



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

WP11336

REQUEST FOR BID

BID NUMBER WP11336

APPOINTMENT OF PROFESSIONAL SERVICE PROVIDER TO UNDERTAKE THE STUDY FOR THE PROVISION OF GENERAL MODELLING AND WATER RESOURCE EVALUATION SERVICES FOR ALLOCABLE WATER QUANTIFICATION AND TO SUPPORT INTEGRATED WATER RESOURCE PLANNING (KOUGA, BAVIAANS, GAMTOOS AND KROMME RIVERS)

ISSUE DATE:

11 SEPTEMBER 2020

CLOSING DATE AND TIME

13 OCTOBER 2020 at 11H00

SUBMIT TENDER DOCUMENT

POSTAL ADDRESS:
DIRECTOR-GENERAL: WATER AND
SANITATION
PRIVATE BAG X 313 PRETORIA, 0002

OR

TO BE DEPOSITED IN:
THE TENDER BOX AT THE
ENTRANCE OF ZWAMADAKA
BUILDING 157 FRANCIS BAARD
STREET (FORMERLY SCHOEMAN
STREET)
PRETORIA
0002

Compulsory briefing session

Briefing session:

Venue: G18 Emanzini Building National Department of Water and Sanitation, 173 Francis Baard Street,
Pretoria 0001

Date: 29 September 2020

Time: 11:15am

TENDERER: (Company address and stamp)

PART A INVITATION TO BID

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE (NAME OF DEPARTMENT/ PUBLIC ENTITY)					
BID NUMBER:	WP11336	CLOSING DATE:	13 OCTOBER 2020	CLOSING TIME:	11H00
DESCRIPTION	APPOINTMENT OF PROFESSIONAL SERVICE PROVIDER TO UNDERTAKE THE STUDY FOR THE PROVISION OF GENERAL MODELLING AND WATER RESOURCE EVALUATION SERVICES FOR ALLOCABLE WATER QUANTIFICATION AND TO SUPPORT INTEGRATED WATER RESOURCE PLANNING (KOUGA, BAVIAANS, GAMTOOS AND KROMME RIVERS)				
BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT (STREET ADDRESS)					
TENDER BOX AT ZWAMADAKA BUILDING 157 FRANCIS BAARD STREET (FORMERLY SCHOEMAN STREET)					
PRETORIA, 0002					
BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO			TECHNICAL ENQUIRIES MAY BE DIRECTED TO:		
CONTACT PERSON	Winnie Dolamo		CONTACT PERSON	Mr Patrick Mlilo	
TELEPHONE NUMBER	012 336 8974		TELEPHONE NUMBER	012 336 8199	
FACSIMILE NUMBER	0864890777		FACSIMILE NUMBER	N/A	
E-MAIL ADDRESS	dolamow@dws.gov.za		E-MAIL ADDRESS	Mlilop@dws.gov.za	
SUPPLIER INFORMATION					
NAME OF BIDDER					
POSTAL ADDRESS					
STREET ADDRESS					
TELEPHONE NUMBER	CODE		NUMBER		
CELLPHONE NUMBER					
FACSIMILE NUMBER	CODE		NUMBER		
E-MAIL ADDRESS					
VAT REGISTRATION NUMBER					
SUPPLIER COMPLIANCE STATUS	TAX COMPLIANCE SYSTEM PIN:		OR	CENTRAL SUPPLIER DATABASE No:	MAAA
B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE	TICK APPLICABLE BOX] <input type="checkbox"/> Yes <input type="checkbox"/> No		B-BBEE STATUS LEVEL SWORN AFFIDAVIT		[TICK APPLICABLE BOX] <input type="checkbox"/> Yes <input type="checkbox"/> No
[A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE/ SWORN AFFIDAVIT (FOR EMES & QSEs) MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE]					
ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?	<input type="checkbox"/> Yes <input type="checkbox"/> No [IF YES ENCLOSE PROOF]		ARE YOU A FOREIGN BASED SUPPLIER FOR THE GOODS /SERVICES /WORKS OFFERED?		<input type="checkbox"/> Yes <input type="checkbox"/> No [IF YES, ANSWER PART B:3]
QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS					
IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?				<input type="checkbox"/> YES <input type="checkbox"/> NO	
DOES THE ENTITY HAVE A BRANCH IN THE RSA?				<input type="checkbox"/> YES <input type="checkbox"/> NO	
DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA?				<input type="checkbox"/> YES <input type="checkbox"/> NO	
DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA?				<input type="checkbox"/> YES <input type="checkbox"/> NO	
IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?				<input type="checkbox"/> YES <input type="checkbox"/> NO	
IF THE ANSWER IS "NO" TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 2.3 BELOW.					

PART B

TERMS AND CONDITIONS FOR BIDDING

1. BID SUBMISSION:

- 1.1. BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.
- 1.2. ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED—(NOT TO BE RE-TYPED) OR IN THE MANNER PRESCRIBED IN THE BID DOCUMENT.
- 1.3. THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT, 2000 AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.
- 1.4. THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT FORM (SBD7).

2. TAX COMPLIANCE REQUIREMENTS

- 2.1. BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.
- 2.2. BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VERIFY THE TAXPAYER'S PROFILE AND TAX STATUS.
- 2.3. APPLICATION FOR TAX COMPLIANCE STATUS (TCS) PIN MAY BE MADE VIA E-FILING THROUGH THE SARS WEBSITE WWW.SARS.GOV.ZA.
- 2.4. BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.
- 2.5. IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.
- 2.6. WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.
- 2.7. NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE, COMPANIES WITH DIRECTORS WHO ARE PERSONS IN THE SERVICE OF THE STATE, OR CLOSE CORPORATIONS WITH MEMBERS PERSONS IN THE SERVICE OF THE STATE."

NB: FAILURE TO PROVIDE / OR COMPLY WITH ANY OF THE ABOVE PARTICULARS MAY RENDER THE BID INVALID.

SIGNATURE OF BIDDER:

.....

CAPACITY UNDER WHICH THIS BID IS SIGNED:

.....

(Proof of authority must be submitted e.g. company resolution)

DATE:

.....

PRICING SCHEDULE

APPOINTMENT OF PROFESSIONAL SERVICE PROVIDER TO UNDERTAKE THE STUDY FOR THE PROVISION OF GENERAL MODELLING AND WATER RESOURCE EVALUATION SERVICES FOR ALLOCABLE WATER QUANTIFICATION AND TO SUPPORT INTEGRATED WATER RESOURCE PLANNING (KOUGA, BAVIAANS, GAMTOOS AND KROMME RIVERS)

NAME OF BIDDER:PROJECT NO: **WP11336**

CLOSING TIME: **11:00**

CLOSING DATE: **13 OCTOBER 2020**

OFFER TO BE VALID FOR 90 DAYS FROM THE CLOSING DATE OF BID.

ITEM DESCRIPTION BID PRICE IN RSA CURRENCYNO (ALL APPLICABLE TAXES INCLUDED)

1. The accompanying information must be used for the formulation of proposals.
2. Bidders are required to indicate a ceiling price based on the total Estimated time for completion of all phases and including all Expenses inclusive of all applicable taxes for the project.

R.....

3. Period required for commencement with project after Acceptance of bid

.....

4. Estimated man-days for completion of project

.....

5. Are the rates quoted firm for the full period of contract? *YES/NO

6. If not firm for the full period, provide details of the basis on which Adjustments will be applied for, for example consumer price index.

.....

.....

.....

.....

*[DELETE IF NOT APPLICABLE]

Any enquiries regarding bidding procedures may be directed to the

Department: Department of Water and Sanitation

Contact Person: Winnie Dolamo

Tel: 012 336 8974

E-mail address: dolamow@dws.gov.za

ANY ENQUIRIES REGARDING TECHNICAL INFORMATION MAY BE DIRECTED TO:

Mr Patrick Mlilo

Tel: 012 336 8199

E-mail address: mlilop@dws.gov.za

DECLARATION OF INTEREST

1. Any legal person, including persons employed by the state¹, or persons having a kinship with persons employed by the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid (includes an advertised competitive bid, a limited bid, a proposal or written price quotation). In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons employed by the state, or to persons connected with or related to them, it is required that the bidder or his/her authorised representative declare his/her position in relation to the evaluating/adjudicating authority where-
- the bidder is employed by the state; and/or

the legal person on whose behalf

the bidding document is signed, has a relationship with persons/a

person who are/is involved in the evaluation and or adjudication of the bid(s), or where it is known that such a relationship exists between the person or persons for or on whose behalf the declarant acts and persons who are involved with the evaluation and or adjudication of the bid.

2. **In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.**

2.1 Full Name of bidder or his or her representative:

2.2 Identity Number:.....

2.3 Position occupied in the Company (director, trustee, shareholder², member):
.....

2.4 Registration number of company, enterprise, close corporation, partnership agreement or trust:
.....

2.5 Tax Reference Number:.....

2.6 VAT Registration Number:

- 2.6.1 The names of all directors / trustees / shareholders / members, their individual identity numbers, tax reference numbers and, if applicable, employee / PERSAL numbers must be indicated in paragraph 3 below.

¹"State" means –

- (a) any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No. 1 of 1999);
- (b) any municipality or municipal entity;
- (c) provincial legislature;
- (d) national Assembly or the national Council of provinces; or
- (e) Parliament.

²"Shareholder" means a person who owns shares in the company and is actively involved in the management of the enterprise or business and exercises control over the enterprise.

- 2.7 Are you or any person connected with the bidder **YES / NO**
presently employed by the state?

- 2.7.1 If so, furnish the following particulars:

Name of person / director / trustee / shareholder/ member:

Name of state institution at which you or the person

Connected to the bidder is employed:

Position occupied in the state institution:

Any other particulars:

.....
.....

2.7.2 If you are presently employed by the state, did you obtain the appropriate authority to undertake remunerative work outside employment in the public sector? **YES / NO**

2.7.2.1 If yes, did you attach proof of such authority to the bid Document? **YES / NO**

(Note: Failure to submit proof of such authority, where applicable, may result in the disqualification of the bid.

2.7.2.2 If no, furnish reasons for non-submission of such proof:

.....
.....
.....

2.8 Did you or your spouse, or any of the company's directors / Trustees / shareholders / members or their spouses conduct Business with the state in the previous twelve months? **YES / NO**

2.8.1 If so, furnish particulars:

.....
.....
.....

2.9 Do you, or any person connected with the bidder, have any relationship (family, friend, other) with a person employed by the state and who may be involved with the evaluation and or adjudication of this bid? **YES / NO**
2.9.1 If so, furnish particulars.

.....
.....
.....

2.10 Are you, or any person connected with the bidder, aware of any relationship (family, friend, other) between any other bidder and any person employed by the state who may be involved with the evaluation and or adjudication of this bid? If so, furnish particulars. **YES/NO**

.....
.....
.....

2.11 Do you or any of the directors / trustees / shareholders / members of the company have any interest in any other related companies whether or not they are bidding for this contract? **YES/NO**

2.11.1 If so, furnish particulars:

.....

3 Full details of directors / trustees / members / shareholders.

Full Name	Identity Number	Personal Tax Reference Number	Income Employee Number / Persal Number

4 DECLARATION

I, THE UNDERSIGNED (NAME).....

CERTIFY THAT THE INFORMATION FURNISHED IN PARAGRAPHS 2 and 3 ABOVE IS CORRECT. I
ACCEPT THAT THE STATE MAY REJECT THE BID OR ACT AGAINST ME
SHOULD THIS DECLARATION PROVE TO BE FALSE.

.....
Signature

.....
Date

.....
Position

.....
Name of bidder

PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2017

This preference form must form part of all bids invited. It contains general information and serves as a claim form for preference points for Broad-Based Black Economic Empowerment (B-BBEE) Status Level of Contribution

NB: BEFORE COMPLETING THIS FORM, BIDDERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF B-BBEE, AS PRESCRIBED IN THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017.

1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to all bids:

- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included); and
- the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

1.2

- a) The value of this bid is estimated to ~~exceed/not exceed~~ R50 000 000 (all applicable taxes included) and therefore the...80/20... preference point system shall be applicable; or
- b) Either the 80/20 or 90/10 preference point system will be applicable to this tender (*delete whichever is not applicable for this tender*).

1.3 Points for this bid shall be awarded for:

- (a) Price; and
- (b) B-BBEE Status Level of Contributor.

1.4 The maximum points for this bid are allocated as follows:

	POINTS
PRICE	80
B-BBEE STATUS LEVEL OF CONTRIBUTOR	20
Total points for Price and B-BBEE must not exceed	100

1.5 Failure on the part of a bidder to submit proof of B-BBEE Status level of contributor together with the bid, will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed.

1.6 The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the purchaser.

2. DEFINITIONS

- (a) **"B-BBEE"** means broad-based black economic empowerment as defined in section 1 of the Broad-Based Black Economic Empowerment Act;
- (b) **"B-BBEE status level of contributor"** means the B-BBEE status of an entity in terms of a code of good practice on black economic empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act;

- (c) **“bid”** means a written offer in a prescribed or stipulated form in response to an invitation by an organ of state for the provision of goods or services, through price quotations, advertised competitive bidding processes or proposals;
- (d) **“Broad-Based Black Economic Empowerment Act”** means the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);
- (e) **“EME”** means an Exempted Micro Enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act;
- (f) **“functionality”** means the ability of a tenderer to provide goods or services in accordance with specifications as set out in the tender documents.
- (g) **“prices”** includes all applicable taxes less all unconditional discounts;
- (h) **“proof of B-BBEE status level of contributor”** means:
 - 1) B-BBEE Status level certificate issued by an authorized body or person;
 - 2) A sworn affidavit as prescribed by the B-BBEE Codes of Good Practice;
 - 3) Any other requirement prescribed in terms of the B-BBEE Act;
- (i) **“QSE”** means a qualifying small business enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act;
- (j) **“rand value”** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;

3. POINTS AWARDED FOR PRICE

3.1 THE 80/20 OR 90/10 PREFERENCE POINT SYSTEMS

A maximum of 80 or 90 points is allocated for price on the following basis:

$$\begin{array}{ccc}
 \mathbf{80/20} & \mathbf{or} & \mathbf{90/10} \\
 P_s = 80 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right) & \text{or} & P_s = 90 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)
 \end{array}$$

Where

- P_s = Points scored for price of bid under consideration
- P_t = Price of bid under consideration
- P_{\min} = Price of lowest acceptable bid

4. POINTS AWARDED FOR B-BBEE STATUS LEVEL OF CONTRIBUTOR

- 4.1 In terms of Regulation 6 (2) and 7 (2) of the Preferential Procurement Regulations, preference points must be awarded to a bidder for attaining the B-BBEE status level of contribution in accordance with the table below:

B-BBEE Status Level of Contributor	Number of points (90/10 system)	Number of points (80/20 system)
1	10	20
2	9	18
3	6	14
4	5	12
5	4	8
6	3	6
7	2	4
8	1	2
Non-compliant contributor	0	0

5. BID DECLARATION

- 5.1 Bidders who claim points in respect of B-BBEE Status Level of Contribution must complete the following:

6. B-BBEE STATUS LEVEL OF CONTRIBUTOR CLAIMED IN TERMS OF PARAGRAPHS 1.4 AND 4.1

- 6.1 B-BBEE Status Level of Contributor: = (maximum of 10 or 20 points)
(Points claimed in respect of paragraph 7.1 must be in accordance with the table reflected in paragraph 4.1 and must be substantiated by relevant proof of B-BBEE status level of contributor.

