

**DRAFT v 09 2008-03-31**  
**For inclusion in contract**

## **TERMS OF REFERENCE**

**FOR**

**A SHORT-TERM CONSULTANT  
DEPLOYED UNDER THE DANISH-SOUTH AFRICAN  
URBAN ENVIRONMENT MANAGEMENT PROGRAMME**

**WITHIN THE  
DEPARTMENT HEALTH: POLLUTION CONTROL AND  
RISK MANAGEMENT  
ETHEKWINI MUNICIPALITY**

Technical assistance for development of

**An Integrated Scheduled Trade Permit  
+ Guidance manual and training materials**

**for the Regulation of  
Ferromanganese Plants**

**Using as example: Assmang,  
Cato Ridge Durban, South Africa**

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## 1. Information summary

<p>1. <i>Title:</i></p> <p>Technical assistance for development of  <b>An Integrated Scheduled Trade Permit  + Guidance manual and training materials  for the regulation of ferromanganese foundries</b></p>
<p>2. <i>Client:</i></p> <p>The Urban Environment Management Programme  PSC Secretariat, Department of Environment and Tourism  Programme Advisor: Bo Leth-Espensen +2712 310 3228 <a href="mailto:ble@deat.gov.za">ble@deat.gov.za</a></p>
<p>3. <i>Management of this project:</i></p> <p>Managing UEM-partner:  <b>eThekweni Municipality Health Unit,</b>  P O Box 2443, Durban, 4000,  <b>Siva Chetty - <a href="mailto:chettysiva@durban.gov.za">chettysiva@durban.gov.za</a> 031 311 3690</b>  <b>Rajesh Hooblal – <a href="mailto:hooblalr@durban.gov.za">hooblalr@durban.gov.za</a> 031 311 3601</b></p> <p><b>In the adv. Committee:</b>  Department of Environment and Tourism  Directorate: Air Quality Management  Mazwi Lushaba <a href="mailto:mlushaba@deat.gov.za">mlushaba@deat.gov.za</a> 012 310 3263</p> <p>Department of Environment and Tourism  Directorate: Compliance and Enforcement  xxxx <a href="mailto:xxxx@deat.gov.za">xxxx@deat.gov.za</a> 012 310 xxxx</p>
<p>4. <i>The specific problem:</i></p> <p>In South Africa, where many ferromanganese and primary steel foundries can be found, there is a limited scope for and approach to the regulation and permitting of ferromanganese foundries. With specific relation to environmental health issues the following is of concern :</p> <ul style="list-style-type: none"> <li>• Emissions of heavy metal laden particulate matter into the air, water and soil media</li> <li>• Emissions of toxics such as PAH and dioxins</li> <li>• Poor materials handling and wastewater handling processes</li> <li>• Inadequate process control that causes incidental emissions to the receiving environment</li> <li>• Recent Department of Labour investigations revealed confirmed deaths from occupational exposure to manganese dust.</li> </ul> <p>Further, investigations have revealed gross violations of existing regulatory standards in the industrial environments with potential to impact on local housing settlements.</p>
<p>5. <i>The main output</i> to be delivered is:</p> <p>An integrated SCHEDULED TRADE PERMIT/EMISSION LICENCE with a manual to guide regulatory personnel in government administration. This is to include:</p>

