


ANNUAL REPORT 2016

SUSTAINABILITY RESEARCH UNIT

Professor Christo Fabricius

Faculty Science

This annual report and the audited financial statement were approved by the Faculty on
the _____ day of April 2017.

	Print name	Signature	Date
Entity leader	Professor Christo Fabricius		April 2017
Finance	Mariam Jogee-Jamal		April 2017
Chairperson of Governing Board (If applicable)			
Chairperson: Faculty Board/ Faculty RTI Committee			
Dean	Professor Azwinndini Muronga		April 2017
DVC: RE (when applicable)	Professor Andrew Leitch		April 2017

1. Mission / purpose

The SRU's focus is to gather and communicate evidence to promote a better understanding of the challenges facing society and the natural environment in our quest for a Good Anthropocene. We strive to adaptively address these challenges using transdisciplinary complex systems frameworks and participatory learning and action. We build credibility and relevance by listening, asking the right questions, providing reliable information and learning with our stakeholders through action on the ground. Conventional academic silos do not restrict us.

SRU applies a collaborative inter- and trans-disciplinary approach to face the complex challenge of ecological management in the Garden Route and in doing so, value the contribution and collaborative efforts of internal and external stakeholders, co-designing practical solutions to face the complex challenges. The conceptual framework that informs our work has its theoretical foundations in social learning theory, adaptive collaborative management, complex adaptive systems and collaborative adaptive stewardship.

1.1 Alignment with vision and mission of the NMMU

SRU supports the NMMU vision by providing students with a challenging and supportive learning environment and fostering holistic student development. This is achieved through the relevance of study topics to real world issues, teaching practical research skills and developing students' ability to collaborate in a wider research community under the protection of experienced supervision, mentorship and financial support. Through these postgraduate studies, students can deepen their problem solving, reasoning and critical thinking skills.

The SRU contributes to the NMMU 2020 vision's strategic goal of becoming a recognised institution for encouraging, supporting and rewarding vibrant trans-disciplinary collaborative research, scholarship and innovative culture by focusing on strategic research through partnerships and networks with national and local institutions and stakeholders.

This entity supports the NMMU 2020 vision strategic goal to position the university as an engaged institution that contributes to a sustainable future through critical scholarship. SRU uses several different engagement techniques such as interviews, focus groups, suitability dialogue and participatory mapping to strengthen existing partnerships with public and private sector as well as form new relationships with interested and effected parties.

The NMMU 2020 vision strategic goal to develop and sustain a transformative institutional culture that optimises the full potential of staff and students, is well supported by the SRU through valuing and encouraging teamwork amongst staff, students and stakeholders, as well as the monitoring and evaluation of staff, student and stakeholder expectations and experiences through dialogue and reflective sessions during and after engagement activities.

The entity also contributes to realizing the NMMU 2020 vision strategic goal to formulate and implement a financial growth and development strategy to enhance long-term sustainability and competitiveness. Since its inception, SRU has been successful in

securing income from external and research funds, enabling the entity to operate and provide study opportunities to postgraduate students. Other than the SRU Head's position which is currently Council-funded, the Unit relies entirely on non-council funds for its operational and student funding. Financial sustainability is therefore integral to the SRU's objectives.

2. Governance structures

The SRU reports to the Dean of Science and the Science Faculty. It has a Management Committee consisting of Professor Christo Fabricius, Professor Janine Adams, Adjunct Professor Dirk Roux and Ms Bianca Currie that meets three times per annum to address strategic and operational matters.

2.1 Governance Structure meetings

Manco meetings for were held on the following dates:

Meeting dates	Significant outcomes
17 February 2016	A decision was taken to involve SRU Research Associates more and to host a Symposium to showcase their work. SRU has an increased focus on obtaining funding from external sources during 2016 and beyond.
6 June 2016	The uncertainty about the future leadership of the SRU and a succession plan was discussed.
30 September 2016	It was decided that Research Associates be encouraged to publish more articles and that a stipend of R12 000 each would be provided for 2017.

