



Request for Proposals (RFP)

The provision of services in development of Industrial Water Efficiency Training Course Materials on behalf of the NCPC-SA

RFP No. 1015/18/08/2022

Date of Issue	Thursday, 04 August 2022
Closing Date	Thursday, 18 August 2022
Bid Submission address	tender@csir.co.za
Enquiries	E-mail: tender@csir.co.za
CSIR business hours	08h00 – 16h30
Category	Professional Services

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SECTION A – TECHNICAL INFORMATION

1 INTRODUCTION

South Africa's water resources have significant spatial variability which is compounded by frequent droughts and floods as well as the increasing impacts of climate change. This is further complicated by challenging socio-economic disparities and extreme levels of poverty amongst certain population groups in South Africa which necessitates the need for effective water resource management that promotes socio-economic growth and rural development whilst ensuring water security.

Rising demand and diminishing supplies of water requires an increasingly careful and conservative management of the country's most vital resource. If not managed well, the availability of enough water of sufficient quality could become a significant constraint- not only on supporting economic growth but also on providing potable water for growing urban populations at an affordable cost.

Prevailing dry weather conditions affect most of the water supply schemes nationally. This has already led to water shortages in a number of public water supply schemes and dams and in response to those prevailing conditions many Provinces are now declared water disaster areas with pressure from the agricultural industry to announce a national disaster in response to South Africa's worst drought in a century and in order to release funds.

If industrial water usage is calculated not only from direct abstraction sources but also the water provided through Municipal water supply infrastructures and distribution nets, the percentage of proportional water is in the region of 24% if summarized according to the DWS estimates of water use and in contrast to energy where the capacity to address energy shortages reside in Energy Managers, Electrical Engineers and the like, we fail to see a corresponding capacitation and recognition of water management custodians.

This work is commissioned by the National Cleaner Production Centre, South Africa (NCPC-SA), as part of its commitment in the areas of climate change, sustainable development, and resource efficiency. The focus of this work is the development of an Industrial Water Efficiency training course materials for industrial and commercial sector applications, to raise awareness and capacitate national water utility managers, engineers and experts for the implementation of water resource management systems in the industrial and commercial sectors. The training material developed according to these terms of reference will be used to capacitate and develop a national base of water resource management implementers, to promote its application in the industrial and commercial sectors.

2 BACKGROUND

National Cleaner Production Centre of South Africa (NCPC-SA) is a key industrial sustainability programme of the Department of Trade and Industry, hosted at the CSIR. The work of the NCPC-SA promotes the implementation of Resource Efficiency and Cleaner Production (RECP) methodologies – identifying and advising on cost saving options through reduced energy, water and materials usage, as well as more efficient waste management and use.

The NCPC-SA has long recognized that environmental issues must be addressed, and cleaner production methodologies must be promoted at a systemic level in industrial development. The promotion of resource efficiency requires a perspective and a decision-making process that simultaneously considers both economic value and environmental sustainability. Improved resource efficiency also applies to water and effluent management. Sustainable industrial water strategies that include the adoption of water efficiency and water quality management are key in addressing the SDGs related to economic growth and quality of life.

Against this background, the NCPC-SA provides resource-efficient capacity building for the implementation of multilateral environmental agreements.

3 INVITATION FOR PROPOSAL

Proposals are hereby invited to develop Industrial Water Efficiency training course materials.

The NCPC-SA is committed to capacity building and has placed great emphasis on the need to develop green skills. The intention is to address immediate scarce and critical skills through developing and offering new and relevant training courses that recognize green skills. The successful service provider will be required to map national industrial water consumption and identify major users to establish water resource deficiencies. The appointed consultant will also be required to survey existing national and international water resource/efficiency training courses, to benchmark and align the content with best available and relevant programmes and technologies and in so doing avoid costly and time-consuming duplication. The service provider is requested to develop the 4-5-day Water Resource Management Systems training material in soft copy and in English as defined in point 4 below. The “Self-constructed Industrial Water Efficiency (IWE) Assessment: A Guide for facility water champion” should be the main

reference and certain additions will be required. Suggested peer programmes to earmark for benchmarking:

- Terrafirma - <https://terrafirma-academy.com/>
- IEPA - <https://iepa.org.za/trainers/>
- SAEEC (CWEP) - <https://www.saeeconfed.org.za/certified-water-efficiency-professional-cwep/>
- International Water stewardship Programme (UNIDO, GIZ, WWF)

4 PROPOSAL SPECIFICATION

Key elements to be developed by the service provider comprise the following material:

- A course curriculum outlining the content for the Industrial Water Efficiency training course, defining the objectives and key lessons of each course section / chapter and the associated delivery time periods. See ANNEXURE B.
- A 4 to 5-Day classroom training Power Point slide pack comprising 420 – 500 numbered slides on the NCPC-SA / UNIDO power point slide template applying the NCPC-SA content structure with accompanying facilitator and guidance notes on all content slides. The content must include a 15-minute power review at the start of day 2 and each consecutive day and include four 15-minute quizzes, two on each training day. The power point slide template will be provided by the NCPC-SA for which the specified text font and size is Arial (title) 32 for slide title and minimum Arial (body) 16 for slide text.
- 8 to 10 Half-day virtual training session Power Point slide packs, comprising in total 420 – 500 numbered slides on the NCPC-SA / UNIDO power point slide template applying the NCPC-SA content structure with accompanying facilitator and guidance notes on all content slides. The content must include a 10-minute power review at the start of mornings 2,3 and 4 and a 20-minute quiz after every day of instruction.
- A 200 to 300-page training manual in MS Word with a broader content subject range than that of the slide pack containing relevant benchmarking, case study and related best practice metrics which enables its use as a reference source. This document should include (and be based upon) all information as included in the “Self -constructed industrial water efficiency assessment: a guide for facility water champion” but include additional topics as listed in the “Core training course themes”.

- Two practical assignments requiring access to a selected candidate plant's water consumption and related data to be used in the development of a water resource management system scoping and proposal to test the student's technical conception and business proposal development capabilities. The assignment content should allow completion within 5 days.
- Two 2-hour class tests with accompanying memorandums, answers sheets and an excel scoring worksheet for each test.
- Class handouts comprising water management case studies, application calculators, relevant publications, research articles, position papers, concept documents, conversion tables and general studies.
- A training feedback form to evaluate logistics, content and facilitator performance with multiple and open-ended questions that can be completed within 10-minute period, maximum.
- Identification of a few (2 to 5) key water management related fields in which potential "Expert" training material can be developed. Each field should be accompanied with a short content framework of about one page each.
- Delivery of the first three courses (online or classroom based depending on COVID regulations that may apply at the time). These venue and regions of these courses will be determined (based on interest) and the venue, travel and accommodation cost will be booked and paid by the NCPC-SA.
- Delivery of one Train the Trainer workshop to a selected group of about 5-8 candidates that could (upon successful completion of the course and Train the Trainer workshop) deliver the training by themselves. These candidates therefore has to be identified by the material developers and be interested in becoming trainers of the course.

Course content framework and guideline

The objective is to select an expert or company in the water resource management space for the development of training material which can be used by the industrial and commercial sector, i.e. engineers and energy/water consultants that are interested in expanding their career in modelling and implementing water resource management systems.

The focus for this training should include, although not exclusively, the following sub-sectors:

- Textiles and Leather

- Automotives
- Iron and Steel
- Mining
- Agro-Processing
- Food and Beverages
- Pulp and Paper

Course Objectives:

- To give organizations the requirements for a water resource management system
- To provide benefits for large and small businesses
- To provide a framework for RSA based companies to develop a policy which is
 - based on continual improvement
 - provides targets for improving water efficiency performance systematically
 - facilitates decision making concerning current and future water use
 - in a framework format that allows to measure and compare results
- To assist organizations in making better and more efficient use of their existing water consuming assets and technologies
- To create transparency and facilitate communication on the best and most efficient management of water resources in particular with a view to improve effluent water quality in industrial catchments
- To promote best practices and reinforce good water efficiency management behaviours
- To assist facilities in evaluating and prioritizing the implementation of new water-efficient technologies
- To provide a framework for promoting water efficient practices throughout an industry's entire supply chain that is linked to both products and services
- To facilitate water efficiency management improvements that create resilience against climate change related drought and flood scenarios
- To enable the integration with other organizational management systems that industries apply, such as environmental, and health and safety.
- To capacitate and guide facility water champions and third-party auditors in performing assessments conforming to the "Self-constructed Industrial Water Efficiency Assessment: A Guide for facility water champion" document that was developed by the NCPA-SA for the industrial and commercial water sectors. A Few additions topics that need to be

included in the training material are anticipated and included in the Learning Objectives below.