<ol style="list-style-type: none"> <li>1. Process assessment framework.</li> <li>2. Emission reporting framework</li> <li>3. Protocol for monitoring and sampling for the sector (a ferromanganese foundry)</li> <li>4. Prescriptions for the setting of emission limit values</li> <li>5. Process-environmental control options to minimise impact on the environment</li> <li>6. CASE study / example: with input into the current EIA and integration of the proposed development into the integrated permit</li> </ol>
<p>6. <i>Perspective</i></p> <p>SA is a Country rich in mineral resources. It is important that these resources are extracted sustainably. From the perspective of environment and health management, it is important to ensure emissions to atmosphere, water and land do not pose a burden for health of people and the environment. <b>This protocol will fill in the technical and regulatory gap</b> and to ensure an integrated approach to permitting and monitoring compliance for the ferromanganese foundries sector.</p>
<p>7. <i>Indicators of successful accomplishment</i></p> <p><b>Immediate</b> indicator: The manual with appropriate technical annexes and the scheduled trade permit is published and available</p> <p><b>Intermediate indicator:</b> The manual is directly applicable and used for inputs to the permit of the ferro-manganese plant <b>Assmang, Cato Ridge Durban,</b></p> <p>Long term indicator: The concept is rolled out and used for government administrations permits of similar plants in other Provinces and Municipalities in South Africa.</p>
<p>8. <i>Inputs</i></p> <p>UEM</p> <ul style="list-style-type: none"> <li>• Consultant (days): total 46 working days</li> <li>• 4 International Flights, (Norway to South Africa(Durban))</li> <li>• 4 National Flights</li> <li>• Accommodation</li> <li>• Per diem</li> <li>• Report Writing</li> </ul> <p>eThekwini and partners</p> <ul style="list-style-type: none"> <li>• All other costs, e. g. meetings, site visits for production and presentation of the work</li> <li>• Staff working days as indicated in budget</li> <li>• All printing costs</li> </ul>
<p>9. <i>Dates:</i></p> <p>Commencement: May 2008 (latest)</p> <p>End must be before 31 December 2008 (to be confirmed by inc. meeting)</p>
<p>10. <i>Submission of all outputs</i></p> <p>Before 31 December 2008 to the eThekwini Project manager.</p>

## 2. Project Budget Frames

### Consultant days and staff days

	<b>UEM Cons. W-days</b>	<b>eThekwini Staff Days</b>
Preparation	5	10
Task no. 1 - Visit # 1 Adv. Group meeting #1 Site visits	5	5
Task no. 2 Assessment write up	15	15
Task no 3 - Visit # 2 WS - Presentation of approach to national partners + other stakeholders Adv. Group meeting #2	5	25
Reporting + wrap up	5	15
Finalisation meetings: Visit # 3 Adv. Group meeting #3	5	5
Travel days	6	
<b>TOTAL</b>	<b>46</b>	<b>75</b>

Figures are indicative and to be confirmed at inception meeting

### Other expenses covered by the UEM programme (maximum)

	<b>ZAR</b>
<b>Consultant</b>	
21p Diems (456 each)	9 585
15 x Accommodation (700 each)	10 500
Local transport – car hire, 15 d x 400	6 000
3 int. flights (20 000 each)	20 000
<b>Adv. Group</b>	
Dom. Flights, 4 meetings, 4 persons	40 000
Incl. local transports 16 x 2500	
<b>Total</b>	<b>126 085</b>

**An extra flight** is allocated in the budget and can if necessary be released at the Project Managers discretion. The above limits can not be exceeded on the Programme budget. **Thus all additional costs**, also venues, catering, printing, local transport in connection to site visits, and meetings etc. will be covered by the city of eThekwini, by action of the project manager.

## 3. Background

In South Africa ferroalloy and metal foundries are common industrial endeavours due to our vast mineral resources with operations in existence for over half a century with aging infrastructure and outdated environmental and air quality control technology.

Over the last few years there have been numerous complaints of particulate/dust emissions, smoke and odour emissions, waste management violations, occupational health fatalities and diseases associated with exposure to these compounds and other stresses.

In relation to the ferromanganese plant, Assmang Manganese, in Cato Ridge Durban, the department of labour is currently investigating approximately five confirmed cases of fatalities and numerous suspect cases of occupational exposure to ferromanganese fumes and dust exposure. The impacts to the surrounding informal settlements have recently been reviewed in a study of the surrounding topography and prevailing meteorological conditions with strong indications of potential impacts to these communities

In South Africa ferroalloy foundry pollutant emission rates and composition (toxicity) are essentially unknown; hence the health impacts and environmental impacts of these emissions are unknown.

Further the long term exposure effects of fumes, particulates/dust and the lack of appropriate emission control technology, operation flaws or possibly design flaws in a foundry can be a precursor to adverse health effects to workers and the surrounding community. Insufficient, non prescriptive, outdated and unenforceable regulatory tools (permits) and compliance monitoring schemes will not provide these controls.