3. Staff Members

The SRU consists of a Professor and Head, two Professors associated with other academic departments, two Lecturers associated with other academic departments, and

Name	Position	Qualification
Professor Christo Fabricius	Leader & Manco member	PhD (Cape Town)
Ms Bianca Currie	Deputy leader & Manco member	MTech (NMMU)
Professor Janine Adams	Manco member, Botany Dept.	PhD (UPE)
Ms Jeanette Pauw	Statistician	MSc (UNISA)
Professor Dirk Roux	Research Associate & Adjunct Professor	PhD (UJ)
Dr Hervé Fritz	Research Associate	PhD in Ecology (UPMC Paris)
Dr Peter Novellie	Research Associate	DSc (Pretoria)
Professor Robert Fincham	Research Associate	PhD (Rhodes)
Dr Jeanne Nel	Research Associate	PhD (Cape Town)
Prof Lyn Snodgrass	Dept of Political and Conflict Studies	DPhil (NMMU)
Dr Chloé Guerbois	Post-doctoral fellow	PhD in Ecology (MNHN Paris)
Dr Yashwant Rawat	Post-doctoral fellow	PhD (HNBGU India)
Corita Loubser	Coordinator	MBA (NMMU)

The following postgraduate students were supervised during 2016:

Name	Degree registered for
Bianca Currie	PhD Botany
Current Masunungure	PhD Geosciences
Lisa Heider	PhD Botany
Rosie Gerolemou	MSc Geosciences
Tatenda Mapeto	PhD Forestry

3.1 Human resource changes

Dr Jacki Dabrowski and Dr James Dabrowski submitted applications for Research Associates.

4 **Goals / targets for the year under review**

4.1 Statement of objectives

Some of our primary objectives were to:

- Grow the SRU to an efficient, compact and effective research and engagement Centre with meaningful contribution to local and regional sustainability as well as to the theory and practice of transdisciplinary engaged scholarship.

4.2 Strategies employed to achieve objectives

Objectives	Strategy/activities
Grow the SRU to an efficient, compact and effective research and engagement Centre with meaningful contribution to local and regional sustainability as well as to the theory and practice of transdisciplinary engaged scholarship.	Amongst others, SRU hosted a transdisciplinary writing retreat together with colleagues from the ICMR and other departments.
Strengthen links with NMM faculties and national and international researchers by encouraging post-graduate registration in a variety of departments or schools	Recruited post-graduate candidates from Development Studies, Geosciences, Botany, and School of Natural Resource Management.
Initiate joint projects with members of departments and faculties in NMMU	SRU works closely together with Professor Janine Adams, Director of the ICMR and Prof Lyn Snodgrass of Political Studies
Use this experience to recruit additional senior NMMU researchers to the SRU	Invited Professor Lyn Snodgrass to join the SRU team, which she did from end of 2016.
Selectively invite additional Research Associates to join the SRU	Drs Jackie & James Dabrowski were invited and submitted application forms end 2016.
Increase Master's student numbers, with a special emphasis on recruiting high performing Honours & BTech graduates	Recruited a variety of students via our academic networks and meeting top students at award ceremonies.

4.3 Output

4.3.1 Academic networking and engagement

SRU members delivered the following academic output during 2016:

- SRU hosted Dr Peter Novellie and Dr Harry Biggs on 23 & 24 January
- A postgraduate research workshop was hosted on 25 & 26 January 2016 as an induction for all postgraduate students

- Launched the Caring Colleagues Academic Writing Club in March 2016
- Hosted Dr Jacki Dabrowski as guest speaker on campus on 9 March 2016
- Hosted our first annual Research Associates Symposium on 7 April 2016 to showcase the research studies of research associates from SRU, SNRM and other like-minded NMMU research entities
- Hosted a multi-disciplinary writing retreat funded by Institute for Coastal Management (PE) in Wilderness with participants from various faculties
- Hosted a Virtual SES Lab in collaboration with SANParks on 16 August 2016.