7. SUB-CONTRACTING

- 7.1 Will any portion of the contract be sub-contracted?

(Tick applicable box)

YES	<input type="checkbox"/>	NO	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

- 7.1.1 If yes, indicate:

- What percentage of the contract will be subcontracted.....%
- The name of the sub-contractor.....
- The B-BBEE status level of the sub-contractor.....
- Whether the sub-contractor is an EME or QSE

(Tick applicable box)

YES	<input type="checkbox"/>	NO	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

- v) Specify, by ticking the appropriate box, if subcontracting with an enterprise in terms of Preferential Procurement Regulations, 2017:

Designated Group: An EME or QSE which is at least 51% owned by:	EME √	QSE √
Black people		
Black people who are youth		
Black people who are women		
Black people with disabilities		
Black people living in rural or underdeveloped areas or townships		
Cooperative owned by black people		
Black people who are military veterans		
OR		
Any EME		
Any QSE		

8. DECLARATION WITH REGARD TO COMPANY/FIRM

8.1 Name of company/firm:.....

8.2 VAT registration number:.....

8.3 Company registration number:.....

8.4 TYPE OF COMPANY/ FIRM

Partnership/Joint Venture / Consortium

One person business/sole propriety

Close corporation

Company

(Pty) Limited

[TICK APPLICABLE BOX]

8.5 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES

.....
.....
.....
.....

8.6 COMPANY CLASSIFICATION

Manufacturer

Supplier

Professional service provider

Other service providers, e.g. transporter, etc.

[TICK APPLICABLE BOX]

8.7 Total number of years the company/firm has been in business:.....

8.8 I/we, the undersigned, who is / are duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the B-BBE status level of contributor indicated in paragraphs 1.4 and 6.1 of the foregoing certificate, qualifies the company/ firm for the preference(s) shown and I / we acknowledge that:

- i) The information furnished is true and correct;
- ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 6.1, the contractor may be required to furnish documentary proof to the satisfaction of the purchaser that the claims are correct;
- iv) If the B-BBEE status level of contributor has been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the purchaser may, in addition to any other remedy it may have –
 - (a) disqualify the person from the bidding process;
 - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
 - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
 - (d) recommend that the bidder or contractor, its shareholders and directors, or only the shareholders and directors who acted on a

fraudulent basis, be restricted by the National Treasury from obtaining business from any organ of state for a period not exceeding 10 years, after the *audialterampartem* (hear the other side) rule has been applied; and

- (e) forward the matter for criminal prosecution.

WITNESSES

1.
2.

.....
SIGNATURE(S) OF BIDDERS(S)

DATE:

ADDRESS

.....

.....

DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

- 1 This Standard Bidding Document must form part of all bids invited.
- 2 It serves as a declaration to be used by institutions in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.
- 3 The bid of any bidder may be disregarded if that bidder, or any of its directors have-
 - a. abused the institution's supply chain management system;
 - b. committed fraud or any other improper conduct in relation to such system; or
 - c. failed to perform on any previous contract.
- 4 In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

Item	Question	Yes	No
4.1	Is the bidder or any of its directors listed on the National Treasury's Database of Restricted Suppliers as companies or persons prohibited from doing business with the public sector? (Companies or persons who are listed on this Database were informed in writing of this restriction by the Accounting Officer/Authority of the institution that imposed the restriction after the <i>audi alteram partem</i> rule was applied). The Database of Restricted Suppliers now resides on the National Treasury's website(www.treasury.gov.za) and can be accessed by clicking on its link at the bottom of the home page.	+	No <input type="checkbox"/>
4.1.1	If so, furnish particulars:		
4.2	Is the bidder or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)? The Register for Tender Defaulters can be accessed on the National Treasury's website (www.treasury.gov.za) by clicking on its link at the bottom of the home page.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4.2.1	If so, furnish particulars:		
4.3	Was the bidder or any of its directors convicted by a court of law (including a court outside of the Republic of South Africa) for fraud or corruption during the past five years?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4.3.1	If so, furnish particulars:		
4.4	Was any contract between the bidder and any organ of state terminated during the past five years on account of failure to perform on or comply with the contract?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4.4.1	If so, furnish particulars:		

CERTIFICATION

**I, THE UNDERSIGNED (FULL NAME).....
CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION
FORM IS TRUE AND CORRECT.**

**I ACCEPT THAT, IN ADDITION TO CANCELLATION OF A CONTRACT, ACTION
MAY BE TAKEN AGAINST ME SHOULD THIS DECLARATION PROVE TO BE
FALSE.**

.....
Signature

.....
Date

.....
Position

.....
Name of Bidder

CERTIFICATE OF INDEPENDENT BID DETERMINATION

- 1 This Standard Bidding Document (SBD) must form part of all bids¹ invited.
- 2 Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive bidding (or bid rigging).² Collusive bidding is a *pe se* prohibition meaning that it cannot be justified under any grounds.
- 3 Treasury Regulation 16A9 prescribes that accounting officers and accounting authorities must take all reasonable steps to prevent abuse of the supply chain management system and authorizes accounting officers and accounting authorities to:
 - a. disregard the bid of any bidder if that bidder, or any of its directors have abused the institution's supply chain management system and or committed fraud or any other improper conduct in relation to such system.
 - b. cancel a contract awarded to a supplier of goods and services if the supplier committed any corrupt or fraudulent act during the bidding process or the execution of that contract.
- 4 This SBD serves as a certificate of declaration that would be used by institutions to ensure that, when bids are considered, reasonable steps are taken to prevent any form of bid-rigging.
- 5 In order to give effect to the above, the attached Certificate of Bid Determination (SBD 9) must be completed and submitted with the bid:

¹ Includes price quotations, advertised competitive bids, limited bids and proposals.

² Bid rigging (or collusive bidding) occurs when businesses, that would otherwise be expected to compete, secretly conspire to raise prices or lower the quality of goods and / or services for purchasers who wish to acquire goods and / or services through a bidding process. Bid rigging is, therefore, an agreement between competitors not to compete.

CERTIFICATE OF INDEPENDENT BID DETERMINATION

I, the undersigned, in submitting the accompanying bid:

(Bid Number and Description)

in response to the invitation for the bid made by:

(Name of Institution)

do hereby make the following statements that I certify to be true and complete in every respect:

I certify, on behalf of: _____ that:

(Name of Bidder)

1. I have read and I understand the contents of this Certificate;
2. I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;
4. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign the bid, on behalf of the bidder;
5. For the purposes of this Certificate and the accompanying bid, I understand that the word "competitor" shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:
 - (a) has been requested to submit a bid in response to this bid invitation;
 - (b) could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
 - (c) provides the same goods and services as the bidder and/or is in the same line of business as the bidder
6. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However communication between partners in a joint venture or consortium³ will not be construed as collusive bidding.
7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
 - (a) prices;
 - (b) geographical area where product or service will be rendered (market allocation)

- (c) methods, factors or formulas used to calculate prices;
 - (d) the intention or decision to submit or not to submit, a bid;
 - (e) the submission of a bid which does not meet the specifications and conditions of the bid;
or
 - (f) bidding with the intention not to win the bid.
8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.
9. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

³ Joint venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.

10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

.....
Signature

.....
Date

.....
Position

.....
Name of Bidder

GOVERNMENT PROCUREMENT GENERAL CONDITIONS OF CONTRACT

NOTES

The purpose of this document is to:

- (i) Draw special attention to certain general conditions applicable to government bids, contracts and orders**
- (ii) To ensure that clients be familiar with regard to the rights and obligations of all parties involved in doing business with government.**

In this document words in the singular also mean in the plural and vice versa and words in the masculine also mean in the feminine and neuter.

- ☐ **The General Conditions of Contract will form part of all bid documents and may not be amended.**
- ☐ **Special Conditions of Contract (SCC) relevant to a specific bid, should be compile separately for every bid (if (applicable) and will supplement the General Conditions of Contract. Whenever there is a conflict, the provisions in the SCC shall prevail.**

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General Conditions of Contract

1. Definitions 1. The following terms shall be interpreted as indicated:

- 1.1 "Closing time" means the date and hour specified in the bidding documents for the receipt of bids.
- 1.2 "Contract" means the written agreement entered into between the purchaser and the supplier, as recorded in the contract form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.
- 1.3 "Contract price" means the price payable to the supplier under the contract for the full and proper performance of his contractual obligations.
- 1.4 "Corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution.
- 1.5 "Countervailing duties" are imposed in cases where an enterprise abroad is subsidized by its government and encouraged to market its products internationally.
- 1.6 "Country of origin" means the place where the goods were mined, grown or produced or from which the services are supplied. Goods are produced when, through manufacturing, processing or substantial and major assembly of components, a commercially recognized new product results that is substantially different in basic characteristics or in purpose or utility from its components.
- 1.7 "Day" means calendar day.
- 1.8 "Delivery" means delivery in compliance of the conditions of the contract or order.
- 1.9 "Delivery ex stock" means immediate delivery directly from stock actually on hand.
- 1.10 "Delivery into consignees store or to his site" means delivered and unloaded in the specified store or depot or on the specified site in compliance with the conditions of the contract or order, the supplier bearing all risks and charges involved until the supplies are so delivered and a valid receipt is obtained.
- 1.11 "Dumping" occurs when a private enterprise abroad market its goods on own initiative in the RSA at lower prices than that of the country of origin and which have the potential to harm the local industries in the RSA.
- 1.12 "Force majeure" means an event beyond the control of the supplier and not involving the supplier's fault or negligence and not foreseeable. Such events may include, but is not restricted to, acts of the purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.
- 1.13 "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of any bidder, and includes collusive practice among bidders prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the bidder of the benefits of free and open competition.
- 1.14 "GCC" means the General Conditions of Contract.
- 1.15 "Goods" means all of the equipment, machinery, and/or other materials that the supplier is required to supply to the purchaser under the contract.

- 1.16 "Imported content" means that portion of the bidding price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or his subcontractors) and which costs are inclusive of the costs abroad, plus freight and other direct importation costs such as landing costs, dock dues, import duty, sales duty or other similar tax or duty at the South African place of entry as well as transportation and handling charges to the factory in the Republic where the supplies covered by the bid will be manufactured.
- 1.17 "Local content" means that portion of the bidding price which is not included in the imported content provided that local manufacture does take place.
- 1.18 "Manufacture" means the production of products in a factory using labour, materials, components and machinery and includes other related value-adding activities.
- 1.19 "Order" means an official written order issued for the supply of goods or works or the rendering of a service.
- 1.20 "Project site," where applicable, means the place indicated in bidding documents.
- 1.21 "Purchaser" means the organization purchasing the goods.
- 1.22 "Republic" means the Republic of South Africa.
- 1.23 "SCC" means the Special Conditions of Contract.
- 1.24 "Services" means those functional services ancillary to the supply of the goods, such as transportation and any other incidental services, such as installation, commissioning, provision of technical assistance, training, catering, gardening, security, maintenance and other such obligations of the supplier covered under the contract.
- 1.25 "Written" or "in writing" means handwritten in ink or any form of electronic or mechanical writing.

2. Application.

- 2.1 These general conditions are applicable to all bids, contracts and orders including bids for functional and professional services, sales, hiring, letting and the granting or acquiring of rights, but excluding immovable property, unless otherwise indicated in the bidding documents.
- 2.2 Where applicable, special conditions of contract are also laid down to cover specific supplies, services or works.
- 2.3 Where such special conditions of contract are in conflict with these general conditions, the special conditions shall apply.

3. General

- 3.1 Unless otherwise indicated in the bidding documents, the purchaser shall not be liable for any expense incurred in the preparation and submission of a bid. Where applicable a non-refundable fee for documents may be charged.
- 3.2 With certain exceptions, invitations to bid are only published in the Government Tender Bulletin. The Government Tender Bulletin may be obtained directly from the Government Printer, Private Bag X85, Pretoria 0001, or accessed electronically from www.treasury.gov.za

4. Standards

- 4.1 The goods supplied shall conform to the standards mentioned in the bidding documents and specifications.

5. Use of contract documents and information; inspection.

- 5.1 The supplier shall not, without the purchaser's prior written consent, disclose the contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the purchaser in connection therewith, to any person other than a person employed by the supplier in the performance of the contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.
- 5.2 The supplier shall not, without the purchaser's prior written consent, make use of any document or information mentioned in GCC clause 5.1 except for purposes of performing the contract.
- 5.3 Any document, other than the contract itself mentioned in GCC clause 5.1 shall remain the property of the purchaser and shall be returned (all copies) to the purchaser on completion of the supplier's performance under the contract if so required by the purchaser.
- 5.4 The supplier shall permit the purchaser to inspect the supplier's records relating to the performance of the supplier and to have them audited by auditors appointed by the purchaser, if so required by the purchaser.

6. Patent rights.

- 6.1 The supplier shall indemnify the purchaser against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the goods or any part thereof by the purchaser.

7. Performance security

- 7.1 Within thirty (30) days of receipt of the notification of contract award, the successful bidder shall furnish to the purchaser the performance security of the amount specified in SCC.
- 7.2 The proceeds of the performance security shall be payable to the purchaser as compensation for any loss resulting from the supplier's failure to complete his obligations under the contract.
- 7.3 The performance security shall be denominated in the currency of the contract or in a freely convertible currency acceptable to the purchaser and shall be in one of the following forms:
 - (a) A bank guarantee or an irrevocable letter of credit issued by a reputable bank located in the purchaser's country or abroad, acceptable to the purchaser, in the form provided in the bidding documents or another form acceptable to the purchaser; or
 - (b) A cashier's or certified cheque
- 7.4 The performance security will be discharged by the purchaser and returned to the supplier not later than thirty (30) days following the date of completion of the supplier's performance obligations under the contract, including any warranty obligations, unless otherwise specified in SCC.

8. Inspections, tests and analyses

- 8.1 All pre-bidding testing will be for the account of the bidder 8.2 If it is a bid condition that supplies to be produced or services to be rendered should at any stage during production or execution or on completion be subject to inspection, the premises of the bidder or contractor shall be open, at all reasonable hours, for inspection by a representative of the Department or organization acting on behalf of the Department.