Learning Objectives:

- Understand the benefits of a systematic approach to water management
- Understand the Water-Energy nexus
- Awareness and understanding of the various components and requirements of a Water Resource Management System
- Understand the importance of Water performance and overview of the supporting water metrics
- Building the business case for a Water Resource Management System
- Improve your water resource performance by implementing your own Water Resource Management System

The training course guideline structure is presented below:

4 or 5-Day Industrial Water Efficiency Training Course:

- **Duration of Module:** 32-40 hours
- **Material required:** As defined below
- **Target audience:** Senior Industrial and Commercial Plant Management, Plant Engineers and Utility Managers, Maintenance Managers, Process Engineers, Energy and Water Consultants, Government Officials (Directors, Deputy Directors), Academia, Engineering Students.

Core Training Course Themes:

- **Introduction to Water Resource Management System**
 - Terms, Definitions and Units of Measure
 - Water Standards (ISO 46001, ISO 13060, ...)
- **The Water Cycle**
 - Purpose of Water
 - Sources and Types of Water
 - Uses of Water
 - Water supply options

- **Global and National Water Consumption Statistics**
- **Pollution Types and Impact on Industrial Performance**
 - Potential for causing damage to equipment (e.g. corrosion and abrasion)
 - Problems it may cause in the manufacturing process (e.g. precipitates and colour changes)
 - Impairment of product quality (e.g. taste and discolouration)
 - Complexity of waste handling as a result of using water of the quality available
- **Need for Water Resource Management Systems**
 - Key Concepts of Water Management Systems
 - Building Management Commitment
 - Support
 - Review Water Resource Performance
 - Implementation and Operation
 - Evaluate and Improve
 - Barriers, Issues and Solutions
 - Optimising Water Systems
 - Effluent Quality
- **Common Water Systems**
 - Industrial Water Systems
 - Design of Wastewater Treatment Works
 - Effluent Standards
- **Legislation / Regulatory Framework (International & Local)**
 - Regulatory frameworks,
 - Concepts
 - Water Policy
- **The Business Case**
 - Why a Company Should Develop a Water Management Strategy
 - Context for Water Resource Management Systems
- **Performing a Water Assessment**
 - Developing Water Balances
 - Metering and Calculating Flow
 - Water metering and sub-metering
 - Leak detection

- General water use
- Commercial-grade kitchen water use
- Cooling tower water use
- Chilled and heating water use
- Cleaning and sanitation
- True cost of water
- **Water Quality Parameters and Water Quality Testing**
 - SA Water Quality Guideline Volume 3 – Industrial Water Use
 - Surface Water Quality Monitoring & Management
 - Groundwater Quality Monitoring & Management
 - Fresh Water Quality Management
 - Field Sampling Guidance
- **Water Management Strategy**
- **Zero Discharge**
- **Water Resource Efficiency and Cleaner Production**
 - Steam Systems Optimisation
 - Heating and Cooling System Optimisation
 - Pumps System Optimisation
 - Water Efficient Treatment Technologies
 - Process Water Systems
- **Performance and Financial Analysis**
 - Absolute Consumption Metrics
 - Annualised Consumption Metrics
 - Energy Intensity Water Metrics
 - Normalised (Regression Analysis) Water Metrics
- **Water Consumption Baselines and Water Performance Indicators**
 - Tariffs and Water billing
 - Cost at Point of Use
 - Data Collection and Management
 - Information Technology
 - Baseline water use development,
 - Metering, Monitoring & Verification
 - Benchmarking

- **Continual Real Time Monitoring**
- **The Water: Energy Nexus**
- **Innovation and Digitalisation**
- **Assignments**
 - Development of a business case for implementing a water resource management system of an industrial plant using the plant data and information.