4.3.2 Community engagement output

SRU hosted the following community engagement events during 2016:

- A focus group workshop with Department of Environmental Affairs to aid with identification of indicators and criteria for the monitoring of successful invasive plant management and for monitoring the success of the governance of invasive plant management programmes, hosted on 16 February 2016.
- Hosted DEA on campus for a Scenarios and Capacity Development discussion on 11 March 2016.
- Hosted the Breede-Gouritz Catchment Management Strategy (BGCMS) launch event on campus for the Breede-Gouritz Catchment Management Agency (BGCMA) on 30 March 2016.
- Participated in the WESSA 90-year celebration on 12 June 2016.
- Co-hosted a SCLI/KTT inventory development Workshop on 22 June 2016.
- Hosted a BGCMA stakeholder engagement workshop on 4 July 2016.
- Supported a local pre-school with transport for an educational visit to the Congo Wildlife Farm on 26 October 2016.
- Hosted a BGCMA visioning dialogue on 4 November 2016.
- Hosted a Hacking Information Event (community vision for landscape management) in Wilderness on 29 November 2016 and had a dialogue with the community about managing and creating awareness for management of invasive infestation in the area.

4.3.3 Projects and funding

SRU submitted proposals and received external funding for the following:

- Received R215 000 to manage the community engagement and liaison for the Breede-Gouritz Catchment Management Strategy project in February 2016.
- Received Engagement Advancement Funding (EAF) to the value of R30 000 for the project titled Mobilizing stakeholders for collaborative management of invasive alien plants in the Garden Route.
- An ICMR strategic grant was allocated to SRU for the development of trans-disciplinary research and scholars.
- Submitted a proposal for a DEA tender, but was unsuccessful.
- Submitted a proposal for SALGA to design an invasive plant management plan for Eden district, but the tender was cancelled.
- Submitted a proposal to Kruger National Park together with Research Associate Peter Novellie, which was unsuccessful.
- A draft concept note was sent to Sanlam for Santam-ReVIVE: Resilience, Vulnerability and Innovation in Variable Environs and is pending a board decision.
- The NMMU/DEA Natural Resources Management project was extended to end March 2018, valued R1 050 (including VAT).

4.3.4 Capacity development output

SRU engaged with various potential partners and hosted various capacity development opportunities:

- Sanparks
- CapeNature

- Department of Environmental Affairs
- Grasslands Society of Southern Africa
- Eden District Municipality
- Journal club meetings
- Writing workshops and retreats

4.4 Self-assessment of achievement of goals/targets

Objectives for 2016 were either achieved or sufficient progress were made.

4. **Highlights and special achievements**

- Thea Buckle, Media and Communication Master student who graduated in 2016 (cum laude), was elected the best NMMU Master's student for 2016. She was one of the first to complete a project across academic disciplines.
- Adjunct Prof Dirk Roux retained his B3 NRF rating.
- The SRU collectively produced 13 unique peer-reviewed papers (not accounted for elsewhere) during 2016.
- The SRU Head's council-funded position was renewed for an additional three years.

5. **Finances**

5.1 Financial review

The SRU has received funding from Department of Environmental Affairs, Breede-Gouritz Catchment Management Agency, NMMU's ICMR and an NMMU Academic Engagement award.

5.2 Financial statements

Refer to the SRU financial statement on page 7.

6. **Additional information**

Nothing to add.

7. **Mandatory Summary for Senate**

The SRU maintained its momentum in terms of external funding, projects, research output, community engagement and student supervision.

The annual report must be DATED AND SIGNED by the Director, Manager or Head of the Entity, the Chairperson of the Governance Structure, and the Dean.

INCOME STATEMENT OF SUSTAINABILITY RESEARCH UNIT

ENTITY NAME : SUSTAINABILITY RESEARCH UNIT

ENTITY LEADER : PROF C.FABRICIUS

COST CENTRES : L307, L293, L276, L345, H285,
H392, G640, L321, N276, N410,
3522, H991, N438, N450

INCOME STATEMENT FOR PERIOD : Year 2016

Opening Balance 1,327,229

INCOME 1,852,856

NRF funded income 663,521

Council research funds 242,682

Interest Received 22,487

Research Grants 202,800

Private Grants Unrestricted 721,366

EXPENDITURE 1,715,588

Operating Expenses 931,468

Bursary Awards External Funds 403,900

Salaries 282,934

Program Admin/Agent Fee 97,287

Surplus/(Loss) for the year 137,268

Closing Balance 1,464,496

Signed off by Finance Dept.