- 8.2 If it is a bid condition that supplies to be produced or services to be rendered should at any stage during production or execution or on completion be subject to inspection, the premises of the bidder or contractor shall be open, at all reasonable hours, for inspection by a representative of the Department or an organization acting on behalf of the Department
- 8.3 If there are no inspection requirements indicated in the bidding documents and no mention is made in the contract, but during the contract period it is decided that inspections shall be carried out, the purchaser shall itself make the necessary arrangements, including payment arrangements with the testing authority concerned.
- 8.4 If the inspections, tests and analyses referred to in clauses 8.2 and 8.3 show the supplies to be in accordance with the contract requirements, the cost of the inspections, tests and analyses shall be defrayed by the purchaser.
- 8.5 Where the supplies or services referred to in clauses 8.2 and 8.3 do not comply with the contract requirements, irrespective of whether such supplies or services are accepted or not, the cost in connection with these inspections, tests or analyses shall be defrayed by the supplier.
- 8.6 Supplies and services which are referred to in clauses 8.2 and 8.3 and which do not comply with the contract requirements may be rejected.
- 8.7 Any contract supplies may on or after delivery be inspected, tested or analyzed and may be rejected if found not to comply with the requirements of the contract. Such rejected supplies shall be held at the cost and risk of the supplier who shall, when called upon, remove them immediately at his own cost and forthwith substitute them with supplies which do comply with the requirements of the contract. Failing such removal the rejected supplies shall be returned at the suppliers cost and risk. Should the supplier fail to provide the substitute supplies forthwith, the purchaser may, without giving the supplier further opportunity to substitute the rejected supplies, purchase such supplies as may be necessary at the expense of the supplier.
- 8.8 The provisions of clauses 8.4 to 8.7 shall not prejudice the right of the purchaser to cancel the contract on account of a breach of the conditions thereof, or to act in terms of Clause 23 of GCC.

9. Packing

- 9.1 The supplier shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packing, case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final destination and the absence of heavy handling facilities at all points in transit.
- 9.2 The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the contract, including additional requirements, if any, specified in SCC, and in any subsequent instructions ordered by the purchaser.

10. Delivery and documents

- 10.1 Delivery of the goods shall be made by the supplier in accordance with the terms specified in the contract. The details of shipping and/or other documents to be furnished by the supplier are specified in SCC.
- 10.2 Documents to be submitted by the supplier are specified in SCC.

11. Insurance

- 11.1 The goods supplied under the contract shall be fully insured in a freely convertible currency against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified in the SCC.

12. Transportation

- 12.1 Should a price other than an all-inclusive delivered price be required, this shall be specified in the SCC.

13. Incidental services

- 13.1 The supplier may be required to provide any or all of the following services, including additional services, if any, specified in SCC:

- (a) Performance or supervision of on-site assembly and/or commissioning of the supplied goods;
- (b) Furnishing of tools required for assembly and/or maintenance of the supplied goods;
- (c) Furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied goods;
- (d) Performance or supervision or maintenance and/or repair of the supplied goods, for a period of time agreed by the parties, provided that this service shall not relieve the supplier of any warranty obligations under this contract; and
- (e) Training of the purchaser's personnel, at the supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied goods.

- 13.2 Prices charged by the supplier for incidental services, if not included in the contract price for the goods, shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the supplier for similar services.

14. Spare parts

- 14.1 As specified in SCC, the supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the supplier:

- (a) Such spare parts as the purchaser may elect to purchase from the supplier, provided that this election shall not relieve the supplier of any warranty obligations under the contract; and
- (b) In the event of termination of production of the spare parts:
 - (i) Advance notification to the purchaser of the pending termination, in sufficient time to permit the purchaser to procure needed requirements; and
 - (ii) Following such termination, furnishing at no cost to the purchaser, the blueprints, drawings, and specifications of the spare parts, if requested.

15. Warranty

- 15.1 The supplier warrants that the goods supplied under the contract are new, unused, of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the contract. The supplier further warrants that all goods supplied under this contract shall have no defect, arising from design, materials, or workmanship (except when the design and/or material is required by the purchaser's specifications) or from any act or omission of the supplier, that may develop under normal use of the supplied goods in the conditions prevailing in the country of final destination.

- 15.2 This warranty shall remain valid for twelve (12) months after the goods, or any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the contract, or for eighteen (18) months after the date of shipment from the port or place of loading in the source country, whichever period concludes earlier, unless specified otherwise in SCC.

- 15.3 The purchaser shall promptly notify the supplier in writing of any claims arising under this warranty.
- 15.4 Upon receipt of such notice, the supplier shall, within the period specified in SCC and with all reasonable speed, repair or replace the defective goods or parts thereof, without costs to the purchaser.
- 15.5 If the supplier, having been notified, fails to remedy the defect(s) within the period specified in SCC, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expense and without prejudice to any other rights which the purchaser may have against the supplier under the contract.

16. Payment

- 16.1 The method and conditions of payment to be made to the supplier under this contract shall be specified in SCC.
- 16.2 The supplier shall furnish the purchaser with an invoice accompanied by a copy of the delivery note and upon fulfilment of other obligations stipulated in the contract.
- 16.3 Payments shall be made promptly by the purchaser, but in no case later than thirty (30) days after submission of an invoice or claim by the supplier.
- 16.4 Payment will be made in Rand unless otherwise stipulated in SCC.

17. Prices

- 17.1 Prices charged by the supplier for goods delivered and services performed under the contract shall not vary from the prices quoted by the supplier in his bid, with the exception of any price adjustments authorized in SCC or in the purchaser's request for bid validity extension, as the case may be.

18. Contract amendments

- 18.1 No variation in or modification of the terms of the contract shall be made except by written amendment signed by the parties concerned.

19. Assignment

- 19.1 The supplier shall not assign, in whole or in part, its obligations to perform under the contract, except with the purchaser's prior written consent.

20. Subcontracts

- 20.1 The supplier shall notify the purchaser in writing of all subcontracts awarded under this contracts if not already specified in the bid. Such notification, in the original bid or later, shall not relieve the supplier from any liability or obligation under the contract.

21. Delays in the supplier's performance

- 21.1 Delivery of the goods and performance of services shall be made by the supplier in accordance with the time schedule prescribed by the purchaser in the contract.
- 21.2 If at any time during performance of the contract, the supplier or its subcontractor(s) should encounter conditions impeding timely delivery of the goods and performance of services, the supplier shall promptly notify the purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the supplier's notice, the purchaser shall evaluate the situation and may at his discretion extend the supplier's time for performance, with or without the imposition of penalties, in which case the extension shall be ratified by the parties by amendment of contract.

- 21.3 No provision in a contract shall be deemed to prohibit the obtaining of supplies or services from a national department, provincial department, or a local authority.
- 21.4 The right is reserved to procure outside of the contract small quantities or to have minor essential services executed if an emergency arises, the supplier's point of supply is not situated at or near the place where the supplies are required, or the supplier's services are not readily available.
- 21.5 Except as provided under GCC Clause 25, a delay by the supplier in the performance of its delivery obligations shall render the supplier liable to the imposition of penalties, pursuant to GCC Clause 22, unless an extension of time is agreed upon pursuant to GCC Clause 21.2 without the application of penalties.
- 21.6 Upon any delay beyond the delivery period in the case of a supplies contract, the purchaser shall, without cancelling the contract, be entitled to purchase supplies of a similar quality and up to the same quantity in substitution of the goods not supplied in conformity with the contract and to return any goods delivered later at the supplier's expense and risk, or to cancel the contract and buy such goods as may be required to complete the contract and without prejudice to his other rights, be entitled to claim damages from the supplier.

22. Penalties

- 22.1 Subject to GCC Clause 25, if the supplier fails to deliver any or all of the goods or to perform the services within the period(s) specified in the contract, the purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price, as a penalty, a sum calculated on the delivered price of the delayed goods or unperformed services using the current prime interest rate calculated for each day of the delay until actual delivery or performance. The purchaser may also consider termination of the contract pursuant to GCC Clause 23.

23. Termination for default

- 23.1 The purchaser, without prejudice to any other remedy for breach of contract, by written notice of default sent to the supplier, may terminate this contract in whole or in part:
- (a) If the supplier fails to deliver any or all of the goods within the period(s) specified in the contract, or within any extension thereof granted by the purchaser pursuant to GCC Clause 21.2;
 - (b) If the Supplier fails to perform any other obligation(s) under the contract; or
 - (c) If the supplier, in the judgment of the purchaser, has engaged in corrupt or fraudulent practices in competing for or in executing the contract.
- 23.2 In the event the purchaser terminates the contract in whole or in part, the purchaser may procure, upon such terms deems appropriate, goods, works or services similar to those undelivered, and the supplier shall be liable to the purchaser for any excess costs for such similar goods, works or services. However, the supplier shall continue performance of the contract to the extent not terminated.
- 23.3 Where the purchaser terminates the contract in whole or in part, the purchaser may decide to impose a restriction penalty on the supplier by prohibiting such supplier from doing business with the public sector for a period not exceeding 10 years.
- 23.4 If a purchaser intends imposing a restriction on a supplier or any person associated with the supplier, the supplier will be allowed a time period of not more than fourteen (14) days to provide reasons why the envisaged restriction should not be imposed. Should the supplier fail to respond within the stipulated fourteen (14) days the purchaser may regard the intended penalty as not objected against and may impose it on the supplier.

- 23.5 Any restriction imposed on any person by the Accounting Officer / Authority will, at the discretion of the Accounting Officer / Authority, also be applicable to any other enterprise or any partner, manager, director or other person who wholly or partly exercises or exercised or may exercise control over the enterprise of the first-mentioned person, and with which enterprise or person the first-mentioned person, is or was in the opinion of the Accounting Officer / Authority actively associated.
- 23.6 If a restriction is imposed, the purchaser must, within five (5) working days of such imposition, furnish the National Treasury, with the following information:
- (i) The name and address of the supplier and / or person restricted by the purchaser;
 - (ii) The date of commencement of the restriction
 - (iii) The period of restriction; and
 - (iv) The reasons for the restriction.

These details will be loaded in the National Treasury's central database of suppliers or persons prohibited from doing business with the public sector.

- 23.7 If a court of law convicts a person of an offence as contemplated in sections 12 or 13 of the Prevention and Combating of Corrupt Activities Act, No. 12 of 2004, the court may also rule that such person's name be endorsed on the Register for Tender Defaulters. When a person's name has been endorsed on the Register, the person will be prohibited from doing business with the public sector for a period not less than five years and not more than 10 years. The National Treasury is empowered to determine the period of restriction and each case will be dealt with on its own merits. According to section 32 of the Act the Register must be open to the public. The Register can be perused on the National Treasury website.

24. Anti-dumping and countervailing duties and rights

- 24.1 When, after the date of bid, provisional payments are required, or antidumping or countervailing duties are imposed, or the amount of a provisional payment or anti-dumping or countervailing right is increased in respect of any dumped or subsidized import, the State is not liable for any amount so required or imposed, or for the amount of any such increase. When, after the said date, such a provisional payment is no longer required or any such anti-dumping or countervailing right is abolished, or where the amount of such provisional payment or any such right is reduced, any such favourable difference shall on demand be paid forthwith by the contractor to the State or the State may deduct such amounts from moneys (if any) which may otherwise be due to the contractor in regard to supplies or services which he delivered or rendered, or is to deliver or render in terms of the contract or any other contract or any other amount which may be due to him.

25. Force Majeure

- 25.1 Notwithstanding the provisions of GCC Clauses 22 and 23, the supplier shall not be liable for forfeiture of its performance security, damages, or termination for default if and to the extent that his delay in performance or other failure to perform his obligations under the contract is the result of an event of force majeure.
- 25.2 If a force majeure situation arises, the supplier shall promptly notify the purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the force majeure event.

26. Termination for insolvency

- 26.1 The purchaser may at any time terminate the contract by giving written notice to the supplier if the supplier becomes bankrupt or otherwise insolvent. In this event, termination

will be without compensation to the supplier, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the purchaser.

27. Settlement of Disputes

- 27.1 If any dispute or difference of any kind whatsoever arises between the purchaser and the supplier in connection with or arising out of the contract, the parties shall make every effort to resolve amicably such dispute or difference by mutual consultation.
- 27.2 If, after thirty (30) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the purchaser or the supplier may give notice to the other party of his intention to commence with mediation. No mediation in respect of this matter may be commenced unless such notice is given to the other party.
- 27.3 Should it not be possible to settle a dispute by means of mediation, it may be settled in a South African court of law.
- 27.4 Mediation proceedings shall be conducted in accordance with the rules of procedure specified in the SCC.
- 27.5 Notwithstanding any reference to mediation and/or court proceedings herein,
- (a) The parties shall continue to perform their respective obligations under the contract unless they otherwise agree; and
 - (b) The purchaser shall pay the supplier any monies due the supplier.

28. Limitation of liability

- 28.1 Except in cases of criminal negligence or wilful misconduct, and in the case of infringement pursuant to Clause 6;
- (a) The supplier shall not be liable to the purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the supplier to pay penalties and/or damages to the purchaser; and
 - (b) The aggregate liability of the supplier to the purchaser, whether under the contract, in tort or otherwise, shall not exceed the total contract price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment.

29. Governing language

- 29.1 The contract shall be written in English. All correspondence and other documents pertaining to the contract that exchanged by the parties shall also be written in English.

30. Applicable law

- 30.1 The contract shall be interpreted in accordance with South African laws, unless otherwise specified in SCC.

31. Notices

- 31.1 Every written acceptance of a bid shall be posted to the supplier concerned by registered or certified mail and any other notice to him shall be posted by ordinary mail to the address furnished in his bid or to the address notified later by him in writing and such posting shall be deemed to be proper service of such notice.
- 31.2 The time mentioned in the contract documents for performing any act after such aforesaid notice has been given, shall be reckoned from the date of posting of such notice.

32. Taxes and duties

- 32.1 A foreign supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside the purchaser's country.
- 32.2 A local supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted goods to the purchaser.
- 32.3 No contract shall be concluded with any bidder whose tax matters are not in order. Prior to the award of a bid the Department must be in possession of a tax clearance certificate, submitted by the bidder. This certificate must be an original issued by the South African Revenue Services.

33. National Industrial Participation (NIP) Programme

- 33.1 The NIP Programme administered by the Department of Trade and Industry shall be applicable to all contracts that are subject to the NIP obligation

34. Prohibition of Restrictive practices

- 34.1 In terms of section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, an agreement between, or concerted practice by, firms, or a decision by an association of firms, is prohibited if it is between parties in a horizontal relationship and if a bidder (s) is / are or a contractor(s) was / were involved in collusive bidding (or bid rigging).
- 34.2 If a bidder(s) or contractor(s), based on reasonable grounds or evidence obtained by the purchaser, has / have engaged in the restrictive practice referred to above, the purchaser may refer the matter to the Competition Commission for investigation and possible imposition of administrative penalties as contemplated in the Competition Act No. 89 of 1998.
- 34.3 If a bidder(s) or contractor(s), has / have been found guilty by the Competition Commission of the restrictive practice referred to above, the purchaser may, in addition and without prejudice to any other remedy provided for, invalidate the bid(s) for such item(s) offered, and / or terminate the contract in whole or part, and / or restrict the bidder(s) or contractor(s) from conducting business with the public sector for a period not exceeding ten (10) years and / or claim damages from the bidder(s) or contractor(s) concerned.