Summary of deliverables

	Deliverable
1	Course curriculum
2	Classroom slide pack (4-5 days)
3	Online slide pack (8 to 10 sections of roughly 4 hours each to be covered over the course of two weeks)
4	Eight 15 min quizzes
5	100 to 150-page training manual in MS Word
6	Two practical assignments
7	Two 2-hour class tests with memos and scoring sheets
8	Class handouts (case studies, application calculators, relevant publications, research articles, position papers, concept documents, conversion tables and general studies)
9	A training feedback form
10	Identification and framework for a few (2 to 5 fields potential "Expert" training material development.
11	Delivery of the first three training courses
12	Delivery of a Train the Trainer workshop

5 FUNCTIONAL EVALUATION CRITERIA

The evaluation of the functional / technical detail of the proposal will be based on the following criteria:

Criteria	Criteria Description	Weight
Qualification and experience of team members	Provide a list of team members and their qualifications.	50
Timeframe	Projected timeframe to complete all tasks described	30
Additional elements that add value	Proposal includes additional elements that adds value to the potential impact of the proposed projects	20
	Total	100

Proposals with functionality / technical points of less than the pre-determined minimum overall percentage of 70% and less than 50% on any of the individual criteria will be eliminated from further evaluation.

Refer to Annexure A for the scoring sheet that will be used to evaluate functionality.

6 ELIMINATION CRITERIA

Proposals will be eliminated under the following conditions:

- Submission after the deadline;
- Bidders that submit to the incorrect location or email address;
- Bidders that are listed on the NT database of restricted suppliers ;
- Bidders that are registered on the NT Register of Tender Defaulters;
- Bidders that do not submit a fully completed and signed SBD 1 and SBD 4 Form.
- The proposed project team does not include members that collectively meet all of the criteria listed below:
 - Engineering or equivalent qualification

- Minimum of 7 years of experience in industrial water efficiency
- Minimum one person with Energy Management System Implementation (EnMS) Expert certification of the NCPC-SA
- Minimum one person who has successfully completed the Energy Performance Management Indicators (EnPMI) training course with the NCPC-SA

7 NATIONAL TREASURY CENTRAL SUPPLIER DATABASE REGISTRATION

Before any negotiations will start with the winning bidder it will be required from the winning bidder to:

- be registered on National Treasury's Central Supplier Database (CSD). Registrations can be completed online at: www.csd.gov.za;
- provide the CSIR of their CSD registration number; and
- provide the CSIR with a certified copy of their B-BBEE certificate. If no certificate can be provided, no points will be scored during the evaluation process. (RSA suppliers only)

SECTION B – TERMS AND CONDITIONS

8 VENUE FOR PROPOSAL SUBMISSION

All proposals must be submitted using the following email address: tender@csir.co.za

9 TENDER PROGRAMME

The tender program, as currently envisaged, incorporates the following key dates:

- Issue of tender documents: Thursday, 04 August 2022
- Last date for submission of queries: Thursday, 11 August 2022
- Closing / submission Date: Thursday, 18 August 2022
- Estimate appointment date of successful tenderer: Monday, 19 September 2022

10 SUBMISSION OF PROPOSALS

Proposals must consist of two parts, each of which clearly marked:

PART 1: Technical Proposal: RFP No.: 1015/18/08/2022

PART 2: Pricing Proposal, B-BBEE and other Mandatory Documentation:

RFP No.: 1015/18/08/2022

Proposals submitted by companies must be signed by a person or persons duly authorised.

The CSIR will award the contract to qualified tenderer(s)' whose proposal is determined to be the most advantageous to the CSIR, taking into consideration the technical (functional) solution, price and B-BBEE.

11 DEADLINE FOR SUBMISSION

Proposals shall be submitted at the email address mentioned above no later than the closing date of Thursday, 18 August 2022 during CSIR's business hours. The CSIR business hours are between 08h00 and 16h30.

Where a proposal is not received by the CSIR by the due date and stipulated place, it will be regarded as a late tender. Late tenders will not be considered.

