



WATER RESEARCH COMMISSION

FETWATER BUSINESS PLAN TEMPLATE 2015/16 – 2016/17

PROPOSAL DETAILS

KSA	10
Thematic Area	
Proposer	Water Planning and Implementation Network
Proposal Title	Water Resource Management Qualification
Proposal Number	
Start Date	01 August 2015
End Date	30 July 2017



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA



ORGANISATIONS

Lead organization

Organization Name	WRP Consulting Engineers
SMME	NO
Department/Component	
Contributions	
Postal Address	PO Box 1522, Brooklyn Square
City	Pretoria
Postal Code	0075
Physical Address	Block 5, Greenpark Estate
City	Groenkloof, Pretoria
Postal Code	0181
BEE Certificate	Scanned in Appendix A, original provided on request
Tax Clearance Certificate	Scanned in Appendix A, original provided on request
Company Registration Certificate	Scanned in Appendix A, original provided on request
Bank Account Confirmation Letter	Scanned in Appendix A, original provided on request

Contract Signatory

Title	Mrs
Initials	CJ
First Name	Caryn
Last Name	Seago
Gender	Female
Race	White
Nationality	RSA
Citizenship	RSA
Country of Origin	RSA
Email Address	caryns@wrp.co.za
Telephone Number	012 346 3496
Physical Address	Block 5, Greenpark Estate
City	Groenkloof, Pretoria
Postal Code	0181

Participating Organizations

This section requires further investigation, however, it is anticipated that the indicated organizations could contribute. They have not yet been approached, and the final team / network contributors will be determined as part of the study.

Organization Name	UKZN, UWC, Rhodes, UP
Department	
Contributions	
Contact Details	
Address	
City	
Postal Code	

Organization Name	DWS, Tshwane
Department/Component	
Contributions	
Contact Details	
Address	
City	
Postal Code	

Organization Name	SRK Consulting, Aurecon
Department/Component	
Contributions	
Contact Details	
Address	
City	
Postal code	

Organization Name	Peter van Niekerk / Johan van Rooyen (Retired DWS managers)
Department/Component	
Contributions	
Contact Details	
Address	
City	
Postal code	

PROJECT TEAM

Project team member details See comment above

Organization	WRP	Water Resources Appraisal Services	Strategic Water Partners Network
Role	Lead	Curriculum development	Curriculum development
Title	Mrs	Dr	Ms
Initials	CJ	P	Z
First Name	Caryn	Peter	Zama
Surname	Seago	van Niekerk	Siqalaba
ID/Passport Number			
Gender	Female	Male	Female
Race	White	White	Black
Nationality	RSA	RSA	RSA
Citizenship	RSA	RSA	RSA
Country of Origin	RSA	RSA	RSA
Relevant Years of Experience	12	30+	10
Qualifications	MSc Eng (Pr Eng)		BSc Social Science
Email Address	caryns@wrp.co.za	waterappraisal@gmail.com	
Organization	WRP	SRK	Galdlati
Role	Administration	Qualification development	Qualification guidance
Title	Ms	Dr	Mr
Initials	C	H	M
First Name	Constance	Bulcock	Musa
Surname	Makola	Hartley	Furumele
ID/Passport Number			
Gender	Female	Male	Male
Race	Black	White	Black
Nationality	RSA	RSA	RSA
Citizenship	RSA	RSA	RSA
Country of Origin	RSA	RSA	RSA
Relevant Years of Experience	9	6	15
Qualifications		PhD (Hydrology)	Pr Eng
Email Address	constancem@wrp.co.za	hbulcock@srk.co.za	musa@gandlati.co.za

RATIONALE

Motivation

FETWater is in the third phase of a study aiming to achieve the goals of the National Water Resources Strategy as outlined in Chapter 15 with regards to “skills and capacity”. One of the key performance indicators specified and to be addressed by FETWater is “Number of Water Related Qualifications developed”.

The wider study has been divided into 6 groups or “networks” of which this business plan forms part of the “Water Planning and Implementation” network. This business plan is prepared based on ideas presented at a workshop held on 27 May 2015 in which specialists in the sector were asked to brainstorm ideas surrounding a new qualification that could assist with the objectives of the network.

The Water Planning and Implementation Network plays a critical role in the future of Water Resources in South Africa. We are faced today with the consequences in the Energy Sector of inadequate and insufficient future planning, combined with a lack of sufficient skills to do so. The water sector can learn from these errors.