Js GCC (revised July 2010)

35. SPECIAL CONDITIONS OF CONTRACT

- 35.1 The State reserves the right to verify and authenticate all the information supplied in this document by the bidder.
- 35.2 The Bid must be strictly in accordance with the conditions and specifications contained herein.
- 35.3 If it is found that any information has been tampered with during the evaluation process and/or after the Bid/Contract has been awarded that any false information has been provided, the State reserves the right to take the necessary action as it deems fit, including but not limited to the institution of criminal proceedings.
- 35.4 Failure to sign all relevant places shall invalidate your bid (**SBD1, SBD 3.1, SBD 4, and SBD 6.1 or 6.2, SBD 8, SBD 9 and SCC**)
- 35.5 All queries should be sent to the relevant person via email state above. No query will be responded to if sent 3 days before the closing date.

- 35.6 If you are not a registered supplier with the Department of Water and Sanitation, please complete the supplier registration forms and banking details, supplier registration forms are available at Departmental website, www.dws.gov.za
- 35.7 Bidders/ Individuals that are directors or members in more than one company bidding for this tender and do not openly declare their interests will be disqualified
- 35.8 **Failure to submit original and valid Tax Clearance Certificate shall invalidate your bid.**
- 35.9 The DWS reserves the right to not make an award on any of the responses to this Bid.
- 35.10 The DWS reserves the right to award only parts of this bid and re-bid for other parts.
- 35.11 All bid documents should be hand delivered and deposited in to the Tender Box, if sent via post,
Envelope or package, the envelope must be clearly marked to avoid your submission been mixed with normal letters sent to the Department.
- 35.12 Only signed, original documents will be accepted.

36. ACCEPTANCE OF TERMS AND SPECIAL CONDITIONS

The above terms of the bid and all Annexure have been read, understood and accepted.

For and on behalf of the Bidder:

.....
...

Signature of Bidder:

Date:

Bidder's Name & Surname:

Designation

Witness Name & Surname:

Date

Signature:

Address (Physical):



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

APPOINTMENT OF PROFESSIONAL SERVICE PROVIDER TO UNDERTAKE THE STUDY FOR THE PROVISION OF GENERAL MODELLING AND WATER RESOURCE EVALUATION SERVICES FOR ALLOCABLE WATER QUANTIFICATION AND TO SUPPORT INTEGRATED WATER RESOURCE PLANNING (KOUGA, BAVIAANS, GAMTOOS AND KROMME RIVERS)

WP11336

TRADING NAME: _____

CONTACT PERSON: _____

CONTACT NUMBER: _____

CLOSING DATE: _____

This template must be completed by the bidder

TENDER NUMBER		
SERVICE /PROJECT DESCRIPTION		
NAME OF BIDDER		
TENDER AMOUNT		
BBBEE LEVEL		
COMPANY'S COMPOSITION OF EXISTANCE		
	% OWNERSHIP	TOTAL NUMBER
WOMEN		
PEOPLE WITH DISABILITIES		
BLACK MALES		
YOUTH		
PARTICIPATION IN PROJECT IMPLEMENTATION		
	TOTAL NUMBER	LEVEL OF PARTICIPATION (eg Project Management, Technical, Administrative)
WOMEN		
PEOPLE WITH DISABILITIES		
BLACK MALES		
YOUTH		

Please note that this information is for reporting purposes only, and will not prejudice the company in anyway nor will it be considered as an evaluation tool.

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Position:.....

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I/we understand that the credit transfers hereby authorised will be processed by computer through a system known as "ACB- Electronic Fund Transfer Service", and
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☐ Company ☐ Trust
☐ CC ☐ Other (Specify)

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Registered Name

 Trading Name

 *VAT Number *Compulsory where applicable
 PERSAL Number
 Title Initials
 First Name
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Section C: Address Detail

Payment Address

 Postal code

**ENTITY MAINTENANCE** (continuation page)**Section D: Supplier Account Details (TO BE VERIFIED BY BANK)**

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Branch Name		<input type="checkbox"/> Savings Account
Branch Number		<input type="checkbox"/> Transmission Account
*ID Number		* Compulsory for individuals
Passport Number		
**Company Registration Number		**Compulsory for companies
***CC Registration		***Compulsory where applicable
****Please include CC/CK where applicable		
Practise Number		
****Trust Number		

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Nedbank: Banking Platform under the Client Details Tab

Contact Number ()

BANK STAMP

dd / mm / yyyy

Date (dd/mm/yyyy)

Signature of Bank Official

Print Name

Section E: Contract Details of Supplier

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Fax	()
Mobile (Cell no.)	
E-mail Address	
Contact Person	

Signature of Supplier

Print Name

dd / mm / yyyy

Date (dd/mm/yyyy)

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Fax	()
E-mail Address	

OFFICIAL STAMP

Signature of DWA Official

Print Name

dd / mm / yyyy

Date (dd/mm/yyyy)



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

DIRECTORATE: NATIONAL WATER RESOURCE PLANNING

**KOUGA, BAVIAANS, GAMTOOS and KROMME RIVERS
(THE L81, L82, L90 and K90 SECONDARY CATCHMENTS):**

**PROVISION OF GENERAL MODELLING AND WATER RESOURCE EVALUATION SERVICES FOR
ALLOCABLE WATER QUANTIFICATION AND TO SUPPORT INTEGRATED WATER RESOURCE
PLANNING**

TERMS OF REFERENCE

SEPTEMBER 2019

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List of Abbreviations

CMS	Catchment Management Strategy
DWA	Department of Water Affairs and Forestry
HDE	Historically Disadvantaged Enterprise
HDI	Historically Disadvantaged Individual
IAPs	Invasive Alien Plants
IFR	In-stream Flow Requirements
NWA	National Water Act
NWRS	National Water Resources Strategy
PSP	Professional Service Provider
SFR	Stream flow Reductions
SMC	Study Management Committee
SMT	Study Management Team
ToR	Terms of Reference
WMA	Water Management Area
WRC	Water Research Commission
WRPM	Water Resource Planning Model
WRYM	Water Resources Yield Model

1. INTRODUCTION

The Department of Water and Sanitation (DWS) is calling for proposals from Professional Service Providers (PSPs) for the provision of water resource modelling and water resource evaluation services for allocable water quantification and to support related integrated water resources planning in the L81, L82, L90 and K90 secondary catchments, which comprise the catchments of the Kouga, Baviaans, Gamtoos and Kromme rivers respectively. A description of the background to this Call for Proposals and the Terms of Reference (ToR) for the ensuing study follows.

1.1 Description of the study area, available data, previous studies and considerations related to water resource management

Please see **Figure 1** general location of Study Area.

The Study Area encompasses the L81 (Kouga), L82 (Baviaans), L90 (Gamtoos) and K90 (Kromme) secondary catchments, the latter including the Seekoei and the Swart River catchments. A comprehensive record of all available data sets, reports on previous and current water-related studies and all water-related modelling undertaken in L81, L82, L90 and K90 has been prepared in conjunction with this ToR and is appended in **Annexure A**.

The following considerations regarding the Study Area's water-related situation, needs to be taken into account, namely:

- In the recent past, a range of water resource-related models have been configured for the Kouga and Kromme/Seekoei catchments, i.e. the monthly WRSM90/WRSM2000 modelling suite (which contains the Pitman model), the daily ACRU agro-hydrological model, the monthly WRYM, the monthly Rapid Simulation system model and the monthly Mike Basin system model among others.
- The water resources of the Kromme and Kouga catchments are generally believed to be over-allocated, but, in practice, many users have not yet taken up their full entitlements, whereas others are deemed to over-abstract or abstract illegally.
- The primary categories of water use are: *streamflow reductions* (commercial afforestation), *irrigated agriculture*, *domestic and industrial*, *the ecological Reserve requirements* and *invasive alien plants (IAPs)*.
- The Kouga, Churchill and Impofu dams (see Figure 1) are the dominant surface water sources, which are located more or less in the middle of the related catchments. Irrigation takes place both upstream and downstream of these impoundments. The domestic and industrial water users in Port Elizabeth, Uitenhage, the coastal towns between Jeffreys Bay and Cape St Francis as well as the Coega IDZ are quite remote from their primary water supply dams.

- Entitlements for water used for irrigation exceed 65% of the historical firm yield of the system.
- The dominant irrigation crops are citrus and vegetables to a lesser extent. In the Kouga catchment deciduous fruit and pasture are predominantly cultivated under irrigation.
- The Ecological Reserve requirements have been determined at a number of EWR sites along the Kromme and Seekoei rivers.
- A number of wetlands play a significant role in the water balance of the system and these wetlands have an Ecological Reserve requirement as well. Extensive rehabilitation of some of these wetlands has been completed or is underway. The Gamtoos Irrigation Board is the Implementing Agent for Working for Wetlands. Data on the wetlands rehabilitated and planned for future rehabilitation can be sourced from the Gamtoos IB.
- The water balance of the wetlands is dependent on the groundwater dynamics of their immediate environments.
- Groundwater is a major contributor to the low flows in the rivers.
- Water quality is currently deemed to be a seriously growing concern, but this needs to be verified. Dysfunctional WWTWs in the towns in the Langkloof give rise to localised concern, and return flows from irrigation practices are also beginning to show negative impacts on the impoundments.
- The extent and impact of sedimentation in the dams need to be assessed.
- Industrial expansion in Nelson Mandela Bay Metro Municipality, the Coega IDZ, the Nqura Harbour area and the constellation of industries dependent on it is expected to grow considerably in the future. This will result in additional requirements for water entitlements from the extensively developed Kouga/Kromme water resources, as well as from the Orange-Fish-Sundays inter-basin transfer scheme. In future effluent from the Fishwater Flats WWTW will be treated to at least production standard for supply to the Coega IDZ and other suitable industries in NMBM.
- The recent Verification and Validation of Water Use study for the Kouga catchment area undertaken by the Regional Office must be thoroughly analysed and the results incorporated into the modelling, if found relevant. The PSP must critically determine the usefulness of this data and then use it in this study, if found applicable.
- A general location of the Study area is shown below in Figure 1.



Figure 1: General location of Study Area

2. OBJECTIVES OF STUDY

The objectives of the Study are:

- to reconfigure the existing WRYM monthly system model in the Study Area at a quaternary catchment scale, or finer where required, in a manner that is suitable for allocable water quantification;
- to establish a generic approach and methodology, as well as modelling procedures, for decision support to on-going licensing processes;
- to use the reconfigured models to support allocable water quantification in the Study Area and to support on-going licensing decisions, as well as general integrated water resource planning in the Study Area;
- to incorporate into the Study any changes in the concepts, definitions, modelling approaches and models, hitherto used in allocable water quantification, forthcoming out of current research projects;
- to use the reconfigured models to perform evaluations of water availability (both surface water and groundwater) under different scenarios of water resource classification and water use growth scenarios;
- to set up the Water Resource Planning Model (WRPM) for use by the Department's Directorate National Water Resource Planning, the Directorate National Water Resource Infrastructure Management (NWRIM) (Southern Operations), the Sub-directorate

Systems Operation, the Sub-directorate Systems Analysis, the Eastern Cape Provincial Operations, the Mzimvubu-Tsitsikamma proto-CMA and the Algoa Reconciliation Study Steering Committee, to ensure timely recommendations and informed decisions on studying or implementing augmentation interventions for the area can be made;

- to provide technical support to the Department in the process of developing Water Allocation Schedules in the Study Area, in agreement with the requirements of the NWA; and
- to provide in-house training and skills development to departmental and proto-CMA officials on water resources modelling.

3. BACKGROUND

The National Water Act 1998 (NWA) prescribes the establishment of compulsory licensing for all registered users in catchments that have been prioritised for this purpose, based on any of the following conditions:

- “water stress”, i.e. where the water requirements exceed the available supplies, or where water quality is becoming a serious problem;
- the need to achieve equity in water allocation;
- the need to promote beneficial water use;
- the need to facilitate efficient water management; and
- the need to protect water resource quality and health.

Studies done in support of the National Water Resource Study (NWRS Editions 1 and 2) have indicated that, in a wide range of catchments across the country, conditions already exist that necessitate the urgent establishment of water allocation schedules.

The Department has recognised that the water allocation process, in a format that conforms to the NWA’s requirements, would necessarily be a learning experience in the catchments selected for this purpose. This learning experience would, *inter alia*, comprise application of appropriate (or the systematic development of innovative) approaches, methods and processes by the water resource management community, including models and techniques used to quantify and evaluate water availability.

The L81 (1233.4 km²), L82 (2819.6 km²), L90 (1211.6 km²) secondary catchments, comprising the Kouga, Baviaans and Gamtoos rivers (5264 km²) and the K90 secondary catchment, comprising the Kromme River (1199.7 km²), have been identified as a critical study area for a water allocation reform project under the NWA, because it already faces increasing shortfalls in water availability, with resulting low assurances of supply and more frequent water restrictions to be imposed on all water user sectors. This ToR is aimed at the provision of specialised water resource modelling and water resource evaluation services in catchments L80, L90 and K90, to support the water allocation process and general integrated water resources planning in this defined study area.

3.1 Parallel Projects Required to Support the Water Allocation Process

Additional to the task of water resource evaluation through the provision of water resource-related modelling services, a number of individual projects are required to support the water allocation process in every catchment under assessment, each one dealing with a particular aspect of the process. In any specific catchment these could include projects such as:

- verification and validation of existing lawful water use;
- determination of the ecological Reserve and Resource Quality Objectives (RQO) for current and alternative water resource classifications;
- formulation of future water requirements scenarios based on relevant demographic, economic and social development studies;
- water balance studies to determine the “allocable volume” of water in the catchments under consideration;
- development and gazetting of certain minimum components of the Catchment Management Study (CMS), particularly the water allocation plan;
- development and implementation of a communication Strategy about water allocation scheduling and compulsory licensing;
- participative stakeholder engagement processes to support the water allocation process, with particular focus on poor or previously marginalised communities, to understand their water needs that need to be planned and catered for; and
- the formulation of an allocation schedule and its gazetting after appropriate stakeholder engagement.

Some of these projects inevitably overlap with each other in time, while others need to be sequential in nature, because they rely on output from preceding projects or studies. The scope of these projects will necessitate the engagement of a wide range of skills by the Department, both in-house and through its PSPs.