The national legislation guarantees the citizens a clean environment and the air quality management act prescribes the development of monitoring mechanisms. As this legislation will come in place there will be a need to develop and implement an air emission license (a Scheduled Trade Permit in the case of eThekweni Municipality) to control and minimise the impact from these enterprises. This process must be conducted in conjunction with the DEAT National Departments National Project Ferro **as a pilot project where lessons learnt here may be imparted nationally as a pilot control/regulatory tool which meet the international standard.**

In eThekweni Municipality and as part of the DEAT Project Ferro, ferroalloy foundries have been prioritised for regulatory intervention.

*Hence the need to and importance of instituting technology and regulatory tools/measures to achieve objective environmental impact management and control of foundry emissions in South Africa will be fulfilled by this project. This project will provide the technical platform and will contribute to the legislative process, regulation, provision of information to the public etc.*

#### **4. Objective of this assignment**

Noting that South Africa is a dominant player in the metallurgical sector, this STTA project presents a useful opportunity to reach out to other regulators throughout South Africa, under DEAT Project Ferro, to transfer knowledge and to build capacity in this sector.

**The long term objective** to be supported in this respect is: An increased appreciation of the environmental impact of metallurgical operation in the short, medium and long term and **a concept available** for national consideration which implies improved, standardized, predictable and objective monitoring and regulatory measures in relation to the sector.

The **immediate objective** is that this concept is defined and applied in a pilot case in eThekweni, thus making practical experience of the applicability readily available.

## 5. Key Output

The **overall output** of this assignment is a **scheme with directions and guidelines** for the proper assessment, processing and follow ups in relation to THE SCHEDULED TRADE PERMIT to be issued by the city municipality, based on EMISSION LICENCE Applications from companies of the metallurgical sector.

The **key output thus is a manual** – a guideline handbook for regulators and companies showing how this sector impacts on the environment and how it should be regulated.

The manual to be produced will be of the following nature:

- **Explanatory** – establishing a common platform of understanding of these responsibilities and challenges of the sector and also prescriptive, assigning the collection of information, consideration of information and the options for solutions.
- **Prescriptive** – ensuring that the reader can operate directly based on the instructions. The functions is supported by templates etc. for the work.
- **Of general (national) applicability** – ensuring that it can be used not only in eThekweni, but country-wide, guided by national legislation, standards and approaches.
- **User friendly** – i. e. easy to understand and to operate for officials working with the issue in public administration as well as in companies of the sector.

With this overall approach the **contents of the manual will include** – but not necessarily be limited to - the following sections:

### 1. Process assessment framework.

This section will describe the key elements and steps of the Ferro-alloy processes highlighting the environmental effects they may course, and ways and means to deal with them. It will provide an overview understanding for officials, in the authorities, as well as in the companies, thus establishing a common understanding and common direction of attention.

### 2. Emission reporting framework

The purpose of this section is to enable the management of a factory to report on the various parameters of process emissions, inputs to surrounding air, water and soil. The reporting framework will be linked to the targets set (see section 4 below) and will be used to assess/track performance over time. It will be the basis around which the annual review meetings take place with stakeholders.

The section will include the following annexes:

- Reporting templates for emissions to air, water and soil media, operating conditions and other parameters
- Reporting format for annual performance reporting and incident reporting.

### 3. Protocol for monitoring and sampling for the sector (a ferromanganese foundry)

This section will define the sampling strategy and methodology of key input and output streams taking into account chemistry, metallurgy and impact on the environment. This includes prescriptions for sampling frequencies, methodologies, other sampling and measurement standards. These are to be prescribed, explained, documented and discussed, as appropriate.

#### **4. Prescriptions for the setting of emission limit values**

The section describes the general strategy and specific prescriptions on how emissions limit values are to be set in the individual factory. It will take into account technology bracket, current and future legislative requirements and the local social and environmental context.

#### **5. Process-environmental control options to minimise impact on the environment**

The section will define and describe the key operational control options of this particular sector - with the objective to ensure minimal impact to the environment when the process malfunctions.

#### **6. CASE study / example:**

The section will demonstrate the scoping, screening, significance determination and risk assessment study into this particular case and the mitigation steps. Overall it will demonstrate an approach to make the necessary inputs into EIAs for the sector. The section will make use of **ASSMANG MANGANSE (Pty) LTD, IN CATO RIDGE DURBAN** to demonstrate the use of the manual incl. templates and other tools in relation to the current environmental impact assessment and the upcoming integrated permit.

