 1998) in co-operation with other relevant authorities and stakeholders.

The Ecosystems team completed a three-year Water Research Commission project aimed at establishing a procedure to develop and monitor wetland Resource Quality Objectives (RQOs). Resource Quality Objectives are measurable management goals for significant water resources. Determining RQOs form a vital part of the water resources management cycle, as only when managers have clear objectives will protection of the selected significant resources become a reality.

The procedure provides a step-by-step approach to develop and monitor qualitative RQOs for wetland resources and, where there is sufficient data, it also allows for determining quantitative RQOs with numerical limits. It is based on the need to balance practicality with sourcing wetland data at a suitable confidence level for the purposes of setting RQOs. While the procedure allows for the development of RQOs, there is opportunity for improvement as we gain a better understanding of the country's wetland resources. Therefore, the procedure developed should be viewed as part of a process for enhancing how we identify and set key management objectives for South Africa's significant wetland resources.

Given that the procedure provides for the identification of significant wetland resources across the country, and the setting of objectives to sustainably manage significant wetland resources, there is an opportunity to contribute to the way South Africa reports on Sustainable Development Goal (SDG) 6, and specifically Target 6.6. In particular, there is a significant opportunity to utilise the recommended desktop monitoring method for not only monitoring the country's significant wetland resources from an RQO perspective, but also from an SDG perspective.

The procedure provides a recommended national standardised procedure for determining and monitoring wetland RQOs, and it will be used by key government departments, catchment managers, classification and RQOs consultants, and wetland specialists.

Agriculture and Rural Livelihoods: Increasing resilience to water-related risk in the South African fresh fruit system

We are working as part of a consortium on the Global Food Security's 'Resilience of the UK Food System Programme'. The three-year project aims to understand the resilience of the South African fresh fruit system (from grower to consumer) to current, and future, water-related risks. The INR is leading the South African case study, with overall project leadership by Dr Tim Hess from Cranfield University (UK) and Prof Bruce Lankford of the University of East Anglia.

South Africa is the UK's second largest supplier of fresh fruit. Local fruit producers are reliant on irrigation to grow fruit to the standards demanded by export markets. To sustain quality and market access, South African growers have to be increasingly efficient in an environment of mounting uncertainty in relation to water availability, brought into sharp focus by the recent and current droughts in South Africa. Our research is focused on the Groot Letaba Catchment around Tzaneen, Limpopo Province - an important avocado and citrus producing region.

For the past two years we have been working with growers, water managers and commodity organisations within the catchment in an effort to understand our exposure to water-related risks and to investigate the relationship between water use efficiency and resilience, asking the question: does greater efficiency of water use equate to increased resilience? Using this information, we are identifying how South Africa's producers can be more resilient to water-related risks. Within the Groot Letaba we have identified various practices applied at an orchard and farm scale which result in water savings, particularly during droughts. More broadly, at the catchment scale, we can see that water managers are allocating water responsibly and proactively promote fair allocation of water to irrigators across the catchment. Finally, we are considering how water use by the fruit sector affects the resilience of other stakeholders in the catchment, for example domestic users and the environment.

2018 | A YEAR IN REVIEW

Capacity and Career Development, and Transformation

Despite significant financial constraints, considerable emphasis was placed on the capacity development of our staff, students and interns. To highlight some examples:

- The international conference of the International Association of Impact Assessment (IAIA) was held in Durban. This provided the opportunity for several of our staff, notably Dave Cox, Sian Oosthuizen, Samiksha Singh, Matthew Dickey and Nosipho Makaya to participate in and/or lead certain sessions.
- Ian Bredin presented at the Society of Wetland Scientists annual meeting in Denver, Colorado.
- Duncan Hay presented on various subjects at a meeting with the University of Cambridge and local organisations in Bahidar, Ethiopia and with the International Water Security Network in Nimli (Delhi), India.
- Michelle Browne and Fonda Lewis published a book chapter in the *Environmental Impacts of Tourism in Developing Nations* published by IGI Global.
- Dr Lutendo Mugwedi participated in IUCN Tomorrow's Leaders Today initiative.
- Dave Cox presented several courses on biodiversity offsets to diverse participants.
- Leo Quayle provided remote sensing training to a group of international participants.