In the case of L80 and K90, some of these above-mentioned steps have been completed or started, i.e.

- A comprehensive ecological Reserve determination for the Kromme-Seekoei System has been completed by the then DWA in 2005;
- The verification and validation of existing lawful water use has been completed for the Eastern Cape Regional Office (EC RO) (by Jeffares and Green) in the Kouga (L81) catchment. This information is available. Training of officials and handover to the EC RO were completed by these consultants in 2015.
- Future water requirement scenarios have been developed for the Algoa Reconciliation Study area supplied from the Algoa Water Supply System and the Orange-Fish-Sundays Scheme, and are annually updated.
- The process of establishing the Mzimvubu-Tsitsikamma CMA has started and the business plan has been drafted.

3.2 An Appropriate Modelling Approach to Support Water Allocation

A primary aspect of the water allocation process is the determination of the “allocable” portions of surface and groundwater, given the specific classification of relevant components of these resources (known as “Resource Units”) in different parts of the catchments under consideration. Quantification of the allocable portions of the surface and groundwater allows a *Water Allocation Schedule* to be drawn up and gazetted for such catchments. In general, the quantification of the allocable water will require evaluation of the spatial and temporal variability of the availability of surface water and groundwater, followed by the reconciliation of water availability with requirements (i.e. water balances) via one or more modelling approaches. This ToR deals, *inter alia*, with the details of provision of such modelling support to the water allocation process.

The NWA requires that the abovementioned Water Allocation Schedule be the result of a “due process”, i.e. it would need to be based on stakeholder acceptance, after a participative consultative process, of the “most desirable” selected scenario from a range of reconciliation scenarios. These scenarios comprise the reconciliation of alternative spatial water requirement patterns in the designated catchment with naturalised spatial water availability patterns, and where the naturalised water availability patterns depend on one or more alternative Classifications of the spatial components of the water resources in the catchment.

The alternative spatial water requirement patterns, both current and future, must be compiled on the basis of expressed needs of water user and other water stakeholder groups, as well as the dictates of the NWA (as outlined in Section 3.1 above) and of the National Water Resource Study(NWRS), Editions 1 and 2. Additional to the requirements of an appropriate “due process”, there is a range of primary conceptual and practical considerations that should also inform the selection of a particular “suite” of models, as well as decisions relating to the linking of outputs of individual models, (over and above the requirements posed by the unique character of the catchment.) These considerations are outlined in Section 3.3.

Given the above “due process” requirement, DWS recognises that the conventional approach of partitioning the firm (annual) *yield* of the catchment or river-reservoir system among competing users at some equivalent reliability of supply, might in the long run not be adequate for the water allocation process. For example, in recent years alternative and more dynamic water allocation concepts have entered the water resource management domain internationally. If applicable, these alternative allocation and other relevant water resource planning concepts, outlined in Section 3.3, could be expected to have a bearing on the set of modelling requirements that should support the quantification of allocable water in catchments and need to be assessed for its applicability for inclusion in the modelling process.

DWS thus needs to commission a study that comprises updating of the hydrology, setting up and calibrating of the appropriate models, general modelling and water resource evaluation services in support of allocable water quantification and other aspects of integrated water

resource management, which is based on the current understanding of “best practice” for the L80, L90 and K90 secondary catchments.

3.3 Primary Conceptual and Practical Considerations when Quantifying Allocable Water

This section outlines the conceptual and practical considerations that could be expected to determine the technical outcomes of the allocable water quantification process. Each of these considerations poses one or more water resource-related modelling specifications of a functional, process, scale or resolution nature. These conceptual considerations and the consequent modelling specifications have informed the ToR of the study mentioned above and will need to be accommodated in an appropriate way. (It should be noted that other modelling requirements might also arise in the course of a specific water resource-related study, but they are regarded as secondary to the items outlined below.)

i) Partitioning of annual yield on a risk-reliability basis

This conventional risk-based approach to allocating water is focused on quantifying water availability during those years when unusually low streamflow was historically recorded over extensive periods, or is deterministically/stochastically modelled. The annual yield from a river-reservoir system is the maximum annual volume of streamflow (plus groundwater, if applicable) that can be provided by that system at a given annual reliability (assurance) of supply. Different user groups, or sectors, prefer or can tolerate different annual reliabilities of supply. The annual yield of the catchment or river-reservoir system is then partitioned among all qualifying users, either at some equivalent reliability of supply, or by judicious reconciliation of yield-reliability characteristics with the component user requirements. The yield-partitioning concept underlies the water balances of the NWRS, as well as most other approaches to water resource planning and scheme design hitherto undertaken under DWS’s auspices. Important (present) drawbacks of or challenges with this approach are (among others):

- the dilemma of disaggregating and operationalising the constant annual allocation value into shorter time increment values in the face of dynamic changes in streamflow (and groundwater) availability from day to day or month to month;
- meeting the ecological Reserve requirements in each unique catchment under all the current constraints;
- the undermining of overall water use efficiency, because users become locked in a “use-it-or-lose-it” mind-set, that tends to ignore the actual state of the water resource;
- no good understanding of how to provide for the potential impacts of climate change on the individual catchments, that each has a unique climatic state.

Note: *Because the yield partitioning concept is so well-entrenched and because of its role in the formulation of the NWRS, it will necessarily form the dominant approach to allocable water quantification in the Study.*

ii) Curtailment of water supplies and operating rules

In cases of significant reservoir storage capacity in a catchment, operating rules govern release/abstraction decisions in response to downstream ecological requirements and user requirements, or to deal with unfavourable conditions in the river system, such as low reservoir storage levels, or downstream water quality concerns. Operating rules can be employed to maximise or optimise yield from a system. However, when extended drought flow conditions threaten the reliability of supply, curtailment (also called “rationing”, or “restriction”) of the individual annual allocations to user groups or water user sectors is usually implemented. Curtailment reduces water delivery to different user groups by differing degrees, dependent on their respective required reliabilities of supply and ability to absorb shortages of water supply. Curtailment and partitioning of annual yield go hand-in-hand and curtailment therefore has similar operationalising drawbacks to partitioning.

iii) *Spatial scale of allocable water quantification*

Hitherto, the question of what would be an appropriate spatial scale at which to perform water allocation exercises has not received exhaustive examination. This detail does however affect the design of an appropriate modelling approach to support allocable water quantification. A plausible response to that question is that the Water Allocation Plan for each WMA or major catchment must specify the spatial scale(s) that is relevant to that area.

The ToR for this study is grounded on the assumption that the quaternary catchment definitions currently in use in the RSA constitute the coarsest reasonable scale at which to quantify allocable water. Therefore, the Water Resources Yield Model (WRYM) needs to be reconfigured to at least that scale, but in certain tributaries a finer water allocation scale may be necessary. The study must take appropriate scale requirements into account.

iv) *Spatial scale and temporal resolution of modelling*

A high degree of variability in the hydrological responsiveness and land- and water-use characteristics of a catchment might require that the spatial scale and temporal resolution of modelling should be fine, rather than coarse. The rainfall-runoff response times of the sub-catchment components of a river system, as well as the travel times of reservoir releases, might also influence the specifications of the required modelling approaches.

The Study Area displays a high degree of land-use variability in certain sub-catchments, which might necessitate fine-scaled and land-use sensitive modelling in those areas; for example such as that offered by the ACRU model. Furthermore, given the relatively small size of particular significant tributaries, a daily temporal resolution might be needed as part of the overall modelling approach.

v) *Regulated versus unregulated river reaches*

Stream flow in the river reaches downstream of large impoundments can be largely regulated through controlled releases and, therefore, may be suitably modelled at a monthly time scale and with system network models, such as the WRYM. However, upstream of

such impoundments or in unregulated tributaries to the main river systems, daily modelling might be required – particularly, if relatively complex human impacts are present in those sub-catchments, as is the case in the L81, L90 and K90 catchments.

This potential need must be examined in the Study.

vi) *Water quality modelling requirements*

Water quality can affect the water allocation process on three fronts: firstly, as an operating rule, when freshening releases from local impoundments or inter-catchment transfers are required to ameliorate downstream water quality concerns and impacts; secondly, if the Water Allocation Plan specifies that not only water quantity, but also water quality load, should be formally partitioned among user groups; and thirdly, if upstream practices impact on the water quality flowing into the storage facilities, impacting on the water quality supplied to the downstream users. Water quality is defined in terms of a range of variables and constituents, therefore, selection of modelling approaches should accommodate those variables that are of critical concern to specific water users. The following DWS documents provide guidance on the water quality component of the water allocation process: *A Guideline to the Water Quality Management Component of a Catchment Management Strategy*¹, and *A Guide to Conduct Water Quality Catchment Assessment Studies: In Support of the Water Quality Management Component of a Catchment Management Strategy*².

The ToR for this study is informed by the current perspective that water quality is a growing concern in the RSA and very specifically in the Study Area. The Study must examine the validity of this perspective and, if necessary, configure and calibrate suitable water quality system models such as WQT or WQSAM in support of the WRYM and WRPM to enable viable scenarios to be developed as to the future water quality that could be supplied from the different catchments in the Study Area.

vii) *Conjunctive use of groundwater and the role of freshwater lakes*

Groundwater forms an integral part of the allocable water quantification exercise and the approach to its quantification will depend on whether or not the groundwater resources manifest as non-riparian primary aquifers, or as fractured-rock (secondary) aquifers, or as alluvial riparian aquifers. Extensive groundwater exploitation to meet spatially distributed requirements can be expected to reduce streamflow in particular river reaches, as well as the behaviour of natural freshwater wetlands. On the other hand, during extended periods of low stream flow, groundwater could be used to reduce the risk of failure of supply from surface water resources, provided that bulk reticulation infrastructure allows for that. Both rainfall-runoff catchment modelling and river-reservoir system modelling should be able to accommodate these aspects of groundwater utilisation, where applicable.

¹ Water Quality Management Series, Sub-Series No. MS 8.2, Edition 1, March 2003, DWAF, Pretoria.

² Water Quality Management Series, Sub-Series No. MS 8.3, Edition 1, March 2003, DWAF, Pretoria.

In the Study Area, it is known that groundwater dynamics and the recharge dynamics of certain river reaches, which are also water supply nodes, are inter-related. Aquifer boundaries are not following surface water boundaries (quaternaries) and may progress further than the Study Area. Groundwater utilisation is well developed in all of the Study Area catchments and further development will be required to meet the growing water requirements specifically in the L81 and K90 catchments and maybe in the L82 catchment. This needs to be quantified as far as possible.

Experience gained with groundwater modelling development for the Berg Water Availability Assessment Study (2011) must also be accommodated to ensure that the conjunctive use of surface and groundwater from the different aquifers is suitably understood, addressed and modelled.

viii) Operationalising the Ecological Reserve for streamflow modelling

Currently, for modelling purposes, the Ecological Reserve for streamflow is specified in the form of flow duration curves at the identified Ecological Water Requirement (EWR) sites, as well as particular season-linked flood flows. Modelled reservoir releases required for maintenance of the Ecological Reserve are “triggered” by flows at a so-called indicator site and are sized according to the relationship between the relevant flow duration curves. The following concerns about this operationalisation procedure have been raised and require further investigation:

- a) Avoiding the danger of “double accounting” for required releases when irrigation requirements lie downstream of EWR sites.
- b) Examining the implications of overriding the indicator site “trigger” when storage levels are low.
- c) Avoiding “surplus” EWR flood flows in the middle to lower reaches, when upstream as well as downstream indicator sites are used with poorly co-ordinated “triggers”.
- d) Refining the specification of “drought” EWR flows in relation to the Ecological Management Class.
- e) Incorporating EWR releases that are effectively consumptive (in that they spill from the modelled system at its downstream boundary) in the Water Resources Planning Model (WRPM) is problematic.
- f) Improving understanding, in general, of the challenges that arise when the Ecological Reserve is required to be operationalised on a daily basis, including the points raised under concerns (a) to (d) above.

Both the WRYM and WRPM needs to be set up, taking into account the requirements, concerns and constraints as set out above.

ix) Options regarding modelled irrigation abstractions

Irrigation is often the largest water consumer in a catchment and a significant component of the negotiations around allocable water can be expected to focus on irrigation allocations, *inter alia* whether they are legal, what assurances of supply they can handle, where in the

System they occur, their impact on return flows and thus water quality and quantity. Therefore, the modelling approach needs to be particularly flexible in regard to the extent of irrigation abstractions, reasonable options in this regard must be developed and the modelling procedures used for this purpose, both in the monthly and daily catchment modelling processes and in the WRYM needs to be realistic and acceptable to all stakeholders.

The Study must make suitable allowance for the use of optional/opportunistic irrigation requirements and abstraction quantification and modelling procedures in all modelling approaches proposed, as this is common practice in the Study Area.

x) *Small farm dam irrigation-related influences*

In general, much of the irrigation upstream of large impoundments, as well as in unregulated downstream tributary catchments, depends on storage in small farm dams. In sub-catchments where farm dams are concentrated in large numbers, they, with their corresponding irrigation abstractions, have a pronounced impact on surface water availability and must therefore play a role in allocable water quantification and licensing decisions. The discretisation of sub-catchments for modelling purposes (i.e. the fineness of modelling scale) should, *inter alia*, be informed by the concentration and location of such small farm dam-related irrigation impacts.

The Study must make suitable allowance for the influence of small farm dam impacts and their corresponding irrigation abstractions on all model configurations, a particular problem in the catchments of both the Kouga and the Churchill dams. The Study must examine the relative importance for allocable water quantities of different degrees of aggregation of such impacts.

xi) *Estimating streamflow reductions (SFRs) due to commercial afforestation*

On-going research in this domain in South Africa has yielded a series of tools and models for estimation of SFRs³ - some broad-based, others detailed and dynamic. Some inconsistencies in SFR estimation have resulted from this on-going process; therefore, the DWS developed a protocol for application of the latest tools in water resource management decision-making, while the WRC has completed a research project⁴ to further develop and enhance the existing tools and models.

Commercial afforestation is prevalent in particular sub-catchments of the Study Area and the appointed PSP for the Study will be expected to remain informed of progress on both fronts and to incorporate appropriate findings and improved tools from these studies and research in both the catchment and systems modelling approaches being applied.

³ A.H.M Görgens, In search of a protocol for the quantification of streamflow reductions (SFRs) due to commercial afforestation in South Africa, *Proceedings, Eleventh South African National Hydrology Symposium*, September 2003, Port Elizabeth

⁴ *An investigation and formulation of methods and guidelines for the licensing of SFRAs with particular reference to low flows.* WRC Project K5/1428

xii) Estimating SFRs due to invasive alien plants (IAPs)

On-going research in this domain in South Africa has yielded a set of tools and models for estimation of SFRs due to IAPs⁵ - some broad-based, others detailed and dynamic. Some inconsistencies in SFR estimation have resulted from this on-going process; therefore, the WRC and the Working for Water Programme of the DEA have initiated various research projects to further develop the existing tools and models.