12 AWARDING OF TENDERS

Awarding of tenders will be published on the CSIR tender website. No regret letters will be sent out.

13 EVALUATION PROCESS

All proposals will be evaluated by an evaluation team for functionality, price and B-BBEE. Based on the results of the evaluation process and upon successful negotiations, the CSIR will approve the awarding of the contract to successful tenderers.

A two-phase evaluation process will be followed.

- The first phase includes evaluation of **elimination** and **functionality criteria**.
- The second phase includes the evaluation of **price** and **B-BBEE** status.

Pricing Proposals will only be considered after functionality phase has been adjudicated and accepted. Only proposals that achieved the specified minimum qualification scores for functionality will be evaluated further using the preference points system.

Preference points system

The 80/20 preference point system will be used where 80 points will be dedicated to price and 20 points to B-BBEE status.

14 PRICING PROPOSAL

Pricing proposal must be cross-referenced to the sections in the Technical Proposal. Any options offered must be clearly labelled. Separate pricing must be provided for each option offered to ensure that pricing comparisons are clear and unambiguous.

Price needs to be provided in South African Rand (excl. VAT), with details on price elements that are subject to escalation and exchange rate fluctuations clearly indicated.

Price should include additional cost elements such as freight, insurance until acceptance, duty where applicable.

Only firm prices* will be accepted during the tender validity period. Non-firm prices** (including prices subject to rates of exchange variations) will not be considered.

*Firm price is the price that is only subject to adjustments in accordance with the actual increase or decrease resulting from the change, imposition, or abolition of customs or excise duty and any other duty, levy, or tax which, in terms of a law or regulation is binding on the contractor and demonstrably has an influence on the price of any supplies, or the rendering costs of any service, for the execution of the contract;

**Non-firm price is all prices other than “firm” prices.

Payment will be according to the CSIR Payment Terms and Conditions.

15 VALIDITY PERIOD OF PROPOSAL

Each proposal shall be valid for a minimum period of three (3) months calculated from the closing date.

16 APPOINTMENT OF SERVICE PROVIDER

The contract will be awarded to the tenderer who scores the highest total number of points during the evaluation process, except where the law permits otherwise.

Appointment as a successful service provider shall be subject to the parties agreeing to mutually acceptable contractual terms and conditions. In the event of the parties failing to reach such agreement CSIR reserves the right to appoint an alternative supplier.

17 ENQUIRIES AND CONTACT WITH THE CSIR

Any enquiry regarding this RFP shall be submitted in writing to CSIR at tender@csir.co.za with “RFP No 1015/18/08/2022 - The provision of services in development of Industrial Water Efficiency Training Course Materials on behalf of the NCPC-SA as the subject.

Any other contact with CSIR personnel involved in this tender is not permitted during the RFP process other than as required through existing service arrangements or as requested by the CSIR as part of the RFP process.

18 MEDIUM OF COMMUNICATION

All documentation submitted in response to this RFP must be in English.

19 COST OF PROPOSAL

Tenderers are expected to fully acquaint themselves with the conditions, requirements and specifications of this RFP before submitting proposals. Each tenderer assumes all risks for resource commitment and expenses, direct or indirect, of proposal preparation and participation throughout the RFP process. The CSIR is not responsible directly or indirectly for any costs incurred by tenderers.

20 CORRECTNESS OF RESPONSES

The tenderer must confirm satisfaction regarding the correctness and validity of their proposal and that all prices and rates quoted cover all the work/items specified in the RFP. The prices and rates quoted must cover all obligations under any resulting contract.

The tenderer accepts that any mistakes regarding prices and calculations will be at their own risk.

21 VERIFICATION OF DOCUMENTS

Tenderers should check the numbers of the pages to satisfy themselves that none are missing or duplicated. No liability will be accepted by the CSIR in regard to anything arising from the fact that pages are missing or duplicated.

Pricing schedule and B-BBEE credentials should be submitted with the proposal, but as a separate document and no such information should be available in the technical proposal.