Our internship programme continues to excite and in 2018 we became, to a certain extent, victims of our own success. All four interns, Nosipho Makaya, Thembani Nxumalo, Mlungisi Shabalala and Matthew Dickey secured professional or academic positions before their internships were complete. All four also secured their masters' degrees during the course of the year. We have recruited a further five interns for 2019 and all are hard at work on a broad range of projects. Samiksha Singh, who was previously an intern and is currently a scientist at the INR, has secured a Fulbright PhD Scholarship to the University of California, Riverside. This is a highly prestigious award which is fully funded for two years.

Building on our internship programme, and our relationship with UKZN and the University of the West of England, we are establishing an advanced academic and professional development programme. This programme will deliver skilled professionals capable of taking up leadership positions in the environmental and water resource sectors. Core funding has been secured and the first bursaries have been allocated. It is likely that some of our current interns will transition into this programme.

While overall the Institute might be considered transformed, achieving racial transformation at the senior level is proving difficult. During 2018 we were fortunate to have on our staff Dr Lutendo Mugwedi and Dr Sandile Hadebe but both left to pursue academic careers. Particularly in the current economic climate, it is proving difficult to compete for the services of well qualified black professionals.

Business and partnerships

It is ironic that, while environmental issues are increasingly at the forefront of our conscience, we increasingly have fewer resources with which to build our understanding of and get to grips with the problems. The size of projects on offer is decreasing and there are interminable delays in state and parastatal procurement processes.

As a consequence, from a business perspective, 2018 was a very tough year which ended with a deficit of R 520 000. While not ideal, in the context of a declining economy and numerous state governance failures, the overall financial outcome was actually encouraging. For further detail please see an extract from our audited annual financial statements on pages 20 and 21.