Name : Rheinard van Onselen

Title : Accountant Research and Third Stream Income

Signature :



Date : 13-04-17

ANNEXURE A
RESEARCH OUTPUTS/ACTIVITIES (insert year)

OUTPUTS/ACTIVITIES	NO	DETAILS	STAFF INVOLVED	OTHER (Specify)
<u>CONFERENCES</u>				
International Conferences (Published Papers)		N/A		
National Conferences (Published Papers)		N/A		
International Conference (presented but not published papers)	1	Building Research Impact and Partnerships in Africa Conference: 15,16 March 2016, Nairobi	Prof Christo Fabricius	
National Conference (presented but not published papers)	1	The Mammal Research Institute, Kruger Park, 12-16 Sept 2016	Prof Christo Fabricius, Dr Chloe Guerbois	
	2	International Long-Term Ecological Research (ILTER) meeting, Kruger Park, 9-13 Oct 2016	Prof Christo Fabricius; Hervé Fritz	
International Conferences (only attended)		N/A		
National Conferences (only attended)		N/A		
<u>JOURNAL ARTICLES</u>	1	Barendse, J., Roux, D., Currie, B., Wilson, N. and Fabricius, C. 2016. A broader view of stewardship to achieve conservation and sustainability goals in South Africa. <i>South African Journal of Science</i> 112(5/6), Art. #2015-0359. http://dx.doi.org/10.17159/sajs.2016/20150359	Prof Dirk Roux, Bianca Currie, Prof Christo Fabricius	Dr Jaco Barendse
	2	Barendse, J., Roux, D., Erfmann, W., Baard, J., Kraaij, T. and Nieuwoudt, C. 2016 Viewshed and sense of place as conservation features: a case study and research agenda for South Africa's national parks. <i>Koedoe</i> 58(1), a1357. http://dx.doi.org/10.4102/koedoe.v58i1.1357	Prof Dirk Roux	Dr Jaco Barendse; Dr Tineke Kraaij
	3	Bousquet, F., A. Botta, L. Alinovi, O. Barreteau, D. Bossio, K. Brown, P. Caron, M. D'Errico, F. DeClerck, H. Dessard, E. Enfors Kautsky, C. Fabricius, C. Folke, L. Fortmann, B. Hubert, D. Magda, R. Mathevet, R. B. Norgaard, A. Quinlan, and C. Staver. 2016. Resilience and development: mobilizing for transformation. <i>Ecology and Society</i> 21(3):40. http://dx.doi.org/10.5751/ES-08754-210340	Prof Christo Fabricius	
	4	Esler, K.J., Downsborough, L., Roux, D.J., Blignaut, J., Milton, S., Le Maitre, D. and De Wit, M.P. 2016. Interdisciplinary and multi-institutional higher learning: reflecting on a South African case study investigating complex and dynamic environmental challenges.	Prof Dirk Roux	