There are currently a number of tertiary education degrees and diplomas available in various aspects dealing with water. Historically, engineers/technicians, both civil and agricultural, would be appointed in positions to carry out water resources planning and implementation. This practice is, however, changing in recent times, with fewer and fewer engineers graduating (often due to the competition for candidates with the IT sector) and the need to fill a wide range of jobs with those that do. The role of water resources planning and implementation is now being taken up by other skilled professionals, for example, graduates with a form of a science degree or diploma. This can result in graduates entering a steep learning curve in order to gain the experience and knowledge required to do their day to day activities.

Despite the traditional qualifications being presented by the tertiary institutions such as hydrology, engineering and the sciences, there still appears to be a gap between what is taught in the academic world, and what is required to carry out the activities of a water resources planner and implementer. It is here where FETWater has an opportunity to bridge this gap.

It is the recommendation of this Network that there is a need to fill the gap by creating a qualification in which a “water resources manager” would be trained in a wide range of skills that are required to carry out the function of planning and implementation of water resources. The course prepared to achieve the qualification will be unique as it will be streamlined and geared towards practical challenges faced by water resources planners and implementers.

An analysis carried out resulted in the following listed ideas regarding the ability of this network to achieve the set goals of producing a course in water resources management.

STRENGTHS: The network will consist of a multi sector team, weighted towards members working in the field of water resources management. This will enable a practical course to be developed and presented that will target the needs of the working environment as opposed to merely general theory traditionally taught in the academic world.

WEAKNESSES: It is impossible to foresee all the potential challenges setting up such a qualification may have. Team members have not necessarily been involved in this type of work before, and will have to overcome challenges as they arise.

OPPORTUNITIES: There is a real opportunity here to impact the water resources management field, by providing graduates with the tools required to face their day to day challenges. The

course will be focussed and streamlined, and will therefore provide a broad knowledge over a short space of time.

CONSTRAINTS: It still remains unclear at present the exact target group for the qualification, and the numbers of individuals that can be impacted by such a course. Due to the higher level of training required, this qualification may not be deemed important as it will target a relatively small group of individuals, as opposed to some of the other networks that can churn out artisan type qualifications at a faster pace. It may also be difficult to get the message across requiring the necessary buy-in to move forward with the process if the decision makers are not aware of the impact such a course could have on the sector.

Outputs/Outcomes and Expected Impact

The outputs of this proposed business plan is training material for a course which would result in a certified “water resources manager” qualification. This will impact practitioners (mostly individuals starting their career) working in the field of water resources planning and implementation. The impact will be targeted at various Institutions across the country (mostly Governmental employees) however, can also spill over into the Private Sector.

In parallel to the development of the training material and the course framework, the various institutions involved with accreditation will be engaged with, in order to correctly prepare the course and eventual qualification.

The risk involved with such a proposed output is that the course framework and plan may not be sufficient to “qualify” for a specific academic level. This is unknown at present, and can only be ascertained during the study in the engaging phase. It is suggested that the SETAs and other institutions be aligned with and modifications made to the course framework where required until the course is deemed satisfactory for those academic bodies. It should be noted here that the proposed qualification will be pitched at the level of a bridging course and not a tertiary degree or diploma.

It is anticipated that this qualification would greatly benefit the water resources planning and implementation sector, as no such course currently exists. New graduates are currently thrown in the deep end regarding their day to day activities, and there is often little or no time for mentorship by their superiors. Managers are thinly spread across the sector, often requiring young, newly appointed individuals to attend meetings representing their organisations (for examples DWS) alone. They can not always speak with authority as they are unsure of the processes involved. This is imperative in the water sector where the resource is scarce and multiple users compete for the bit there is.

A further risk would be that the necessary candidates are unable to attend the course due to prior work commitments. It is the recommendation of this network that the course be geared towards individuals that are already in employment, and the practicalities of this need to be assessed. A way to overcome could be to offer 2 courses each month and candidates can select which date suits them better. This will all need to be addressed as part of this study.

AIMS AND OBJECTIVES

AIM

The aim of this proposed business plan is to produce a course that will give those that qualify the ability to speak with authority regarding water resources planning and implementation. They will be skilled with a wide range of functions required to carry out management of water resources. The course will train individuals to become effective “Water Resources Managers”. The definition of the career involves someone who carries out the following 4 specific activities regarding water resources:

- Plans,
- Implements,
- Evaluates,
- Reports on.

A water resources manager would be an individual in a managerial / decision making role, who manages water resources. It is anticipated that the individual does not need to know details on specific water resources aspects; however, they should have a broad understanding and knowledge of the related subsectors that all play a role in water resources management. This broad understanding will assist them in their day to day role of planning and implementing water resources on various levels, including dealing with various stakeholders. The individual may find themselves working in a governmental post (Department of Water Affairs and Sanitation or a Local / District Municipality) or in the private sector for a consulting firm, or in an advisory role to a Municipality.