## **6. List of all outputs**

These outputs are interrelated in two ways: In working process of the project one output will lead to the subsequent ones. The main output will not stand alone but in its functions be supported, by the process and, in particular output 4.

### **The complete list of outputs to be delivered comprises**

1. Inception document, including as annexes draft outline for the main output and work plan outlining the tasks to be completed responsibilities and the timeframes
2. List of reference documents from RSA and internationally to be sourced (minimum list)
3. List of persons, companies and institutions to be consulted, in RSA and internationally.
4. Power point presentations and adjoining adherent collation of training resource material. (one for each of the sections, above).
5. 6 Meetings with eThekweni staff (one for each of the sections, above)
6. 1 or 2 Workshop(s) with stakeholders
7. Stakeholders consultation report
8. Draft Manual guideline document
9. Draft completion report
10. Draft press release

11. Final Manual guideline document including annexes
12. Completion report
13. Press release

**Outputs 1-3** are due at the inception meeting (1<sup>st</sup> advisory group meeting), which will discuss, amend as pertinent and endorse these outputs as the basis for the continued work.

**Outputs 4-6 (7)** are due at the 2<sup>nd</sup> advisory group meeting, which will discuss and amend as pertinent and endorse these outputs as the basis for the continued work. This meeting will also review the draft outline of the main output and in the light of the lessons learnt, it will address issues of significance for the production of a successful guideline document. The meeting will inform the continued work.

**Outputs 8-10** are due at the 3<sup>rd</sup> advisory group meeting, which will discuss and amend as pertinent and endorse these outputs. After this meeting the stakeholders and the Project Manager has 2 weeks for supplementary comments to be submitted to the project consultant. After submission of these, the consultant has 2 weeks to complete the last and final three outputs, which are:

Outputs **11-13** are the use in the following aspects

- use of the city of eThekweni for management etc. of permits and other issues in relation to the sector
- use of authorities in the national, provincial and municipal spheres of government in their general management of the issues and the improvement of legislation, bylines and other public management.
- draft to the project manager for his/the city's reporting to the UEM Programme.

A guideline for the production of Output 12 and 13 can be found in the Manual for Short Term Technical Assignments, section 3. The relevant portion from this section is found as annex 1 to this TOR.

## 7. Inputs

**The Consultant** will provide

- Specialist know-how on ferroalloy/ferromanganese foundry environmental emissions and impacts with both a strong theoretical and practical knowledge base.
- Application of specialist knowledge to work towards a solution for the management of air and other emissions from ferroalloy foundries.
- Literature, etc. in electronic form on relevant National and International policies and know-how
- All necessary word processing equipment and IT for the assignment

**The Department** will provide

- Staff time as indicated
- All background information available and pertinent about South African approaches to the subject matter and in particular w. r. t. ASSMANG MANGANSE (Pty) LTD, IN CATO RIDGE DURBAN
- Venues and catering for workshops and meetings.
- Access to stakeholders important for meetings, inputs, etc.

- All practical arrangements and logistical support in connection with the meetings, workshops, the work in general
- The Department will also manage all public information, including communication to surrounding inhabitants etc, as pertinent, while the consultant will focus on the technical aspects of the project.

## 8. Scope of work

**The consultant will refer to** the project manager and liaise closely with manager as indicated in these terms of reference. Decisions about changes in outputs and in the process will be proposed in writing or when this is not possible confirmed in writing no later than 48 hours after. No outputs may be cancelled.

**Timing and implementation:** The consultancy will commence following the signing of a contract between the department and the selected consultancy. The consultancy will have duration of no longer than 46 working days (incl. 6 travel days) over a period of 6 months. The timing indicated in the table, section 2 of these ref. are indicative and to be specified and confirmed in the work plan, output 5.1

**Internal Consultancy Communication:** All decisions, suggestions, recommendations, reports, etc. concerning the consultancy must be submitted in writing. In the case of emergencies, verbal decisions, suggestions, recommendations, reports, etc. must be confirmed in writing by the contracted consultant within 48 hours of the verbal communication.

**All documents shall be prepared in MS Word** and bar charts and spreadsheets in either MS Project or in Microsoft Excel. All required reports will be submitted to the project manager in 5 hard copies as well as on an appropriate electronic storage medium (disk or CD).