Extensive areas of IAPs are prevalent in particular sub-catchments of the Study Area and the appointed PSP for the Study will be expected to remain informed of progress on both fronts and to incorporate appropriate findings from these studies and research in both the catchment and systems modelling approaches being applied. Working for Water is actively combating IAPs in the area with the Gamtoos Irrigation Board (IB) as its Implementing Agent (IA).

xiii) Water use efficiency and water demand management within sectors

The efficiency of water use varies across different user sectors and is determined by the combined outcome of conveyance, delivery, processing (industrial) and management approaches. Improvements to the efficiency of water use can translate into increased allocable water quantities in a catchment, or, at least, into a spatial re-distribution of existing allocable water quantities. This is an important component of water demand management undertakings. Modelling approaches used in the allocable water quantification process need to be able to accommodate realistic options for sub-efficiency settings that reflect alternative conveyance, delivery, processing and management approaches.

The Study must make suitable allowance for examination of the allocable water benefits of alternative water use efficiency settings in the WRYM reconfiguration for the Study Area and must produce a scoping report on practicably achievable efficiency improvements in all the significant water use sectors in the Study Area.

The DWS Directorate Water Use Efficiency has developed a Water Conservation and Water Demand Management Strategy for the former WMA 15. The results and recommendations from that study must be incorporated where applicable in the area, as specific inputs and scenarios.

xiv) Climate Change

The potential effects and impacts of climate change on the rainfall and run-off in the different catchments need to be taken into account when setting up the models. These potential impacts should be treated as scenarios to determine its potential impact on the availability of water in future, to enable informed decisions on further water resource development to be

⁵ A.H.M. Görgens and B.W. van Wilgen, Invasive alien plants and water resources in South Africa: current understanding, predictive ability and research challenges. *SA Journal of Science*, pp 27-33, Vol 100, Jan/Feb 2004

taken timeously. Much work has been done to refine the climate change prediction models and the latest results must be obtained and incorporated into the WRPM scenarios.

xv) *Inter-catchment support and integrated system analysis*

The quantification of allocable water becomes complex when a number of inter-linked catchments with multiple large reservoirs are able to support each other during localised droughts, given that the group of catchments and their bulk storage and conveyance infrastructure together represent an integrated system and may need to be modelled as such. The catchments of the Study Area have limited inter-catchment transfer support from neighbouring river systems; however, future needs for increased water supplies to support new social and economic developments might necessitate future inter-catchment transfer schemes. The current storage dams in the System are currently operated as an integrated water supply system to optimise water availability and must be set up as such.

The Study must make suitable allowance for both existing and future potential transfer schemes, if any.

(xvi) *Legal requirements for information provided in a water allocation schedule and the concomitant licences*

The exact legal requirements for the water entitlement information that appears on a water allocation schedule, as well as on the concomitant licences, would influence the specification of modelling requirements, or, at least, of the tools used to interrogate model outputs. The higher the levels of detail legally required, the more demanding the specification of the modelling approach will need to be.

The PSP for the Study has an obligation to remain informed of progress on that front, obtain the latest verified information from the DWS entities and to incorporate relevant findings where appropriate.

(xvii) *Stakeholder communication needs*

Stakeholder understanding and acceptance of the fundamental aspects and the outcomes of the quantification process of the allocable water in a catchment is a primary water resource management goal. Given the highly technical and intensely numeric nature of the subject matter, computer-assisted communication tools have an important role to play in the consultative and participative processes that need to accompany water allocation. Illustrative graphics of water availability or shortfall frequencies, such as box-whisker plots, or exceedence/frequency curves, are but two simplistic examples of numerous technical communication tools that would be needed in this process. Although this does not add to modelling specifications *per se*, it is of high enough importance to warrant being listed as part of the primary considerations for an appropriate allocable water quantification approach.

Stakeholder and public participation tasks in the Study Area will be the responsibility of the PSP for the Study, who must also develop a set of specifications for basic communication tools required for participative consultation. The PSP for the Study must prepare the basic communication material and tools according to these specifications and must make suitable allowance for setting up and maintaining the information base for the communication tools, based on the technical information generated during the allocable water quantification process. These information tools must be tested for their applicability and implementation during the stakeholder consultation process in the Study Area.

The stakeholder databases developed for the Verification and Validation (V&V) and Algoa WSS Reconciliation Study studies should be sourced as a starting point. The LivingLands NGO has also been doing extensive Integrated Water Resource Management work in the Kromme and Kouga catchments, and would also have useful databases and data, *inter alia* some rainfall records.

(xviii) Model-related software modifications and the role of the Directorate: Water Resource Planning Systems

In order to address some of the primary conceptual and practical considerations when providing support to water allocation quantification, as outlined above, model-related software modifications could be necessary.

In the Study, the models that could require modifications are: updating and calibrating the WRYM, current versions of the Pitman monthly rainfall-runoff catchment model, and current versions of the catchment modelling systems in which the Pitman model is imbedded (e.g. WRSM2000, and SPATSIM); improved SFRA tools; climate change modelling inputs; water quality modelling tools etc. The maintenance of and on-going improvements to the WRYM are the responsibility⁶ of the DWS Sub-Directorate: Systems Analysis of the Directorate: Water Resources Planning Systems. The PSP for the Study must liaise closely with the Sub-Directorate: Systems Analysis regarding any required WRYM and WRPM modifications implied in Sub-sections 3.3 (i) to (xvi) above, as well as the National Water Resource Infrastructure Management (Southern Operations) component of the DWS in regard to the current operating rules and specific constraints that need to be incorporated into the models.

4. TECHNICAL SCOPE AND MANAGEMENT OF THE STUDY

The Study will run over three partially overlapping phases for a period of 36 months, as follows:

- Phase One is a relatively brief Inception Phase of three months that allows the appointed PSP to become fully informed about the available data, preceding and current water resource-related studies and research, and current concerns and issues in the

⁶ *Business requirements for registration of projects with the office of the CIO: Planning systems software development, updating and maintenance.* Report by DWAF Sub-Directorate: Systems Analysis, September 2003 (Draft).

Study Area. The Inception Phase must conclude with clear proposals on the scope and format of the rest of the Study and on the requisite modelling and allocable water quantification approaches.

- Phase Two deals with the reconfiguration of the existing models in the Study Area and the setting up of relevant information bases to allow quantification of allocable water, given the current situation in the Study Area.
- Phase Three encompasses the quantification of allocable water under alternative scenarios of classification and water use, as well as supporting the longer-term integrated water resource planning needs by DWS and/or the Mzimvubu-Tsitsikamma proto-Catchment Management Agency in which the Study Area falls.

4.1 Use of the Document: Guidelines for Models to be Used for Water Resources Evaluation

The document⁷: *Guidelines for Models to be used for Water Resources Evaluation* was developed under the auspices of and for the Directorate: National Water Resources Planning through an interactive process in which a range of modelling-related specialists and water resource managers participated. The *Guidelines* are updated and enhanced from time to time as required.

The primary objective of these *Guidelines* is to guide the water resource modelling that will be required to quantify the allocable water for the purposes of compulsory licensing. Typical water resource assessment situations experienced by South African practitioners were identified and the *Guidelines* prescribe the appropriate models and methodologies to be employed.

Successful PSPs are expected to study the latest available version of the *Guidelines* and to follow the model selection prescriptions, as well as other sound modelling procedures contained therein, during execution of their tasks.

4.1.1 Phase One – Inception

Tasks:

- i) Review the findings of relevant historical water resources evaluations and planning studies, as well as all relevant supporting studies in the Study Area. Make suitable inferences for the current study. (A summary of DWS, WRC and other reports relevant to this study is given in Annexure 1.)
- ii) Review the details of relevant historical catchment and system model applications in the Study Area and determine whether or not the most recent calibration of the monthly Pitman catchment model in the Kromme/Seekoei catchment is acceptable for the generation of up-to-date long-term monthly flow sequences for use in the WRYM model,

or whether a re-calibration of the Pitman model is required in the light of expected improvements in information on historical water use.

iii) Reach agreement with the Client on:

- appropriate ways to address and implement those conceptual and practical considerations in Section 3.3 above;
- the calibration status of the Pitman model in the Kouga, Baviaans and Kromme catchments; and
- any other priority considerations and issues in the Study Area, relevant to the quantification of allocable water, that need to/could be assessed by the appropriate modelling.

The *Guidelines for Models to be used for Water Resource Evaluation*⁷ should be used to provide further guidance in this regard.

Some provisional engagement of key stakeholders will be necessary for this step.

Deliverable:

- *Inception Report* - After appropriate consultations with DWS on the outcomes of the Inception Phase, the PSP must prepare an Inception Report, detailing the required approach, individual tasks, budget breakdown and final work programme.

4.1.2 Phase Two – Provide Technical Modelling Support for the Evaluation of the Current Situation

Tasks:

- i) Obtain model configurations used in previous studies (from the relevant previous PSPs and DWS) which may be relevant for this Study.
- ii) Collect and review information on the primary physical characteristics of all existing and planned water resources-related schemes in the Study Area. Much of this information has been collated in DWS's Algoa Water Supply System Reconciliation AMATOLA.
- iii) Obtain the following requirements or stipulations from the National Water Resource Strategy, or from other DWS processes and studies, as they apply to the Study Area: provisional water resource classifications; Ecological Reserve specifications.
- iv) Incorporate in Tasks 5.2 (v) to (x) below all applicable conceptual and practical modelling considerations identified in Section 3.3.

⁷ *Guidelines for Models to be used for Water Resources Evaluation*, Directorate: National Water Resource Planning Report No. P.RSA/00/2702, Version 2, November 2003, DWAF, Pretoria.

- v) Assemble records of historical and existing water use and abstractions from recent and current water use/requirement projection studies in the Study Area. The All Towns Reconciliation Strategies for the towns in the study area should provide some guidance. Use the latest updated version of these strategies. Also source information from the internationally funded IWRM study conducted by LivingLands primarily in the Baviaans and Kouga catchments.
- vi) Assemble suitable hydro-meteorological and physical input data sets for Pitman catchment model-based applications. Particularly make use of the information collected for the Algoa Bridging Study, regarding satellite imaging to determine land use. Those results have not yet been fully verified.
- vii) With the Pitman catchment model, generate naturalised long-term monthly flow sequences at quaternary catchment spatial scales or finer, except where otherwise agreed with the Client under Task 5.2 (iii) above.
- viii) Pending the outcomes of Task 5.2 (vii) above, configure the WRYM for each of the two catchment systems of the Study Area and make suitable allowance for groundwater and the wetlands - as outlined in Section 3.3 above. Yield model configuration should be at quaternary catchment spatial scales or finer, except where otherwise agreed with the Client under Task 5.2 (iii) above.
- ix) Generate suitable stochastic long-term monthly flow sequences and derive relevant yield-reliability characteristic curves, as well as a Firm Yield curve, for the two Study catchment systems.
- x) For the current provisional classifications of the components of the water resource and for current water use patterns, utilise the new configurations of the WRYM to evaluate the water requirements/availability water balance at suitable locations in the Study Area, according to yield-reliability criteria agreed with the Client. Incorporate groundwater availability in the water balance, as appropriate. The outcome of this step will be the baseline assessment of allocable water for current conditions.

Deliverables:

- *Report on current land use*
- *Report on updated hydrology for each of the major catchments*
- *Assessment of rainfall and river gauging*
- *Assessment of water quality in all catchments*

⁸ See Footnote 11

- *Assessment of potential climate change impacts*
- *A report on the reconfigured and updated WRYM and WRPM setting out the methodology used.*
- *A report on the incorporation of any applicable aspects of Section 3.3 of the ToR: "Primary Conceptual and Practical Considerations when Quantifying Allocable Water".*

4.1.3 Phase Three – Provide Technical Modelling Support for the Evaluation of Alternative Future Scenarios

Tasks:

- i) Implement any model-related changes proposed during Phase Two.
- ii) Use the configured water resource-related models to provide modelling support to the relevant DWS components during iterative engagements with primary water user groups and other stakeholders. The Phase Three support to DWS under this ToR will include the use of the configured water resource-related models to perform iterative water resource evaluations for the range of development scenarios in the Study Area, agreed to between DWS, the primary user groups, and other key stakeholders. Allocable water should be quantified and evaluated under the following individual scenarios:
 - alternative future water requirement patterns for the current provisional classification of the water resource;
 - alternative water resource classifications, combined with either current or future water requirement scenarios; and
 - alternative planning-level operating rules with any of the above scenarios, where applicable.
- iii) Ensure that the evaluation of allocable water under the above scenarios is aligned with the criteria and requirements contained in the Water Allocation Plan for the Study Area. (The development and gazetting of the Water Allocation Plan is required by the NWA and will form a component of the establishment of a Catchment Management Strategy for the Study Area under a separately funded and managed process.)
- iv) Document the aforementioned work in appropriate detail and prepare a free-standing Public Communiqué in a style and format suitable for informing a wide range of technical and non-technical stakeholders.
- v) Assist DWS in the compilation of Water Allocation Schedules in accordance with the Water Allocation Plan, as part of the compulsory licensing process, if so required.

- vi) Use the configured modelling systems to provide support to DWS, if and when so required, for general integrated water resources planning in the Study Area, e.g. general licensing decisions, reconnaissance studies of options for water resource augmentations, or examining options for rehabilitation of “stressed” sub-systems, or to prioritise source directed controls, etc.
- vii) Provide aerial surveys and develop a remote sensing tool informed by weekly satellite data sets and imagery. This tool is expected to detect and determine current uses to inform future development of augmentation schemes but also to provide defensible evidence in concluding the verification of water uses which are being challenged in tribunals as well informing investigations of compliance with ELU, licences and restrictions.

Deliverables:

- *Quarterly Progress and Final Technical Reports* - on all Phase Three activities and outcomes.
- *Public Communiqué* – on allocable water scenario analysis.
- *Configured WRYM and WRPM* available for scenario analyses.
- *Monthly streamflow series for Natural, Current-day and Future Scenarios, as well as all outputs according to the applicable aspects of Section 3.3 of the ToR: “Primary Conceptual and Practical Considerations when Quantifying Allocable Water”.*
- *Capacity building and training to interns/graduate trainees/candidate engineers or any other relevant DWS and proto-CMA staff on the application and use of the WRYM and WRPM, as well as any supporting rainfall-runoff catchment models and water quality simulation models as well as a final report setting out the training given.*

5. STUDY GOVERNANCE

The governance structure of the study will mainly consist of the committees discussed in the following sub items:

5.1 Study administration committee (SAC)

The SAC comprise of the DWS Study Manager and the PSP Study leader team. The committee is responsible for the day to day administration and management of the study. The SAC meetings are to be held on a six weekly basis, commencing with a Mobilisation Meeting and a meeting at the end of the Inception Phase. SAC meetings will normally be scheduled to coincide with Technical Support Group Meetings described in the following item.