The specifics surrounding the qualification and the targeted students will be determined as part of the work proposed for in this business plan.

No	Objective
1	Build on the concept of a qualification titled “water resources management” which will provide a new / unique opportunity for planners and implementers to gain a wide range of skills required for their day to day activities
2	Establish the requirements in order to register the water resources management course which will provide motivation for potential candidates to sign up for the course
3	Develop the framework for the water resources management course which will assist in explaining and marketing the course
4	Prepare the training material for the water resources management course which will be key to the successful implementation of the qualification

ACTIVITIES

Activity 1: Establishment of Representative Network and Core Study Team

This activity will build on previous work. It is unclear to what extent the current members of the network are effectively involved, and a relook at those members is required. Further suggestions of individuals that will greatly contribute to the network will be made. It is the aim to rather have a smaller group of committed individuals that actually contribute, than to spread wide the invitation with few contributors. The Network will be operated on two levels, firstly individuals representing the core study team and secondly, those that will form a higher level advisory role for the qualification 1 month

Activity 2: Outline of Proposed Qualification

This activity will involve outlining the proposed "water resources manager" course by adding further detail as to what is envisaged in the course, as well as typical uses and career opportunities such an individual may have. The activity will include a two day workshop, the first day involving the wider network group to brainstorm ideas, and the second including just the core study team, aimed at establishing roles and assigning budgets and responsibilities 2 month

Activity 3: Determination of Target Group

This activity will narrow down potential candidates for the proposed qualification and ascertain the typical undergraduate qualifications the individual may require in order to further qualify as a water resources manager. A needs assessment will be carried out here, including interviews with individuals currently fulfilling the roles as water resources planners and implementers 2month

Activity 4: Engagement with SETAs and other organizations

Activity 4 will engage with the various organizations that will assist in the further development of the course from the perspective of the required academic obligations. Information from Activity 1 and 2 will be required for the discussions with the relevant organizations. 2 month

Activity 5: Assessment and Refinement of proposed career

It may be, following Activity 4, that further refinement and planning regarding the proposed qualification be required, and this will take place as part of this activity. The final deliverable from this activity will be a detailed description of the proposed water resources manager career and the approach that will be taken to gain the suitable accreditations. 4 months

Activity 6: Detailed outline of course

Activity 6 will involve creating the curriculum and determining the time frames and plans for the required training courses. A final detailed course framework will be developed as a deliverable of this activity. This will include liaison with potential course planners and future trainers. This Activity will again include a core study team workshop for the planning thereof. 2 month

Activity 7: Preparation of course material

Activity 7 will include the preparation of the required training material for the course. 15 modules in the form of power point slides and handouts will be developed and delivered as part of this activity. Each module will also include one exam question for the final exam. 12 months

Activity 8: Plan for 2018 course

Activity 8 will involve the practicalities of planning for the first course with the aim to carry out a pilot in 2018. Potential trainees, trainers and venues will be narrowed down.

Activity 9: Study Management

This Activity will include the overall management of the study, including the necessary logistical arrangements, as well as client liaison in order to confirm that the study is progressing as required.

DELIVERABLES

Task	Description	Budget (R)	Delivery date	Deliverable
1	Network Establishment	30 000	31 August 2015	
2	Career Outline	100 000	30 September 2015	Minutes of inception workshop Discussion document
3	Target group	80 000	30 November 2015	Discussion document
4	Engagement	50 000	31 January 2016, ad hoc thereafter depending on workshop dates	Minutes of meetings & attendance registers of workshops
5	Final career plan	50 000	30 April 2016	Chapter in final report
6	Outline of qualification	60 000	30 June 2016	Chapter in final report
7	Prepare qualification material	780 000 (60 000 x 13)	30 June 2017	Coursework file including all modules and exam questions
8	Plan for 2018 piloting	50 000	30 June 2017	Training schedule for 2018 including potential trainees, trainers venues etc
9	Management	80 000		
	Disbursements	50 000		
		1 330 000		

PRODUCTS

An example of the proposed structure of the course to obtain the water resource management qualification follows. The product of this study will be to build on this skeleton and bring it to life.