**External Consultancy Communication:** All communication external to the consultancy, in the department or elsewhere (e.g. response to queries, complaints, from the department or the public, press/media etc.) will be carried out by or as decided by either the Project manager (e.g. specific resource persons or the Department's communication section). As such, all queries, etc. must be referred to the Project manager together with a written briefing on a possible response.

## 9. Management

**Manager of the project** will be

**Siva Chetty** - [chettysiva@durban.gov.za](mailto:chettysiva@durban.gov.za) , +2731 311 3690

eThekwini Municipality Health Unit,  
P O Box 2443,  
Durban, 4000

Resource persons in Ethekewini: Rajesh Hooblal, Baba Mantambo, Sharveen Maharaj.

**A Project Advisory Group (PAG)** will be formed of the associated partners on the initiative of the manager. The group will function by email and convene at least three times:

- once to discuss outputs 1-3
- once to discuss output 4-7

- once to discuss output 8-10

The project manager will convene the group and provide it with the necessary arrangements, incl. agenda, and documents for discussion, minutes and practicalities. Expenses for max four meetings are covered by the UEM budget.

## **10. Monitoring, Reporting**

The outputs will serve, also as a formal reporting mechanism.

They will be public and may be published in total or in part as agreed with the project manager. They may be used for further development of the monitoring and regulation as pertinent. All the documents will be public by the end of the project and may be so before, if agreed between the consultant and the manager.

The project manager is responsible for the reporting to the PSC Secretariat (as described in the UEM-Manual for STTA projects). Outputs should be delivered when done. As completion all outputs should be delivered in one email.

## **11. Financial Management**

This follows the procedures outlined in the contract of the assignment.

## **12. Annexes**

1. Extract of the UEMPs Manual for STTAs
2. Motivation and UEM-checklist (Why this project fits into the UEM-programme)

## **13. References**

- A. DEAT Project Ferro Project Plan.doc
- B. ASSMANG SITE INSPECTION REPORT.pdf
- C. Permit Concepts.pp
- D. Process Descript AssmangCatoSivaChJan07.doc

## Annex 1 Completion Reporting - UEMP STTA

The project is executed as a Short Term Technical Assignment of the Urban Environmental Programme. For info about the programme see

[www.uemp.org.za](http://www.uemp.org.za)

The following is an extract from the Manual of the STTA facility, section 3, Completion Reporting:

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**Two** documents are due, as soon as possible after the completion:

1. **A technical completion note** that the assignment has been successfully delivered and the Secretariat *can initiate payments etc.* The note will also inform the PSC.
2. **A press release statement** to support dissemination of UEM-results and lessons learnt to the other partners, partners and the public.

In addition documents produced by the assignment are annexed to the completion note.

### 3.1 Completion note

The PSC (and the Secretariat) need a formal report. Please follow the outline below.

1-9 is cut-paste-edit from the TOR, etc.

In item A please state a list of the original outputs and the delivered outputs, add your comments of general accomplishment and shortcomings, if any. In B-E state your assessment of how the project will impact in these contexts. 2-10 lines for each.

#### Basic info

1. Name of Project:
2. UEM Partner(s) (Applicant institution):
3. Name, tel., mail of the person responsible of institution:
4. Name, tel., mail of Consultant, of Consultant's company:
5. Contract signed:
6. Assignment started:
7. Project completed and this report signed:
8. Title and dates for earlier reports to PSC Secretariat
9. List of annexes (= reports produced by the assignment)

#### Report

- A. Original problem(s), Outputs aimed for and accomplished solutions (outputs)
- B. Assessment of the applicability in your own context
- C. Assessment of the applicability in the context of other partners (or SAfrica as a whole).
- D. Lessons learnt about the subject matter
- E. Lessons learnt about the implementation of a STTA-project
- F. Overall declaration:  
Make the following statement: *'I as the responsible manager am satisfied with the delivery of the assignment, and find this in compliance with the terms of references*

*and the intentions of your administration. On this background I sign the project off and encourage the PSC-Secretariat to settle the accounts and wrap up the assignment as indicated.'*

If you have reservations to the statement, explain this + propose how this should be handled by the PSC Secretariat.