		<i>Current Opinion in Environmental Sustainability</i> 19:76–86. http://www.sciencedirect.com/science/article/pii/S1877343515300142		
	5	Fabricius, C. 2016. Resilience, Development and Global Change. <i>Transactions of the Royal Society of South Africa</i> : 1–2. https://www.researchgate.net/publication/306913807_Fabricius_C_2016_ResilienceDevelopment_and_Global_Change_Transactions_of_the_Royal_Society_of_South_Africa1-2 and http://www.tandfonline.com/doi/full/10.1080/0035919X.2016.1218374	Prof Christo Fabricius	
	6	Nel, J.L., Roux, D.J., Driver, A., Hill, L., Maherry, A., Snaddon, K., Petersen, C., Smith-Adao, L.B., Van Deventer, H. and Reyers, B. 2016. Knowledge co-production and boundary work to promote implementation of conservation plans. <i>Conservation Biology</i> 30(1): 176–188. https://www.researchgate.net/publication/277780859_Knowledge_co-production_and_boundary_work_to_promote_implementation_of_conservation_plan	Prof Dirk Roux	Dr Jeanne Nel, Research Associate
	7	Novellie, P., H. Biggs, and D. Roux. 2016. National laws and policies can enable or confound adaptive governance: Examples from South African national parks. <i>Environmental Science & Policy</i> 66:40–46. http://www.sciencedirect.com/science/article/pii/S1462901116305147	Prof Dirk Roux	Dr Peter Novellie, Research Associate
	8	Knight, M. H., Novellie, P., Holness, S., du Toit, J., Ferreira, S., Hofmeyr, M., Grant, R., Herbst, M. & Gaylard, A. (2016). Hands-on or hands-off? Contrasting approaches to antelope management. In: J Bro-Jørgensen & D Mallon (Eds). <i>Antelope Conservation in the 21st Century: From Diagnosis to Action</i> . John Wiley & Sons, Ltd, London.		Dr Peter Novellie, Research Associate
	9	Domestication of South Africa’s game animals: The potential of integrative, landscape level governance to address a “wicked” issue” (Peter Novellie, Christo Fabricius, Bronwyn Botha (SANParks), Michael Knight (SANParks), Jeanetta Selier (SANBI). (submitted)	Prof Christo Fabricius	Dr Peter Novellie, Research Associate
	10	Roux, D.J., Nel, J.L., Fisher, R-M and Barendse, J. 2016. Top-down conservation targets and bottom-up management action: creating complementary feedbacks for freshwater conservation. <i>Aquatic Conservation: Marine and Freshwater Ecosystems</i> 26: 364-380. https://www.researchgate.net/publication/306913807	Prof Dirk Roux, Dr Jeanne Nel, Research Associate; Dr Jaco Barendse	

		ation/280528444_Top-down_conservation_targets_and_bottom_management_action_Creating_complementary_feedbacks_for_freshwater_conservation		
	11	Sitas, N., Reyers, B., Cundill, G., Prozesky, H.E., Nel, J.L. and Esler, K.J. 2016. Fostering collaboration for knowledge and action in disaster management in South Africa. <i>Current Opinion in Environmental Sustainability</i> , 19, 94-102. http://dx.doi.org/10.1016/j.cosust.2015.12.007 and https://www.researchgate.net/profile/Heidi_Prozesky/publication/292345157_Fostering_collaboration_for_knowledge_and_action_in_disaster_management	Dr Jeanne Nel, Research Associate	
	12	Turak, E., I. Harrison, D. Dudgeon, R. Abell, A. Bush, W. Darwall, C. M. Finlayson, S. Ferrier, J. Freyhof, V. Hermoso, D. Juffe-Bignoli, S. Linke, J. Nel, H. C. Patricio, J. Pittock, R. Raghavan, C. Revenga, J. P. Simaika, and A. De Wever. (2016). Essential Biodiversity Variables for measuring change in global freshwater biodiversity. <i>Biological Conservation</i> . http://dx.doi.org/10.1016/j.biocon.2016.09.005 and https://www.researchgate.net/profile/Harmony_Patricio/publication/308748307_Turak_etal_2016_EBVs/links/57ee2fd308ae886b897283e8.pdf	Dr Jeanne Nel, Research Associate	
	13	Von Maltitz, G.P., Gasparatos, A., Fabricius, C., Morris, A., Willis, K.J. Jatropha cultivation in Malawi and Mozambique: impact on ecosystem services, local human well-being, and poverty alleviation. <i>Ecology and Society</i> 21 (3):3. http://dx.doi.org/10.5751/ES-08554-210303	Prof Christo Fabricius	
	14	N Lübcker, J Dabrowski, TA Zengeya, PJ Oberholster, G Hall, S Woodborne & MP Robertson (2016). Trophic ecology and persistence of invasive silver carp <i>Hypophthalmichthys molitrix</i> in an oligotrophic South African impoundment, <i>African Journal of Aquatic Science</i> , 41:4, 399-411, DOI: 10.2989/16085914.2016.1246356	Dr J Dabrowski, Research Associate	
	15	J Dabrowski, DS Baldwin, JM Dabrowski, L Hill & J Shadung (2016). Impact of temporary desiccation on the mobility of nutrients and metals from sediments of Loskop Reservoir, Olifants River, <i>Water SA</i> Vol. 43 No. 1 January 2017, DOI: http://dx.doi.org/10.4314/wsa.v43i1.02	Dr J Dabrowski, Research Associate	
<u>BOOKS AND BOOK CHAPTERS</u>	1	Knight, M. H., Novellie, P., Holness, S., du Toit, J., Ferreira, S., Hofmeyr, M., Grant, R., Herbst, M. & Gaylard, A. (2016). Hands-on or hands-off? Contrasting approaches to antelope	Dr Peter Novellie	

