

APPENDIX A

List of Topics for Concept Notes - 2018/18 Financial Year Projects

Reference Number	Proposed Project Title/ Topic	Budget (R)	Duration	Research Manager	KSA	Abstract
ACCEPTED PROJECTS						
CN 1	Dissection of the W. Cape drought with focus on Cape Town. <ul style="list-style-type: none"> - Historical reports- last 47 yrs - Analysis of 2014 drought - Lessons for the future - Future water management models 	400 000	12 months	Brilliant Petja brilliantp@wrc.org.za Sylvester Mpandeli Wandile Nomquphu Shafick Adams Stanley Liphadzi Nonhlanhla Kalebaila John Zvimba	1 - 2	This study intends to demystify the human dimensions and socio-economic aspects of drought as it relates to governance, water management, preparedness and adaptive response. While the study should reflect on the past experiences of drought and responses, focus should also be on the resilience incorporating the ability to move on after drought and incorporating such lessons to improve the adaptive capacity for the future. With the hindsight of drought, future water management models should be developed which would incorporate aspects of managing water scarcity, changing water use behaviours and improving efficiency, governance and real time prepared for drought in order to encourage risk reduction.
CN 2	Assessing the consequences of delays in finalising institutional arrangements for decentralised water resource management	200 000	4 months	John Dini johnd@wrc.org.za	1 - 2	This project will undertake a rapid assessment of the key risks and consequences arising from the incomplete transition to a new, stable set of institutional arrangements for decentralised water resource management in South Africa. This will include comparing the functionality of water resource management in areas that have operational Catchment Management Agencies with those that do not; identifying the key drivers that are currently impeding the finalisation of institutional arrangements for decentralised water resource management, along with potential

Reference Number	Proposed Project Title/ Topic	Budget (R)	Duration	Research Manager	KSA	Abstract
						interventions to address these drivers; and assessing the extent to which the status quo has influenced the ability of the water sector to respond to drought and other water related disasters. Where relevant, the project should make recommendations for amendments to the National Water Act and other applicable legislation.
CN 3	Sector readiness to female entrepreneurship: Enablers and hindrances. (lessons learnt)	300,000	12 months	Virginia Molose virginiam@wrc.org.za	1 - 2	Description: This is a lessons learnt study for sector initiatives addressing the transformation agenda through empowerment and participation of women entrepreneurs in sector. The study needs to move beyond legislative framework and delve into realities of internal government departmental capacities to interpret and implement policies aimed at addressing transformation Aims: To identify the sector initiatives To demonstrate the enablers and hindrances for such programmes and To provide clear recommendations for similar future programs. particularly for women Outcomes: Framework for implementing women empowerment programmes in the sector.
CN 4	Communities as water services intermediaries	400 000	12 months	Virginia Molose virginiam@wrc.org.za	1 - 2	Description: The community owned water schemes are a response by communities to lack of municipal services. The tension about ownership in terms of pledged resources (by communities, i.t.o. funds, time, skills and knowledge) and accountability at times of disasters/outbreaks which falls on the municipalities is an issue for investigation Aims: To investigate the policy response to communities as water service intermediaries.

Reference Number	Proposed Project Title/ Topic	Budget (R)	Duration	Research Manager	KSA	Abstract
						<p>To investigate possible partnership arrangements between communities and municipalities amongst government departments themselves</p> <p>To explore mechanisms for deepening IDP and budgeting processes of municipalities</p> <p>Outcomes: Policy framework for communities as water intermediaries.</p>
CN 5	Contributing factors to sustaining water conservation and demand management practices and strategies during and beyond water crisis	350 000	12 months	Virginia Molose virginiam@wrc.org.za	1 - 2	<p>Description: During water crises like droughts and floods there are concerted efforts by various institutions including communities to alter behaviours and practices of people affected by the crises.</p> <p>Often these newly acquired behaviours and practices are sustained throughout the crises however abandoned immediately the crises are over. The downside is that institutions and people resort to old practices and behaviours which are not in the best interest of the water resources. The study intends to investigate the reasons for this change in behaviour and practices by the various institutions including also users.</p> <p>Aims:</p> <ul style="list-style-type: none"> • To investigate reasons for sustaining water conservation and demand management practices and strategies during water crisis and beyond • To investigate reasons for a relapse in 'old habits of water wastage' 'immediately the water crises are over • To recommend measures required to sustain water conservation and demand management practices beyond water crises