Module no	Month	Module name	Brief Summary	Time frame
1	January	Hydrology	General overview of hydrological concepts and the water cycle including surface and groundwater	3 days
2	February	The South African Water Sector	Overview of Role players and requirements from a water resources perspective	1 day

Module no	Month	Module name	Brief Summary	Time frame
3	February	NW Act and regulating Policy	Including Water Reconciliation Strategies and international basin obligations	2 days
4	March	Water Quality	Principles of water quality	1.5 days
5	March	Water Ecology	Principles of ecology and the environmental reserve	1.5 days
6	April	Infrastructure	Dams, boreholes, pumps, weirs, tunnels, transfers	3 days
7	May	Water Users and economics	Understanding various water user sectors eg. irrigation, mining, industry into their requirements and terminology	3 days
8	June	Data requirements	Overview of water resources data required in day to day management of schemes	3 days
9	July	Water Modeling	Including rainfall-runoff and yield	3 days
10	August	Water Modeling	Including planning and operations (real time)	3 days
11	September	Management skills	General aspects required to become an effective manager, including time and people management, problem solving, good communication	3 days
12	October	Reporting	Terms of reference writing, tender evaluation and report writing skills	3 days
13	November	Experience	Presented by experienced water resources managers, this module will provide insight into historical approaches to problems and case studies	3 days
	December	Exam	Test of concepts learnt throughout the year	0.5 days

BUDGET

This budget is draft and will only be completed / finalized at the workshop proposed for Activity 2. The budget assigned to Activity 7 has not been allocated to individuals as this can only be done once the course framework has been finalized under Activity 6.

Human Resource Costs

Project Team	Financial	Remuneration	Days/Year	Amount (R)
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Member	Year	Rate (R/day)		
Seago	2015/16	3000	56.5	169 500
van Niekerk	2015/16	3000	20	60 000
Siqalaba	2015/16	3000	20	60 000
Makola	2015/16	1500	27	40 500
Bulcock	2015/16	3000	20	60 000
Furumele	2015/16	3000	20	60 000
Training Material Development	2016/17			780 000
Wider Network participation in workshop	2015/16			50 000
TOTAL				1 280 000

Travelling Expenses (International Conferences, Symposia, Seminars, Workshops & Meetings)

Item	Motivation	Financial Year	Amount (R)
Inception workshop wider network travel	Assuming 8 delegates to fly @ R4000 return flight	2015/16	32 000
Accommodation for core team 2 day workshop	Assuming 4 Team members @ R1500	2015/16	6 000
Additional team travel throughout study			12 000
TOTAL			50 000

Summary

Fin. Year	HR	Travelling	Total	Deliverables
2015/16	500 000	50000	550 000	Qualification preparation
2016/17	780 000	-	780 000	Course material

TRAINING DISSEMINATION AND UPTAKE

The final deliverable of this study will be the electronic slides, handouts and descriptions on slides that will be used for the presentation of the water resources manager bridging course. Though it is suggested and advised that practitioners in the various subsectors be used to present the courses, it is not imperative. Additional trainers could be developed and trained in order to present the course. These trainers would obviously need to first attend the course themselves.

The target audience / stakeholders who will benefit from this will be individuals working in a water resources management and implementation role. This course will assist in bridging the gap

between the theory they have learnt at tertiary institutions, and the practicalities of carrying out their work.

It is anticipated that retired, experienced water resources managers will be brought into the study to assist with the planning of the course, as well as to prepare and present some training materials. This will result in a true transfer of skills from experienced individuals to new graduates.

ADDITIONAL INFORMATION

Brief CV details for the Network Coordinator

Caryn Seago is an agricultural engineer who has since 2003 gained extensive experience in the Water Resource planning field with emphases on system analysis studies, software testing and maintenance. In recent years she has worked with multidisciplinary teams in developing strategies for water resource development of the Orange River System (international shared basin) and the Luvuvhu-Letaba system (supplying poorer rural communities) to ensure sufficient water supply over the following twenty to thirty years. Caryn has since 2009 been responsible for the testing of the main simulation models (Water Resources Yield and Planning models – WRYM & WRPM) used by the South African Department of Water Affairs and Sanitation (SADWS) as the primary Decision Support System (DSS) for water resource planning and management in the country. During her 13 year career she has undertaken many hydrological studies, capability assessment of existing water resource systems, determination of optimal operating rules for systems, scheduling of augmentation schemes (e.g. Lesotho Highlands Water Project) and operation analysis of the Integrated Vaal and Orange River Supply System. As an agricultural engineer, Caryn is experienced with various factors surrounding irrigation. She is experienced with primary data collection (rainfall and streamflow), collation and simulation. This includes rainfall-runoff simulation, mainly with the Pitman Hydrological Model.

List of Abbreviations

CV	Curriculum Vitae
FETWater	Framework Programme for Research, Education and Training in the Water Sector
HR	Human Resources
NWRS2	National Water Resources Strategy Version 2
PDIs	Previously Disadvantaged Institutions/Individuals