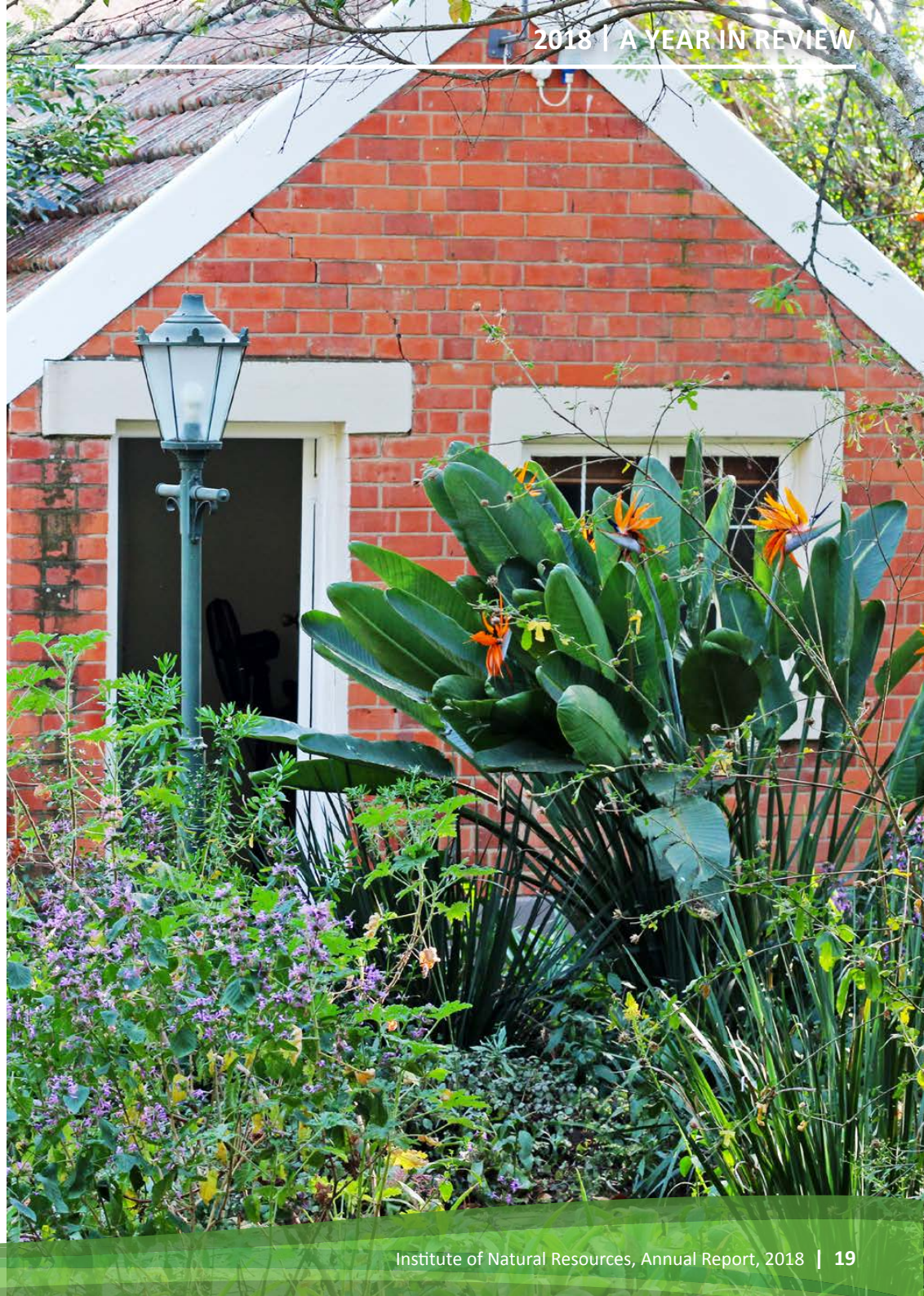
This year the medium term outlook is much improved. At the time of writing, our cash flow position is good; we have secured about 70% of the work required to meet our budget for 2019 and morale is high. Also, we have significantly strengthened our partnerships with, amongst others, UKZN, the commercial forestry sector, Umgeni Water (with which we have signed an MoU), SANBI, eThekwini and the South African Cities Network. All these partnerships present clear and tangible opportunities. Finally we are renewing our relationship with the iSimangiliso Authority and are currently exploring areas of potential cooperation.

Despite the fairly gloomy national economic outlook, we are confident we will be able to resume our growth path.

Visibility and facilities

As part of our marketing strategy, we completely reworked and reconstituted our website in 2018. We urge you to visit it at www.inr.org.za. Not only is it visually appealing, it is much more informative than earlier versions and provides for a far more interactive engagement. Our Facebook page, kindly managed by Belinda Murray, is attracting a significant following particularly amongst students, interns and young professionals.

As mentioned in the preface, we continue to take pride in our historic homes that act as offices and the indigenous gardens that surround them. Refurbishment of the three houses was completed at the end of 2017 and, currently, little in the way of maintenance is required. The gardens have recovered well from the drought and our bird list currently stands at 61 species, which is remarkable for an urban environment.



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Governance, management and administration

During 2018 we recruited two new independent directors, Caryn Maitland and Norman Dlamini. Caryn is a chartered accountant and directs a practice in Pietermaritzburg. In support of Belinda Murray, our Financial Director, she brings much valued financial acumen to the Board. Norman is Business Development Director at Forestry SA and is also based in Pietermaritzburg. The INR has several projects with a number of constituents in South Africa's commercial forestry sector. Norman's contribution is already invaluable. He is providing us with strategic advice on how we might leverage these projects to increase our profile and secure further work in the sector.

A governance highlight early in 2019 was our securing of Section 18A certification from SARS. What this means is that any donations we receive are tax deductible in the hands of the donor. While we do not operate as a donation-based organisation it does open up this option. It also enhances our status as a public benefit organisation.