Reference Number	Proposed Project Title/ Topic	Budget (R)	Duration	Research Manager	KSA	Abstract
						Outcomes: Guideline on sustaining water conservation and demand management strategies and practices beyond water crises.
CN 6	Unpacking and review the returns on investments in Reserve determinations in the last decade (20 years)	300 000	12 Months	Bonani Madikizela bonanim@wrc.org.za	1 - 2	Over the past decade, integrated water resource management (IWRM) has gained prominence as a powerful water management concept. It is an idea that promotes the equitable and sustainable management of a catchment by all who live and share its waters. However, there seem to be huge drags and complexities in realising IWRM despite investments in method developments. Based on Reserve criticisms from various corners, perhaps it is time to review (from benefit point of view) the returns on Reserve determinations in order to learn from trials and develop different approaches, if needed. This review study will look at the return on investments (ROI) in Reserve method development from the socio-economic perspective, bearing in mind the sustainability benchmark of the Reserve, where environment, society and business must share and not compromise the resource. The study will review investments vs benefits (or lack thereof) made in the last decade or since the first determinations were attempted.
CN 7	Development of an integrated groundwater database and visualisation tools for Cape Town and environs (should be a methodology that all other metros can use)	300 000	12 Months	Shafick Adams shaficka@wrc.org.za	1 - 2	Groundwater is an important sole and conjunctive resource in South Africa. During periods of drought it is also an excellent buffer resource. Data and information-based management of the resource is generally considered to be poor in relation to surface water resources. Decision-makers and society at large are now more aware of climate change and its impacts as well as sustainable use

Reference Number	Proposed Project Title/ Topic	Budget (R)	Duration	Research Manager	KSA	Abstract
						<p>of resources. However, they have limited interactions with information and tools to better understand their impact on resources or the impact of resources on them. Data visualisation tools is a great opportunity to engage society and enhancing awareness. Groundwater is spatially more distributed than surface water and requires more sophisticated data management and visualisation tools. The visualisation tools should ideally allow for information to be displayed at a variety of scales – from individual boreholes to wellfields and beyond. It is estimated that 30 000 groundwater abstraction points exist in the Cape Town metropolitan area and environs. Most of the information is not documented or captured in a database. Several institutions were recently involved in drilling new boreholes and the extent of the data is not well known. Developing a multi-parameter database with online visualisation tools will assist communities and regulators to understand and manage their groundwater resources better. Parameters related to water quality will assist in detecting water quality improvements or deteriorations at the appropriate scales. Parameters associated with flow (water levels, abstraction volumes and aquifer properties) will enable early detection of over-abstraction or groundwater flooding.</p>
CN 8	Review of WRC drought research and gap analysis	200 000	6 months	Shafick Adams shaficka@wrc.org.za Stanley Liphadzi	1 - 2	<p>The WRC has made considerable investments in knowledge and tools relating to droughts. There are significant knowledge and products related to droughts but they may have been for a particular area and context. With an ever-changing climatic</p>

Reference Number	Proposed Project Title/ Topic	Budget (R)	Duration	Research Manager	KSA	Abstract
						and weather regime it is now a good time to take stock of what has been done and what the research gaps and needs are. There is also a need to understand what has been done by other institutions and partners to develop responses that are complementary and impactful. The output from this project will enable the WRC to develop a research strategy in conjunction with other related initiatives.
CN 9	An evidence-based review of the health effects of extreme weather events: Towards developing a health vulnerability index for drought	400 000	12 months	Eunice Ubomba-Jaswa euniceuj@wrc.org.za	1 - 2	<p>Rationale With the occurrence of extreme weather events been predicted to increase globally, there is a need to understand the extent to which these events will have a detrimental effect on human health and manage risks to health appropriately. Risk associated with climate change events is often solely based on the hazards that populations are exposed to during events and their coping mechanisms. However, to truly understand risk, the health vulnerability of populations must be taking into account, especially in cases where populations move from one extreme weather event (drought) to another (flooding). The Western Cape provides the perfect case study for understanding health vulnerability to drought and specifically in an urban setting.</p> <p>Aims</p> <ul style="list-style-type: none"> • To define the drivers and patterns of vulnerability and risk during extreme weather events and how these could change over time • To determine how these risks specifically affect human health