		management. In: J Bro-Jørgensen & D Mallon (Eds). Antelope Conservation in the 21st Century: From Diagnosis to Action. John Wiley & Sons, Ltd, London.		
<u>RESEARCH REPORTS</u>	1	The Belmont Forum MAGIC project about adaptation to climate change in the coastal areas of Wilderness (South Africa), Cornwall (UK) and Languedoc-Roussillon (France)	Prof Christo Fabricius, Dr Chloe Guerbois, Lisa Heider	
	2	Understanding the generation of cultural ecosystem services in National Parks – various projects in various parks	Prof Dirk Roux	
<u>CREATIVE OUTPUTS</u>				
<u>MASTERS AND DOCTORAL DEGREES COMPLETED</u>				
Masters by Coursework and Treatise				
Masters by Research	1	Submitted dissertation in January 2017– Rosie Gerolemou, Master student	Supervisor: Professor Christo Fabricius	
Doctoral Degrees				
<u>HUMAN CAPITAL DEVELOPMENT</u>				
Emerging (Staff & PG Students)	1	Hosted a postgraduate research workshop	Bianca Currie	
	2	Attended a thesis writing seminar	Students & staff	
	3	Attended regular academic writing club meetings	SRU staff	
	4	Attended writing retreats	Students & staff	
Established Researchers				
<u>ACADEMIC ENGAGEMENT</u>	1	The Belmont Forum MAGIC project about adaptation to climate change in the coastal areas of Wilderness (South Africa), Cornwall (UK) and Languedoc-Roussillon (France)	Prof Christo Fabricius	
	2	Human and wildlife relationships with reference to the baboon challenge in George	Dr Chloe Guerbois	
	3	Optimising the beneficiation of invasive alien plants biomass	Dr Yashwant Rawat	
	4	Community engagement for integrated catchment management	Prof Christo Fabricius	
	5	Facilitated a Freshwater Ecology module to BTech Nature Conservation students	Prof Christo Fabricius & Prof Dirk Roux	
	6	Hosted the first annual Research Associates Symposium for SRU and SNRM research associates	Research associates, staff & students	
	7	Hosted a multi-disciplinary writing retreat funded by the Institute for Coastal Management	SRU & ICMR staff	

	8	Hosted a Virtual SES Lab in collaboration with SANParks	SRU & SANParks	
<u>COMMUNITY ENGAGEMENT</u>	1	Hosted a focus group workshop with DEA to determine identification of indicators and criteria for monitoring of invasive plant management	Staff & students	
	2	Hosted DEA for a Scenarios and Capacity Development discussion	Staff	
	3	Hosted the Breede-Gouritz Catchment Management Strategy (BGCMS) launch event on campus	Staff & students	
	4	Participated in the WESSA 90-year celebration	Staff & students	
	5	Co-hosted a SCLI/KTT inventory development workshop	SRU & SCLI/KTT	
	6	Hosted a BGCMA stakeholder engagement workshop	Staff	
	7	Supported a local pre-school with transport for an educational visit	Staff & students	
	8	Hosted a BGCMA visioning dialogue	Staff	
	9	Hosted a Hacking Information event	Staff & students	
<u>GRANTS RECEIVED</u>	1	Received R215 000 to manage the community engagement and liaison for the Breede-Gouritz Catchment Management Strategy project		
	2	Received Engagement Advancement Funding to the value of R30 000 for a project titled Mobilizing stakeholders for collaborative management of invasive alien plants in the Garden Route		
	3	Received an ICMR grant for the development of trans-disciplinary research and scholars		
	4	The NMMU/DEA Natural Resources Management project was extended to end March 2018, valued at R1 050		
<u>KNOWLEDGE PRODUCTS</u>				
Intellectual Property		N/A		
IP Commercialisation		N/A		
Disclosures		N/A		
<u>OTHER (Specify)</u>		N/A		