Internal management and administration continues to operate efficiently and effectively in support of our science. To quote the Managing Director of one of our rural development partners "I dream of the administrative system that you have!"

OUR STAFF

BOARD

CHAIRMAN
Dr Shamim Bodhanya

EXECUTIVE DIRECTOR
Duncan Hay

FINANCIAL DIRECTOR
Belinda Murray

NON-EXECUTIVE DIRECTORS
Bongani Khumalo
Jennifer Mitchell
Christopher James
Caryn Maitland
Norman Dlamini

EXECUTIVE MANAGEMENT

Executive Director: Duncan Hay, MSc
Financial Director: Belinda Murray, BCom (Hons), CA (SA)

PROFESSIONALS

Chief Scientists:
Fonda Lewis, BSocSc; MEnvDev
David Cox, MEnvDev

Principal Scientists:
Brigid Letty, MSc Agriculture
Jon McCosh, MEnvDev
Leo Quayle, MPhil Environmental Management
Ian Bredin, MSc, *Pr.Sci.Nat*
Catherine Pringle, BSc Agric, LLM (Env Law), Pr.Sci.Nat

Senior Scientists:
Michelle Browne, MSc Agricultural Economics
Zinhle Ntombela, MSc Agriculture
Sian Oosthuizen, MSc Geography
Lutendo Mugwedi, PhD Environmental Science

Scientists:
Samiksha Singh, MSc Environmental Science
Simone Murugan, MSc Hydrology

Senior Community Facilitator: Zanele Shezi, Diploma in Agriculture

INTERNS

Wesley Evans, MSc Ecological Sciences
Theolin Naidoo, BSc (Hons) Ecological Sciences
Akosua Awuah, BSc (Hons) Geography and Environmental Management
Nomfundo Shelembe, MSc Agriculture (Food Security)
Nomcebo Myeza, BSc (Hons) Hydrology
Matthew Dickey, BSc (Hons) Geography and Environmental Management
Mlungisi Shabalala, MSc Hydrology
Nosipho Makaya, MSc Environmental Science
Thembani Nxumalo, MSc Plant Pathology
Silungile Dlamini, BSc (Hons) Geography and Environmental Management

ADMINISTRATION/SUPPORT

Programmes Manager: Nisha Rabiduth
Bookkeeeper/Office Manager: Jackie Robinson
Administration Assistants: Mandisa Ndaba, Sindiswa Zondi
Receptionist: Londiwe Mnikathi
Gardener: Muzi Hlatshwayo
Cleaner: Delisile Sikhakhane

Extracts of the 2018 audited Annual Financial Statements

Institute of Natural Resources NPC

Statement of Financial Position as at 31 December 2018

	2018 R	2017 R
Assets		
Non-Current Assets		
Property, plant and equipment	2,508,250	2,608,785
	2,508,250	**2,608,785**
Current Assets		
Work in progress	2,778,522	4,088,495
Trade and other receivables	934,660	1,928,525
Cash and cash equivalents	5,309,773	3,778,193
	9,022,955	**9,795,213**
Total Assets	**11,531,205**	**12,403,998**
Equity and Liabilities		
Equity		
Reserves	1,200,000	1,200,000
Retained income	7,994,959	8,511,728
	9,194,959	**9,711,728**
Current Liabilities		
Trade and other payables	995,654	1,533,270
Funds in advance	1,340,592	1,159,000
	2,336,246	**2,692,270**
Total Equity and Liabilities	**11,531,205**	**12,403,998**

Institute of Natural Resources NPC

Statement of Profit or Loss and Other Comprehensive Income

	2018 R	2017 R
Revenue	15,087,496	15,418,924
Other operating income	180,957	162,327
Other operating gains	6,780	9,607
Other operating expenses	(16,008,967)	(16,015,046)
Operating loss	**(733,734)**	**(424,188)**
Investment income	216,976	236,804
Finance costs	(12)	-
Loss for the year	**(516,770)**	**(187,384)**
Other comprehensive income	-	-
Total comprehensive loss for the year	**(516,770)**	**(187,384)**


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