Reference Number	Proposed Project Title/ Topic	Budget (R)	Duration	Research Manager	KSA	Abstract
						<ul style="list-style-type: none"> To understand the short term and long-term impact of extreme events on health vulnerability. <p>Outcomes Step by Step guide on how and what data to use to define hazards, risks and a vulnerability index during extreme weather events.</p>
CN 10	A Research Framework to accurately determine the financial impact of deteriorating water quality and identify mechanisms to better fund water quality management	200 000	12 months	Eunice Ubomba-Jaswa euniceuj@wrc.org.za	1 - 2	<p>Rationale The economic cost of water quality deterioration in South Africa is difficult to estimate. Cost analysis of water pollution has often focused on aging and non-functional infrastructure such as poorly function wastewater treatment works and ageing sewage networks. The costs associated with loss of socio-economic development, decline in human health and in business in general is often not included in cost analysis. On the flip side, funding mechanisms for water resource management (quality) have also been very prescriptive, i.e. the polluter pays principle and need to adapt in order to meet the demands of maintaining water quality.</p> <p>Aims</p> <ul style="list-style-type: none"> To understand the impact of poor water quality on human health, the environment and business thereby determining the true cost of water quality deterioration To recommend innovative funding and financing models in light of the true costs associated with water quality deterioration. To develop a resource mobilisation strategy <p>Outcomes</p>

Reference Number	Proposed Project Title/ Topic	Budget (R)	Duration	Research Manager	KSA	Abstract
						Framework for assessing the socio-economic and financial implications of water quality deterioration and development of water quality funding mechanisms
CN 11	A review of and scoping for water scarcity/security research in South Africa: towards a research strategy	Approx. R350 000	7 months	Wandile Nomquphu wandilen@wrc.org.za	1 - 2	South Africa has a long history of hydrological research into water scarcity/water security which has largely been discipline-based and mostly disparate. The aim of this study is to review, consolidate and scope this research considering the projected weather/climate extreme, and to develop a research strategy that will guide future hydrological research.
CN 12	Scoping study towards determining new priorities in reticulation and water losses into the future	250 000	6 months	Jay Bhagwan jayb@wrc.org.za	3	This is a review and a scoping study to determine the landscape and direction for the future investment requirements in the field of water supply and distribution.
CN 13	Establishing a household water consumption benchmark for South Africa	200 000	12 months	Jay Bhagwan jayb@wrc.org.za	3	Benchmarking of per capita water use in South Africa under South African conditions (climate etc.) does not exist. We continuously use an international norm as what is appropriate for a largely hot and dry country. The objective of this study is to develop a South African benchmark of per capita usage.
CN 14	A critical review of institutional and contracting arrangements of desalination projects in South Africa	300 000	18 months	Nonhlanhla Kalebaila nonhlanhlak@wrc.org.za	3	The aim of the study is to understand, analyse and evaluate the different institutional arrangements and project delivery methods for desalination plants in South Africa. Findings from this study will provide insights on the governance and contracting arrangements for sustainable implementation of desalination in South Africa.

Reference Number	Proposed Project Title/ Topic	Budget (R)	Duration	Research Manager	KSA	Abstract
CN 15	Integrating water sensitive design principles in the National Building Regulations	300 000	12 months	Nonhlanhla Kalebaila nonhlanhlak@wrc.org.za	3	The aim of the study is to develop the knowledge base and framework (based on water sensitive design principles) to facilitate amendment of the National Building Regulations (NBR) Building Standards Act (No. 103 of 1977) to enable water use and efficiency in buildings.
CN 16	Scoping and review of nanotechnology innovations and opportunities for water and sanitation management	300 000	18 months	Nonhlanhla Kalebaila nonhlanhlak@wrc.org.za	3	The aim of this study is to highlights recent advances in nanotechnology innovations for water and sanitation management and identify key areas of research and development where nanotechnology promises to provide the needed solutions for water and sanitation challenges here in SA and abroad. For each of the areas identified, highlight critical factors for deployment of these innovations into the operational environment.
CN 17	Biomimicry (nature based) Design Challenge	400 000	12 months	John Zvimba johnz@wrc.org.za	3	The proposed study is aimed at conducting a biomimicry design challenge as part of the biomimicry learning journey in support of stimulating development of appropriate nature-based products and innovations that can address the current challenges in the water sector. The programme will bring together the young engineers, designers, architects, biologists and ecologists, mentors and end users in support of product/innovation development and match-making. This would enable biomimicry thinking to be applied to real challenges where the Learning Journey of each participant has a focus on solving particular design challenges for an organization/company or national challenge, thereby encouraging open innovation. The proposed design challenge will be premised on the developed WRC Biomimicry Water tool generally