5.2 Technical Support Group (TSG)

The TSG comprise of the DWS Study Manager, the PSP Team, DWS Technical Teams and other external technical teams that provide input into the first order detailed assessments and analysis of the strategy. As already mentioned in the item above, the TSG will hold meetings on a six weekly basis, commencing with a Mobilisation Meeting and a meeting at the end of the Inception Phase. A meeting of this committee will be held just before the Study Steering Committee (SSC) meeting in a form of a Dry Run to that specific SSC meeting.

5.3 Study Steering Committee (SSC)

The Study Steering Committee (SSC) is a forum for stakeholder consultation and public participation. The SSC, comprising of senior representatives of relevant DWS Directorates, the Eastern Cape Provincial Office, NWRIM Southern Operations, other relevant National and Provincial Government Departments, relevant district and local municipalities, the proto CMA, the Gamtoos Irrigation Board and other interested parties identified during the course of the study, will provide high-level direction and guidance with support of the SAC and TSG. It will monitor the progress with the Study, recommend adjustments to the Study when required and communicate to all stakeholders and the public about the progress with the implementation of the Study findings recommendations.

6. CAPACITY BUILDING AND TRAINING

The purpose of this task will be to provide training and technology transfer to Department officials and nominated individuals from the study areas. This is considered to be a key component of the assignment, not only because it will serve to develop the competence and expertise of the individuals in question, but also because it will establish a common understanding of technical aspects between the Study team and the Client (DWS) and thereby contribute to the overall success of the assignment and related activities.

Ten (10) Departmental staff members at various levels will be identified for training in consultation with the Client during the Inception Phase of the study. A proposal in this regard will be made at the first study management meeting for approval.

The training programme to be undertaken will involve two distinct components, namely:

- A formal 2-day training course which will be held to provide attendees with a general background of the processes involved with developing and implementing a reconciliation strategy. The course will address issues such as the basic principles of water resources planning, use of water resources systems models, developing and monitoring water requirement projections, water balances and timing of future intervention measures and the practical implementation and monitoring of a reconciliation strategy.
- The PSP must present clear proposals on capacity building in line with the outline in this paragraph. This proposal should involve the actual participation of attendees in the practical aspects of the assignment and will involve the periodic short-term secondment of trainees to the offices of the PSP. This will focus on technical processes and the application of models. For this purpose, the following distinct instruction methods will be employed:
 - Discussions, where technical processes are discussed in a workshop environment;
 - Demonstrations, where a specific process or model application is demonstrated by a specialist for the benefit of the trainee;

- Applications, where the trainee applies a model practically, under the supervision of a specialist.

The aspects which should be addressed as part of the training that is required for individuals are summarised in **Table 2**. The table also provides an indication of the instruction method which should be employed in each case, as well as the extent of participation required by the trainee. Specific dates are not scheduled and will depend on the progress of the assignment as well as the availability of the individuals involved.

Table 2: Guideline training schedule

Description	Instruction method	Period of participation (days)
Hydrological Analysis		
Data collection and sources	Discussion	½
Rainfall data preparation and checking	Application	1
Rainfall data classification, outlier detection and patching	Application	2
Streamflow data preparation and checking	Discussion, application	1
General groundwater modelling	Discussion	½
Land-use impacts	Discussion, application	2½
WRSM2000 modelling:		
▪ Model configuration and testing;	Demonstration	1
▪ Model calibration;	Application	1
▪ Generation of natural runoff sequences.	Demonstration	1
Stochastic streamflow hydrology:		
▪ Generation of parameter file (PARAM.DAT);	Demonstration	½
▪ Checking generated streamflow sequences.	Demonstration	½
Water Requirements and Return Flows		
Data sources	Discussion	½
Data manipulation and processing	Application	3
Water user reliability requirements, purpose and application	Discussion	½
Format and application of the ecological flow requirements	Discussion	½
Yield Analysis (WRYM)		
Configuration and testing of the WRYM	Demonstration	1
Historical system analysis	Application	½
Stochastic system analysis Long and short-term)	Application	1

Description	Instruction method	Period of participation (days)
Reconciliation analysis (annual water balance calculations)	Application	½
Result presentation and interpretation	Demonstration	½
Planning Analysis (WRPM)		
Background to WRPM	Discussion	1
Configuration and testing of the WRPM	Discussion, demonstration	5
Definition and analysis of planning scenarios	Discussion	½
Processing of WRPM output	Demonstration, application	1
Result presentation and interpretation	Demonstration	½

Annual progress reports on training given must be submitted and will also be submitted to the Directorate Human Resources, the Departmental Bid Specification Committee (DBSC) and the Departmental Bid Adjudication Committee (DBAC).

The impact of the proposed training undertaken will be assessed based primarily on feedback obtained from a designated appropriately skilled Departmental representative on perceived benefits regarding the knowledge base, practical insight and/or work-related behaviour of trainees. Ideally, the representative in question will be a line-manager or senior colleague of trainees and will be selected in consultation with the Department.

Progress on the above training programme will be continually monitored and, upon conclusion, documented in a concise training report. The report will include details on the process of selecting trainees, attendance and feedback of the formal training course and a schedule and milestones of the *ad-hoc* instruction process. The report will also include conclusion on the success of the training based on the impact analysis described above, as well as recommendations on further training that may be required and also on the potential for improving similar training programmes in future.

7. REQUIREMENTS FROM THE PSP

7.1 Methodology

The PSP must provide a detailed methodology of how they intend to conduct the study.

7.2 Expertise or skills required

The PSP team must have the proven skills and capacity to undertake the assignment functions described in the previous sections. Some of the particular skills that would be required are:

- Experience in setting up and updating systems models.
- Experience in setting up and utilizing the Water Resource Yield Model (WRYM) and Water Resource Planning Model (WRPM).
- Experience in developing water requirement scenarios for municipalities, industries and irrigators.

- Experience and good understanding of water resources planning including hydrology, geohydrology, water quality and to assess their impacts on the system yields.
- Good understanding of how to undertake assessments of the Reserve and to assess its effect on system yields.
- Good understanding of the implications and effectiveness of implementing WC/WDM measures and its impacts on system yield.
- Experience in the determination of the environmental and social impacts of interventions, and in formulating mitigation measures.
- Ability to utilize selection processes to identify the most appropriate series of augmentation options to meet various water requirement scenarios within the system constraints.
- Ability to synthesize recommendations in a complex environment.
- Ability to interact with and successfully manage multidisciplinary teams.
- Ability to communicate and interact with senior government officials, decision makers and the public.
- Ability to manage public participation processes.
- Proven ability to do the required training on the different models and water resource planning aspects listed

7.3 Work plan and time schedule

7.3.1 Programme

The contract period for the assignment is estimated to be 36 months.

7.3.2 Study Management

Management of PSP activities will be performed by the DWS's Directorate: National Water Resource Planning (South). Management meetings will take place at appropriate intervals. It is envisaged that these would coincide or be integrated with the Technical Support Group meetings, which in turn will be determined by the programme of SSC meetings. The extent of technical work stemming from SSC requests for support and other instructions issued by the SSC, will also influence the need for Support Group and PSP management meetings.

It is envisaged that SSC meetings will take place once a quarter (four times a year), with Support Group/study management meetings at the same time as well as at least twice in between or more often as required. Initial provision must be made for six-weekly meetings.

7.4 Information to be provided in the proposal by the PSP

7.4.1 Extent of the Proposals

The text of the Proposal should be to the point and not longer than thirty (30) pages (A4), excluding CVs, at a font size of 11 and a line spacing of 1.5.

The Technical Proposal must give a detailed human resource (personnel) application breakdown specified in rates for each study Task. The Financial Proposal must give the

same human resource application breakdown specified in rates and cost for each study Task, which would be part of the Study Cost Schedule.

Deliverables such as reports, presentations, analyses, letters and databases must be provided in Microsoft applications and in PDF-format (where applicable). Text for all documents shall be Arial 11 point font at 1.5 spacing, unless otherwise stated or agreed.

Provision must also be made to supply deliverables, such as reports and letters, in hard copy format. The standard and format of reports must be confirmed with DWS before drafting and submitting the required reports for this Study. Reports are typically submitted as first Draft, Draft Final and Final.

A table listing all the deliverables with the cost of each deliverable and the due date of the deliverable must be supplied, in order for this to be included in the contract between the DWS and the PSP. The PSP will be paid on receipt of each completed deliverable. It is recommended that provision be made for at least 30 deliverables. By nature the execution of planning studies is guided by information gathered as the study progresses. However, **Table 3** provides a guideline of possible deliverables for this Study, in line with the tasks described under paragraph 3, but it is not limited to this.

Table 3: Guideline of possible deliverables for a water availability assessment

Item	Description
0	Literature review
1	Inception Report
2	<i>Kouga, Baviaans, Gamtoos and Kromme sub reports on Hydrology</i>
3	<i>Kouga, Baviaans, Gamtoos and Kromme sub reports on Assessment of rainfall and river flow gauging stations</i>
4	<i>Kouga, Baviaans, Gamtoos and Kromme sub reports on Systems' Operations</i>
5	<i>Kouga, Baviaans, Gamtoos and Kromme sub reports on Systems analysis report – updated Water Resource Yield Model and Water Resources Planning Model</i>
6	<i>Kouga, Baviaans, Gamtoos and Kromme sub reports on Ecological requirements</i>
7	<i>Kouga, Baviaans, Gamtoos and Kromme sub reports on Land use and water requirements</i>
8	<i>Kouga, Baviaans, Gamtoos and Kromme sub reports on Assessment of water quality</i>
9	<i>Kouga, Baviaans, Gamtoos and Kromme sub reports on Assessment of Alien invasive vegetation</i>
10	Yield modeling report
10b	Ground water quality and statistics report
11	Climate change scenarios report
12	Final Water Availability Assessment Report
13	Executive Summary
14	News Letter(s)
15	Support to NWRP (South) provisional budget of R500 000

	Training Framework Report (guideline) <i>1. Hydrology updating</i> <i>2. Setting up water resources yield and planning models (WRYM and WRPM)</i> <i>3. Determining irrigation, industrial and domestic water requirements</i> <i>4. Water balance, water availability and use</i> <i>5. Reserve determinations</i> <i>6. Assessing potential climate change impacts</i>
16	Study Management Meetings – reports and minutes
17	Study Technical Support Group meetings - reports and minutes
18	Study Steering Committee meetings - reports and minutes
19	Stakeholder Workshops
20	Quarterly progress reports
22	Professional study review reports (Cost covered under provisional budget)

Provision must be made to have one senior technical person available one full day per week to give technical, scientific and management support to the CE: NWRP (S) as and when required, related to matters in support of this water availability assessment and modeling study for the Kromme, Kouga, Baviaans and Gamtoos rivers.

7.5 Intellectual Property

All deliverables and products produced for this assignment will be the sole property of the Department of Water and Sanitation. This stipulation will be included in the contract between the appointed PSP and DWS. If anyone or the PSPs wishes to use them or apply them elsewhere they should do so only after receiving approval by the Department in writing. After Study completion all source documents, reports, model set up configurations, raw data, GIS Maps and all other relevant documents will be handed over to DWS as the owner of the information.

8. EVALUATION SYSTEM

Department of Water and Sanitation will evaluate all proposals in terms of the Preferential Procurement Regulations 2017. A copy of the Preferential Procurement Regulations 2017 can be downloaded from www.treasury.gov.za. In accordance with the Preferential Procurement Regulations 2017, submissions will be adjudicated on 80/20 points system and the evaluation criteria. A five phase evaluation criteria will be considered in evaluating the bid. On the receipt of the proposals, the evaluation criteria shown below will be used for the selection of the most suitable bidder to undertake the assignment

Phase 1: Pre-Qualification Criteria

Phase 2: Administrative Compliance

Phase 3: Mandatory Compliance (if not complied with bid will be disqualified)

Phase 4: Functional / Technical Evaluation

Phase 5: Points awarded for Price and B-BBEE Status Level of Contribution
(80/20 Preferential System)

PHASE 1:

PREQUALIFICATION CRITERIA

The following prequalification criteria will be applied:

- Bidders will be prequalified on the basis of attaining B-BBEE Status Level 1 to be eligible for further evaluation. Bidders with B-BBEE Status Level other than 1 will not be eligible for further evaluation.

PHASE 2:

ADMINISTRATIVE COMPLIANCE

Bidders are required to comply with the following listed below:

No	Criteria	Yes	No
1	Companies must be registered with National Treasury's Central Supplier Database. Provide proof of print out from CSD.		
2	Tax compliant with SARS (to be verified through CSD and SARS).		
3	Complete, sign, submit SBD 1, SBD 3.3, SBD 4, SBD 6.1, SBD 8, SBD 9		

PHASE 3:

MANDATORY COMPLIANCE:

Please note that all bidders must comply with the following mandatory requirements-

Failure to submit any of the document listed below will render your bid non-responsive and will be disqualified.

Yes - list the relevant documents required on the table below

No	Criteria	Yes	No
1	Attach certificate for compulsory briefing session attendance		

PHASE 4

FUNCTIONALITY (TECHNICAL) EVALUATION

The 80/20 point system will be used in evaluating all proposals. The criteria and guideline weighting points applicable are detailed in the following paragraphs.

Values: 1 Very Poor..... 2 Poor.....3 Average.....4 Good.... 5 Excellent

Criteria		Points value	Weighting Points Awarded
Functionality	<ul style="list-style-type: none"> Past Experience of the company should be demonstrated in the area specified below. Scoring is done by a value system of 1 to 5 as outlined below. ; Water Resource management projects and The relevant study area. 		25
	≥10 years on all 3 items	5	
	7 to 9 years on all 3 items	4	
	5 to 6 years on all 3 items	3	
	3-4 years on all 3 items	2	
	2 years on all 3 items	1	
	<1 years on all 3 items	0	
	Methodology: <ul style="list-style-type: none"> Compliance with ToR; Detailed method statement for each task within the study area; Inclusion of Organogram; Detailed programme and Innovations to the ToR. 		35
	All 5 items addressed	5	
	4 items addressed	4	
	3 items addressed	3	
	2 items addressed	2	
	1 item addressed	1	
	No item addressed	0	

	Team Capability <ul style="list-style-type: none"> • The study leader should have relevant experience in similar projects • The Study leader should be a registered Professional Engineer (with ECSA or recognised institution according to the Washington Accord) or registered professional Scientist (SACNAPS) ideally with specialisation in the water resource planning/management field (the proof, as provided in abridged cv documents attached as part of the proposal). • The criteria for scoring is outlined as per the value system of 1 to 5 below: Team should have a range of experts in various fields (water resource engineer, hydrologist, geohydrologist, water quality specialist, environmentalist, stakeholder engagement specialist) minimum 5 years experience and • Other support structures e.g Admin, finance, messengers. 		30
	Study leader with min 10 years relevant experience and hydrologists/engineers with minimum 5 years and support staff	5	
	Study leader with min 8 years relevant experience and hydrologists/engineers with minimum 4 years and support staff	4	

	Study leader with min 7 years relevant experience and hydrologists/engineers with minimum 3 years and support staff	3	
	Study leader with min 6 years relevant experience and hydrologists/engineers with minimum 2 years and support staff	2	
	Study leader with min 5 years relevant experience and hydrologists/engineers with minimum 2 years and support staff	1	
	Study leader with min 3 years relevant experience and hydrologists/engineers with minimum 1 years and no support staff	0	
	Capacity building and training: <ul style="list-style-type: none"> Provide clear proposals on Capacity building and training of 10 DWS officials in project management and/or technical aspects to be undertaken as part of this Study . 		10
	Shows innovation in ensuring successful transfer of skills to DWS staff	5	
	Provides detailed methodology of training and capacity building as per ToR	4	
	Provides some methodology but not all aspects	3	
	Training in a workshop format only including WRPM	2	
	Training in a workshop format only excluding WRPM	1	
	No training & capacity building plan provided	0	
Total			100

This study is highly technical, which will also include application of sophisticated models such as the Water Resources Yield Model and the Water Resources Planning Model. In

order to demonstrate its ability to undertake this study successfully the bidder is required to offer a high degree of technical expertise and capability and present technically excellent study methodology.