### **3.2 Press release-statement from you to UEM Webb site, etc**

**One page statement** from you with a summary of the progress made plus 1 or 2 perspectives for the future. The format should be that of a press release. Note that the wording may be published and reused in the press in reports to Danida, etc. You are welcome to publish it, and it may also be published / used by the PSC-Secretariat

Max 350 words or 2500 characters and spaces.

Consider:

- What was the original problem ?
- What was the solution ?
- How does it benefit the livelihood of South African Citizens, directly or indirectly, today and tomorrow ?
- What did your institution learn from this, of value also to others?
- Who may a colleague in some other administration contact to learn more?

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**Completion reporting to be submitted by the project manager**

**to the PSC Secretariat: [ble@deat.gov.za](mailto:ble@deat.gov.za); [eotto@deat.gov.za](mailto:eotto@deat.gov.za)**

**KINDLY use BOTH addresses.**

## Annex 2: Motivation and UEM Checklist

*Motivation for this project in eThekweni and partners:*

In South Africa a vast residential populace of poor and better off people exists on the doorsteps of foundry installations. In the case of the Cato Ridge, Durban, eThekweni, the prevailing wind conditions coupled with a unique topography enhances the impacts. This makes it imperative for source based solutions. Many foundry installations are more than half a century old and therefore prone to poor performance and failure.

In general ferromanganese dust/particulates account for a significant proportion of air pollution complaints. In the Cato Ridge area dust and odour accounts for 10 % of pollution related complaints. Notwithstanding the fact that the major portion of the adjacent community reside in impoverished informal housing settlements without even the luxury of telecommunications, electricity, sanitation or piped water supply. The concerns with metallurgical process emissions relate to:

- the seasonal, meteorological, day/night frequency particulate emissions from Assmang,
- the environmental and health impact of the emissions from the foundry process,
- unreported emissions,
- the linkages between a particulate emissions, the state of operation and stability in a foundry installation, together with the reliability and availability of appropriate emission control technology,
- evaluation against international best practice and regulatory and technology measures to achieve control.

The recent health study conducted for eThekweni Municipality has shown that people living in the South have a two-three fold increased chance of acquiring pollution induced asthma as compared to the less polluted northern suburbs. Generally it is found that the exposed communities are economically marginalised and are more vulnerable to pollution exposures. The poverty is deepened due to large medical bills, schools absenteeism, etc.

**This scheme** will provide direct guidance towards best available technology and international best practice of monitoring and regulation. The scheme will have a national focus benchmarking with international refinery facilities.

### *UEM – Checklist*

1. *Describe the contribution of the output to the **UEM-Programme development objective and the immediate objective** (Component 1 or 3 respectively)*

The project will provide improved municipal capacity for integrated urban environmental management, planning and monitoring

2. *State which of the Programme's 5 **thematic foci** the project will address? Explain how and why this will have a substantial impact.*

Air quality management (theme 4) - developing a strategy to bring the metallurgical sector into an integrated regulatory system with related institutional development (theme 1).

3. ***State the outputs of the programme (National, Provincial, resp. Municipal) which the applied project will support, and explain why this particular support is necessary and sufficient to initiate the step in the right direction, which the project aims to provide***

National- the project will result in the development of national standards and guidelines for the regulation of ferromanganese and ferroalloy foundry operations. This will feed into the regulatory framework of NAQM Act and enforcement at the local level.

Provincial – The province will have the regulatory framework developed for national government to apply NEMA requirements for reporting and measurement of foundry impacts.

Local – the output from the project will form the input into writing of permits for ferromanganese foundry management and reporting. The output will also provide a quantitative framework to audit the environmental performance of foundries.

4. ***Document and explain the alignment with the politically approved priorities of your institution (National, Provincial and/or Municipal)***

The development of the Air Quality Management Plan (AQMP) is a strategic IDP deliverable to achieve sustainable development. Investigation into foundries as a core element of the plan and the development of a programme of action and a firm set of recommendations will go a long way in resolving the problems associated with foundries. Stakeholders from within government and community have identified emissions from foundry processes as an issue of concern (these are captured in minutes of stakeholder engagements, attached – Annexure A).

5. ***Explain the links to the other activities, which your institution is conducting in relation to the UEM programme.***

Development of the AQMP phase 1 which is the framework component of the broad plan.

6. ***You may annex electronic copies for documentation:***  
See references of the ToR