Reference Number	Proposed Project Title/ Topic	Budget (R)	Duration	Research Manager	KSA	Abstract
						focusing on nature's solutions to water treatment challenges as part of supporting both nature-based research traction and stimulation of entrepreneurship in South Africa. John Zvimba
CN 18	Review of entrepreneurial development paths for establishment of smallholder irrigation farming businesses	300 000	12 months	Gerhard Backeberg gerhardb@wrc.org.za	4	Research has been completed and WRC reports published on entrepreneurial development of smallholder irrigation farming. This research-based knowledge creation at the front-end of the innovation cycle was done on selected irrigation schemes in Limpopo, Eastern Cape and KwaZulu-Natal Provinces. It is now essential to undertake a review and determine the requirements for obtaining the most impact with practical application of this knowledge. The target groups are existing or new smallholder farmers and support services in the public and private sectors. The purpose is to encourage opportunity entrepreneurs for establishment of viable small businesses and generating sustainable employment in the food value chain.
CN 19	Testing application of research findings to support empowerment of women for irrigated food production and improved household food production.	200 000	12 months	Sylvester Mpandeli sylvesterm@wrc.org.za		The Water Research Commission (WRC) has completed three key strategic projects on empowerment of women in Limpopo, KwaZulu-Natal, North West and Eastern Cape provinces. The WRC reports were published and shared with various stakeholders. Based on the evidence generated from those three different provinces, the WRC has decided to undertake a review on how some of the results and recommendations emerged from those studies could be upscaled with implementation partners. The target group would be both existing and new women farmers operating in different schemes in the three

Reference Number	Proposed Project Title/ Topic	Budget (R)	Duration	Research Manager	KSA	Abstract
						provinces. The purpose is to address women empowerment in agriculture and also encourage them to contribute throughout the food value chains.
CN 20	Knowledge exchange to improve implementation of irrigation water measurement/metering at farming and scheme level	200 000	12 months	Gerhard Backeberg gerhardb@wrc.org.za	4	The WRC has published guidelines for managed implementation of irrigation water measurement and metering. It is accepted in practice that water use has to be measured for profitable irrigated crop production. However, an ongoing project has highlighted that the WRC has to interact with stakeholders such as Water User Associations (WUAs). Additional actions are required to promote uptake of research-based knowledge and achieve broad-based implementation of water measurement and metering. These include updating and repackaging of available guidelines with links to a dedicated website and presenting practical courses to water managers at irrigation scheme and farming level.

Reference Number	Proposed Project Title/ Topic	Budget (R)	Duration	Research Manager	KSA	Abstract
CN 21	Scoping study and a baseline understanding the measurement of water use of pomegranate orchards in selected production areas.	200 000	12 months	Sylvester Mpandeli sylvesterm@wrc.org.za	4	Although there are general guidelines with regard to the irrigation of pomegranates, there are no local research results available to guide producers with regard to the effect of different levels of soil water depletion on pomegranate tree growth, yield and fruit quality under local conditions. Such research can provide guidelines with regard to the best water use productivity without compromising quality of fruit destined for the export market. The baseline information regarding current irrigation practices and related tree water status, growth, yield and fruit quality information is needed to direct more detailed research for the pomegranate industry. Information obtained by the survey can be utilised to motivate in future for co-funding by the Agricultural Research Council (ARC) for more detailed irrigation research to achieve the high-water use productivity required by the latest South African irrigation water strategy.
CN 22	The development of Water – Energy – Food nexus indicators, and its application to South Africa and SADC: From Theory to Practice	300 000	6 months	Sylvester Mpandeli sylvesterm@wrc.org.za	4	The water-energy-food (WEF) nexus is a cross-sectoral and holistic approach for resource planning and management. Its implementation alleviates the transfer of challenges from one sector to other. Pressure on water, energy and food continues mounting due to climate change, population growth, migration and urbanisation. The missing link between cross-sectoral resource planning and management and the adoption of the WEF nexus has been the lack of science evidence and efficiency indicators to direct its implementation. This study should provide a set of sustainability indicators to assess and monitor the WEF nexus in South Africa & Southern African

Reference Number	Proposed Project Title/ Topic	Budget (R)	Duration	Research Manager	KSA	Abstract
						Development Community (SADC), with the emergence of the Sustainable Development Goals (SDGs), the WEF nexus has been recognised as a key tool for both national and regional integration and development as well as the actual achievement of the national SDG targets. Integrated indicators include those for water, energy and agriculture (agriculture being a proxy of food), whose indicators were calculated through a set of existing models. The aim is to increase efficiency and productivity, improve livelihoods, build resilience and ensure socio-economic securities in the advent of climate change and resource scarcity. The innovative approach to evaluate the WEF nexus increases awareness and governance of resource use, improves investment options and balances cross-sectoral benefits.
Grand Total= R6 350				22 projects		