22 SUB-CONTRACTING

A tenderer will not be awarded points for B-BBEE status level if it is indicated in the tender documents that such a tenderer intends sub-contracting more than 25% of the value of the contract to any other enterprise that does not qualify for at least the points that such a tenderer qualifies for, unless the intended sub-contractor is an exempted micro enterprise that has the capability and ability to execute the sub-contract.

A tenderer awarded a contract may not sub-contract more than 25% of the value of the contract to any other enterprise that does not have an equal or higher B-BBEE status level than the person concerned, unless the contract is sub-contracted to an exempted micro enterprise that has the capability and ability to execute the sub-contract.

23 ENGAGEMENT OF CONSULTANTS

The consultants will only be remunerated at the rates:

Determined in the "Guideline for fees", issued by the South African Institute of Chartered Accountants (SAICA); or

Set out in the "Guide on Hourly Fee Rates for Consultants", by the Department of Public Service and Administration (DPSA); or

Prescribed by the body - regulating the profession of the consultant.

24 TRAVEL EXPENSES

All travel expenses for the CSIR's account, be it directly via the CSIR's travel agent or indirectly via re-imburements, must be in line with the CSIR's travel policy. The following will apply:

24.1.1 Only economy class tickets will be used.

24.1.2 A maximum of R1400 per night for accommodation, dinner, breakfast and parking will be allowed.

24.1.3 No car rentals of more than a Group B will be accommodated.

25 ADDITIONAL TERMS AND CONDITIONS

A tenderer shall not assume that information and/or documents supplied to CSIR, at any time prior to this request, are still available to CSIR, and shall consequently not make any reference to such information document in its response to this request.

Copies of any affiliations, memberships and/or accreditations that support your submission must be included in the tender.

In case of proposal from a joint venture, the following must be submitted together with the proposal:

- Joint venture Agreement including split of work signed by both parties;
- The original or certified copy of the B-BBEE certificate of the joint venture;
- The Tax Clearance Pin of each joint venture member;
- Proof of ownership/shareholder certificates/copies; and
- Company registration certificates.

An omission to disclose material information, a factual inaccuracy, and/or a misrepresentation of fact may result in the disqualification of a tender, or cancellation of any subsequent contract.

Failure to comply with any of the terms and conditions as set out in this document will invalidate the Proposal.

26 CSIR RESERVES THE RIGHT TO

Extend the closing date;

Verify any information contained in a proposal;

Request documentary proof regarding any tendering issue;

Give preference to locally manufactured goods;

Appoint one or more service providers, separately or jointly (whether or not they submitted a joint proposal);

Award this RFP as a whole or in part;

Cancel or withdraw this RFP as a whole or in part.

27 DISCLAIMER

This RFP is a request for proposals only and not an offer document. Answers to this RFP must not be construed as acceptance of an offer or imply the existence of a contract between the parties. By submission of its proposal, tenderers shall be deemed to have satisfied themselves with and to have accepted all Terms & Conditions of this RFP. The CSIR makes no representation, warranty, assurance, guarantee or endorsements to tenderer concerning the RFP, whether with regard to its accuracy, completeness or otherwise and the CSIR shall have no liability towards the tenderer or any other party in connection therewith.

DECLARATION BY TENDERER

Only tenderers who completed the declaration below will be considered for evaluation.

RFP No: 1015/18/08/2022

I hereby undertake to render services described in the attached tendering documents to CSIR in accordance with the requirements and task directives / proposal specifications stipulated in RFP No. 1015/18/08/2022 at the price/s quoted. My offer/s remains binding upon me and open for acceptance by the CSIR during the validity period indicated and calculated from the closing date of the proposal.

I confirm that I am satisfied with regards to the correctness and validity of my proposal; that the price(s) and rate(s) quoted cover all the services specified in the proposal documents; that the price(s) and rate(s) cover all my obligations and I accept that any mistakes regarding price(s) and rate(s) and calculations will be at my own risk.

I accept full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on me under this proposal as the principal liable for the due fulfilment of this proposal.

I declare that I have no participation in any collusive practices with any tenderer or any other person regarding this or any other proposal.

I accept that the CSIR may take appropriate actions, deemed necessary, should there be a conflict of interest or if this declaration proves to be false.