For the above reason a bidder is expected to achieve a minimum threshold/required score for **Functionality** (Past Experience, Methodology, Team capability and Capacity Building and Training) of **65 (%) points**, in order to qualify for further evaluation. Only bidders who obtained at least 65% under the Functionality (Technical) Evaluation will be considered for further evaluation. Further evaluation is based on **Price and Preference** after the minimum score has been achieved by the bidder.

Technical Proposals will be evaluated and scored without reference to the Financial Proposals.

PHASE 5

PRICE AND PREFERENCE (B-BBEE Status Level of Contribution)

The Financial Proposal must be submitted in a separate document and will only be evaluated for those bidders who achieved the minimum score for Functionality.

Price

A maximum of 80 points are allocated for price on the following basis:

$$P_s = 80 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$

Where:

- P_s = Points scored for comparative price of bid under consideration
- P_t = Comparative price of bid under consideration
- P_{\min} = Comparative price of lowest acceptable bid

Preference (B-BBEE Status Level of Contribution)

In terms of Regulation 5(2) and 6(2) of the Preferential Procurement Regulations, preference points must be awarded to a bidder for attaining the B-BBEE status level of contribution in accordance with the table below:

B-BBEE Status Level of Contributor	Number of points (80/20 system)
1	20
2	18
3	14
4	12
5	8
6	6

7	4
8	2
Non-compliant contributor	0

CONDITIONS

- Bidders must submit their original and valid **B-BBEE status level verification certificate** or a certified copy thereof, substantiating their B-BBEE rating issued by a Registered Auditor approved by IRBA or a Verification Agency accredited by SANAS.
- It is advisable that the team be firm and consistent for the duration of the contract, any personnel replacement for senior officials within the company, should be communicated and new officials to hold the same qualifications and experience as per the replaced officials.
- Bidders will be expected to submit a valid certified copy of UIF certificate or letter of good standing and a valid Letter of good standing with the Compensation Commissioner in terms of the Compensation for Occupational Injuries and Diseases Act 130 of 1993 within 21 days of receiving an award letter.

9. ARRANGEMENTS FOR SUBMISSIONS OF PROPOSALS

9.1 Format of Proposal Documentation and Contact Persons

Separate Technical and Financial proposals are to be submitted in two (2) hard copies (marked Original and Copy). The Financial Proposal must be in a sealed envelope. Receipt of each submission will be acknowledged. Enquiries about any aspect of this Proposal invitation can be obtained from the following persons:

- Bidders are requested to provide a clear agreement regarding joint venture/consortia. The percentage involvement of each company in the joint venture agreement should be indicated.

For technical matters:

Mr T Makombe

Tel: 012 336 8503

Cell: 083 662 1414

E-mail: makombet@dws.gov.za

Address: Private Bag X313
PRETORIA
0001

For bid administrative matters:

Ms S Mbanjwa

Tel: 012 336 8398

E-Mail: Mbanjwas@dws.gov.za

for Procurement Matters:

Mr Patrick Mabasa

Telephone: 012-336-7518 or

E-Mail: MabasaP@dwa.gov.za

Address: Private Bag X313
PRETORIA
0001

9.2 Deadline and Address for Submissions

Proposal documentation is to be submitted in accordance with form SBD 1, "Invitation to Tender".

ANNEXURE 1

Relevant studies to be used for the Kromme/Kouga/Baviaans/Gamtoos Water Availability Assessment study

Department of Water Affairs and Forestry, South Africa: 2010. *The Assessment of Water Availability in the Berg Catchment (WMA 19) by means of Water Resource Related Models*. Prepared by Ninham Shand Consulting Services & Umvoto. DWAF Report No. P WMA19/000/00/1209

Department of Water Affairs, South Africa. 2011. *Algoa Reconciliation Strategy*. Prepared by E van der Berg and Dr MJ Shand of Aurecon, as part of the Water Reconciliation Strategy Study for the Algoa Water Supply Area. DWA Report No. WMA 15/M00/00/1409/04.

Department of Water Affairs, South Africa. 2011. *Algoa Reconciliation Strategy: October 2011 Status Report*. Prepared by Aurecon

Department of Water Affairs, South Africa. 2012. *Algoa Reconciliation Strategy: September 2012 Status Report*. Prepared by Aurecon

Department of Water Affairs, South Africa. 2013. *Algoa Reconciliation Strategy: September 2013 Status Report*. Prepared by Aurecon

Department of Water Affairs, 2012, Support for the Implementation and maintenance of the Algoa Reconciliation Strategy, *Evaluation of the Raising of Kouga Dam*. Prepared by Aurecon

Brown, C, Pemberton, C, Birkhead, A, Bok, A, Boucher, A, Dollar, E, Harding, W, Kamish, W, King, J, Paxton, B, Ratcliffe, S. 2006. *In support of water-resources planning - highlighting key management issues using DRIFT: a case study*. Water SA Vol. 32 No. 2. Pg. 181-191.

Coega IDZ Water and Return Effluent Study Report. 2007. Prepared by SSI and Afri-Coast Engineers.

Department of Water Affairs and Forestry, South Africa. 1996. *Algoa Water Resources Stochastic Analysis Study. Possible future Augmentation Schemes*. Prepared by Ninham Shand Consulting Engineers. Report No. PM000/00/0395.

Department of Water Affairs and Forestry, South Africa. 1996. *Algoa Water Resources Stochastic Analysis Study. Final Report. Stochastically generated flows and long term characteristic curves*. Prepared by Ninham Shand as part of the Algoa Water Resources System Analysis (Report 2 of 7). Report No. PM000/00/0295.

Department of Water Affairs and Forestry, South Africa. 2001. *Algoa Pre-feasibility Study, Environmental Screening in the Kouga River, Guerna Dam*. Prepared by BKS Acres (Pty) Ltd. Report No. PM000/00/2401.

Department of Water Affairs and Forestry, South Africa. 2001. *Algoa Pre-feasibility Study, Water demand management programme for the Port Elizabeth Region*. Prepared by Dup van Reenen for BKS Acres as part of the Algoa Prefeasibility Study. Report No. PM000/00/1502.

Department of Water Affairs and Forestry, South Africa. 2002. *Algoa Pre-feasibility Study, Water Supply System Analysis*. Prepared by BKS Acres. DWA Report No. PM 00/00/2302.

Department of Water Affairs and Forestry, South Africa. 2003. *Algoa Pre-feasibility Study, Main Report*. Prepared by BKS Acres. DWA Report No. PM 00/00/2602.

Department of Water Affairs and Forestry, South Africa. 2004. *Fish to Tsitsikamma Water Management Area: Tsitsikamma to Coega Internal Strategic Perspective*. Prepared by Ninham Shand in association with Umvoto Africa. DWA Report No. P WMA 15/000/00/0304.

Department of Water Affairs and Forestry, South Africa. 2005. *Fish to Tsitsikamma Water Management Area: Fish to Sundays Internal Strategic Perspective*. Prepared by Ninham Shand in association with Umvoto Africa. DWA Report no. P WMA 15/000/00/0405.

Department of Water Affairs and Forestry, South Africa. 2005. *Assessment of Water Use (and Water Demand Management) in the Agro-based Sectors of the Eastern Cape*. Report no. 2004-15/02, prepared by Uhambiso Consult (Pty) Ltd.

Department of Water Affairs, South Africa. 2010. *Algoa Water Resources Bridging Study: Main Report*. Prepared by DMM Development Consultant and WRP Consulting Engineers. DWA Report No.: P WMA 15/K90/00/1509

Department of Water Affairs, South Africa. 2010. *Algoa Water Resources Bridging Study: Updating Hydrology for the Kromme, Kouga and Baviaanskloof River Catchments*. Prepared by DMM Development Consultant and WRP Consulting Engineers. DWA Report No.: P WMA 15/K90/00/1809

Department of Water Affairs, South Africa. 2010. *Algoa Water Resources Bridging Study: Water Resources and System Modelling*. Prepared by DMM Development Consultant and WRP Consulting Engineers. DWA Report No.: P WMA 15/K90/00/1909

Department of Water Affairs, South Africa. 2010. *Algoa Water Resources Bridging Study: Urban and Industrial Water Requirements*. Prepared by DMM Development Consultant and WRP Consulting Engineers. DWA Report No.: P WMA 15/K90/00/1609

Department of Water Affairs and Forestry, South Africa. 2008. *Algoa Annual Operational Analysis*. Prepared by Water for Africa, Environmental, Engineering and Management Consultants (Pty) Ltd.

Department of Water Affairs, South Africa. 2011. *Algoa System 2011/2012 System Analysis: Algoa System: Annual Operating Analysis 2011*. Prepared by WRP Consulting Engineers (Pty) Ltd

Department of Water Affairs, South Africa. 2012. *Algoa System 2012/2013 System Analysis: Algoa System: Annual Operating Analysis 2012*. Prepared by WRP Consulting Engineers (Pty) Ltd

Department of Water Affairs, South Africa. 2011. *Groendal Dam Operational Analysis*. Prepared by IWR Water Resources (Pty) Ltd

Department of Water Affairs and Forestry, South Africa. 2008. *Draft Water Conservation and Water Demand Management Strategy for Nelson Mandela Bay Municipality*. Prepared by DMM Development Consultant and WRP Consulting Engineers.

Goedhard, M L, Small, G W and Hulley, V. 2004. *Groundwater targeting in the Algoa Bay region, from Humansdorp to Alexandria, Eastern Cape, South Africa*. Council for Geoscience. Report No. 2004 - 0161.

Nelson Mandela Metropolitan Municipality, 2006. *Water Master Plan 2005 – 2020*. Prepared by Afri-Coast Engineers SA (Pty) Ltd. Report No. B855.

Nelson Mandela Metropolitan Municipality, 2006. *Water Services Development Plan*. Prepared by Africon Engineering International.

Nelson Mandela Bay Municipality, 2008. *Draft Sewerage Master Plan*. Prepared by Cabitech Consulting.

Nelson Mandela Bay Municipality 2011 *NMBM Emergency Supply Strategy*, Prepared by Aurecon

Water Research Commission, 2009. Annual Report 1 and Interim Report 4: *An Evaluation of the Sensitivity of Socio-Economic Activities to Climate Change in Climatically Divergent South African Catchments*. WRC Research Project K5/1843.

Murray, R, Goedhart, M, Baron, J. 2008. *High-yielding groundwater areas around the Nelson Mandela Bay Municipality*. WRC Report No TT 327/08.

Department of Water Affairs, 2012 *Development of Reconciliation Strategies for All Towns in the Southern Planning Region, Provincial Summary Report, Eastern Cape*. Umvoto Africa in association with Aurecon (Note: [Strategies updated](#))

Kouga Local Municipality supported by Amatola Water, 2010, Kouga Municipality Water Conservation and Water Demand Management project, *Report on Non-Revenue Water*, Prepared by Amatola Water

Department of Water Affairs, 2006, *Kromme/Seekoei Catchments Reserve Determination Study*. Prepared by Ninham Shand and Coastal & Environmental Services (CES).

Nelson Mandela Bay Municipality 2009, *IWRM Strategy and Business Plan for implementation for Nelson Mandela Bay Municipality*, Prepared by Uhambiso Consult (Pty) Ltd

Department of Water Affairs and Forestry, South Africa. 2006 *WCDM pilot study for the Gamtoos Irrigation Board*, Prepared by MBB Consulting Engineers.

Nelson Mandela Bay Municipality 2011 *Water Master Plan Review 2011 – 2035*, Prepared by Afri-Coast Engineers SA (Pty) Ltd.

The following WRC studies need to be sourced and the results used where relevant or necessary:

- K5/2019/1 Enhancing hydrological modelling [www.waterresourceswr2012](#)
- KR5/2018 Developing Climate Change adaptation measures and decision-support system for selected SA water boards
- K5/2056/1 Implementing uncertainty analysis in water resource assessment and planning.
- K5/2241 Revision of the MAP estimates over SA
- K5/2517 Economic study of assurance of supply requirements for water resource management
- K5/2527 Selection of hydrological modelling software for use in modelling of the Baviaanskloof, Kouga, and Kromme catchment areas.
- K5/2535 Future water allocations trade-off scenarios

Other studies that have been completed by DWS, and relevant studies by others, that could be useful to study and incorporate results, i.e.

- The WMA 15 WC/WDM Strategy (should be on reports website get from WUE, try Jannie Fourie),
- The Water use validation and verification study for the Langkloof (get from DWS RO in East London),
- Latest approved Annual Operating Rules reports for the Algoa System (get from Ms Jenny Pashkin in DWS WRPS: Systems Operations)

- Reports done by the Dutch firm LivingWaters on the Baviaanskloof restoration (contact Dieter Van den Broeck at dieter@livinglands.co.za)
- Reports on RBIG, MIG and ACIP interventions in the towns upstream of the Kouga and Churchill dams, as well as in Patensie (contact Stephan Oosthuysen and Neville Lawry in the DWS EC RO, Cradock)
- Reports on Working for Water on clearing invasive alien plants (IAPs) and Working for Wetlands work in rehabilitating wetlands that have been undertaken by the Gamtoos Irrigation Board, the Implementing Agent for the two programmes (contact Pierre Joubert at Gamtoos Irrigation Board - pierre.j@gamtooswater.co.za)
- Report on proposed rehabilitation work on the Kouga Dam and how it may impact on the outlet capacity of the dam (DWS Dam Safety Office).