I confirm that I am duly authorised to sign this proposal.

NAME (PRINT)

CAPACITY

SIGNATURE

NAME OF FIRM

DATE

CSIR RFP No. 1015/18/08/2022

WITNESSES	
1
2
DATE:	

28 ANNEXURE A – Technical scorecard

Criteria	Criteria Description	Weight	3	5	7	10
Qualification and experience of team members	Provide a list of team members and their qualifications.	50	Provided a list of team members with Engineering or Water related qualifications and individuals with 7 to 10 years of Industrial Water Efficiency Experience	Provided a list of team members with Engineering or Water related qualifications and individuals with 11 to 14 years of Industrial Water Efficiency Experience	Provided a list of team members with Engineering or Water related qualifications and individuals with 15 to 20 years of Industrial Water Efficiency	Provided a list of team members with Engineering or Water related qualifications and individuals with more than 20 years of Industrial Water Efficiency Experience
Timeframe	Projected timeframe to complete all tasks described in proposal for the RFP	30	The projected timeframe to complete all tasks described in the proposal is more than 14 months.	The projected timeframe to complete all tasks described in the proposal is more than 12 months	The projected timeframe to complete all tasks described in the proposal is no more than 10 months	The projected timeframe to complete all tasks described in the proposal is 8 months or less
Additional elements that add value	Proposal includes additional elements that adds value to the potential impact of the proposed training programme	20	Proposal does not include additional elements that adds value to the potential impact of the proposed training programme	Proposal includes 2-4 additional elements that adds value.	Proposal includes 5-8 additional elements that adds value.	Proposal includes more than 9 additional elements that adds value.
	Total	100				

29 ANNEXURE B – Curriculum

Training Pump System Optimization (PSO) 1-Day Introductory Workshop

	Training	Expert / Trainer	Location	Comments
Day 1	Introductory		Training room	

Target Group: Any technically inclined person with some involvement or potential involvement with Pump Systems, who wants to get a basic understanding of Pump System Optimisation and its benefits in terms of energy and cost savings.

Those who would like a basic introduction before carrying on to the 2 – Day End User and Expert Training levels.

Learning Objectives

- Gain an understanding of how LCC (Life Cycle Cost) affects the operational costs of a Pump System
- Gain an understanding of how to correctly estimate the actual operating costs of a Pump System
- Gain an understanding of the need of using a Systems Approach to accurately evaluate Pump Systems and optimization opportunities
- Learn about different Pump & Valve types and their uses in specific situations
- Learn about the various components within a Pump system
- Learn how to determine how a Pump system operates
- Gain an understanding of basic hydraulics and how this affects Pump system performance
- Learn about the various terminologies for Pressure, Flow, Power and Efficiency
- Gain an understanding of Pump curves and Pump performance characteristics

- Gain an understanding of System curves and the effect of control components on system performance
- Learn about various control methods and the advantages and disadvantages
- Identify the measurements required to manage Pump systems
- Identify areas for efficiency improvements
- Calculate the energy costs associated with Pump systems operation

Title: Introductory PSO Workshop

Start Time: 08:30	Section 1: Fundamentals			120 minutes		Slide allocation
Life Cycle Costs, Systems approach, Basic Hydraulics						
<i>Content</i>	<i>Means of Evaluation</i>	<i>Learning Activities</i>	<i>Duration</i>	<i>Slide #'s</i>		
Introduction to the UNIDO Industrial Energy Efficiency Project	Not applicable	Information only	20 minutes	NCPC	Tanya	
Introduction of attendees and Outline of course	Not applicable	Understand participant backgrounds	20 minutes	1-5	Tanya	
Pump System Life Cycle Costs	Participants questions Group discussion	Understanding of Pump Systems and Life Cycle Costs	20 minutes	6 - 12	Tanya	

	Class review and discussion				
The Systems Approach	Participants questions	Understanding the system and its components	20 minutes	13 - 19	Tanya
Pump System Fluid Relationships and Basic Hydraulics	Participants questions	Understanding Static Head, Velocity Head and Friction Losses Understanding friction factor	30 minutes	20-29	Tanya