

MOOI-MGENI TRANSFER SCHEME PHASE 2 (MMTS-2)

Construction of the Spring Grove Dam Wall



FINAL ENVIRONMENTAL AUDIT REPORT 01

Held on 29 September 2011 on Site

10 October 2011



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1. LIST OF ACRONYMS

DEA	Department of Environmental Affairs
ECO	Environmental Control Officer
EO	Environmental Officer
EMP	Environmental Management Plan
EM	Environmental Monitor
EMC	Environmental Monitoring Committee
MMTS-2	Mooi Mgeni Transfer Scheme Phase 2
TCTA	Trans-Caledon Tunnel Authority
RoD	Record of Decision

2. DEFINITIONS

Auditing	An 'environmental' audit is a methodical examination (including tests, checks, and confirmation) of environmental procedures and practices with the view of verifying whether they comply with internal policies, accepted practices and legal requirements.
Record of Decision	A Record of Decision is a written statement from the relevant environmental authority in terms of the Environment Conservation Act (Act 73 of 1989), with or without conditions, that records its approval of a planned activity and the implementation thereof and the mitigating measures required to prevent or reduce the effects of environmental impacts during the life of a contract.
Environmental Management Plan (EMP)	An EMP is a detailed plan of action prepared to ensure that recommendations for enhancing positive impacts and/or limiting or preventing negative environmental impacts are implemented during the life-cycle of a project.
Compliance Monitoring	Compliance monitoring is a continuous and systematic process to ensure that the conditions in the Record of Decision (RoD) Environmental Management Plan (EMP) are being adhered to.
Environmental Management Programme Audit	An Environmental Management Programme audit is an audit of the environmental measures, procedures and principles that are in place to ensure environmental compliance at the project or programme level.
Environmental Compliance Audit	An Environmental compliance audit examines the compliance of an organisation, a site or operation with environmental legislation, regulations, licences, and other documentation, including internal environmental policies. Compliance audits are applicable at a project and organisational level.
Environmental Management Systems (EMS) Audit	An EMS audit is usually required to maintain accreditation and to ensure that the EMS is functional, relevant, commitments made in the EMS are upheld, and that the EMS is properly implemented
Technical or Process Audit	A technical or process environmental audit is a specialised type of audit undertaken by industry or government departments for the purpose of determining whether a particular operation or process has a detrimental effect on the environment, or to assess the environmental impact of a specific part of an operation or process
Due Diligence Environmental Audit	This is an audit to ensure that due diligence conditions have been met. Due diligence environmental audits may be required before the lending of funds or by the organisation considering a merger, acquisition or divestment
Environmental Marketing Audit	An environmental marketing audit assesses the environmental standing of a product or a range of products, by conducting a life-cycle assessment of a product, as well as ensuring that the company's operations meet legislative requirements and public expectations.
Environmental Management tools Audit	An environmental management tool audit is aimed at assessing the relevancy and the extent to which the environmental tools assist in correctly predicting potential impacts.
Life Cycle Audit	An environmental performance audit is an on-going environmental management activity which examines and assesses practices and

	procedures which, in the event of failure, would cause an environmental impact or result in an environmental risk. This audit takes into account the various requirements during the life cycle of a project and/or programmes to ensure that environmental impacts are identified and mitigated against.
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1. INTRODUCTION

The Mooi-Mgeni Transfer Scheme Phase 2 (MMTS-2) comprises the construction of a 38 meter roller compacted concrete dam with a storage capacity of 142 million m³ on the Mooi River upstream of the Mearns Weir with an associated water transfer system to Mpofana River. The Spring Grove Dam is located 2 km south west of Rosetta on the farms Rosetta and Spring Vale. The purpose of the MMTS-2 is to augment the growing water requirements of the Mgeni System by 60 million m³ per annum. The System supplies the eThekweni Metropolitan Municipality, Msunduzi Local Municipality, and the Ilembe, Ugu, Umgungundlovu and Sisonke District Municipalities.

Nemai Consulting was appointed as the independent external auditor by the Trans-Caledon Tunnel Authority (TCTA) for the MMTS-2 project. The external auditor's functions include auditing the environmental performance of project implementation and compliance with the Record of Decision (RoD) conditions. The presence of an external auditor for the MMTS-2 project is a condition of the RoD which was issued by the Department of Environmental Affairs on 15 June 2009.

In line with the RoD the first environmental audit was held on 29 September 2011. Prior to the audit, the agenda of the audit process was circulated to all participants of audit, refer to Appendix 1.

Two separate audits were performed. The first was an Environmental Management Programme Audit which is an audit of the environmental measures, procedures and principles that are in place to ensure environmental compliance at the project or programme level. Information provided by Ms K Govender, the TCTA Environmental Manager on the MMTS-2 project was used in the audit.

The second audit which was performed was an Environmental Compliance Audit which examined the compliance of the project against the conditions and requirements of the RoD and approved EMP.

Refer to Appendix 2 for a copy of the minutes of the introductory meeting.

2. DEFINING THE ENVIRONMENTAL AUDITING PROCESS

There are numerous definitions of environmental auditing however, a commonly used definition is that of the United States Environmental Protection Agency (EPA, 1997) which defines environmental auditing as a 'documented, periodic and objective review of facility operations and practices related to meeting environmental requirements'. Another common definition is that of the International Chamber of Commerce which defines an environmental audit as 'a management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organisation, management and equipment are performing with the aim of helping to safeguard the environment by: (1) facilitating management control of environmental practices; and (2) assessing compliance with company policies, which includes meeting regulatory requirements. '

The International Standards Organisation (ISO) defines an environmental audit as a 'systematic, documented verification process of objectively obtaining and evaluating audit evidence (verifiable information, records or statements of fact) to determine whether specified environmental activities, events, conditions, management systems, or information about these matters conform with audit criteria (policies, practices, procedures or requirements against which the auditor compares collected audit evidence about the subject matter), and communicating the results of this process to the client (organisation commissioning the audit).'

Environmental audits help in assuring the accuracy and relevance of environmental monitoring, and the identification of issues via the audit process may also lead to environmental standards that exceed regulatory requirements.

It is important to note that a requirement of an environmental audit is that evidence must be verified by supporting documents, if this is not the case, then the process is a review, survey or assessment, but not an audit. Often the terms, audit and monitoring are used interchangeably, however these are two different concepts. Monitoring is a continuous and systematic process to ensure that the conditions in the RoD and Environmental Management Plan (EMP) are adhered to while, an environmental audit is a methodical examination (including tests, checks, and confirmation) of environmental procedures and practices with the view of verifying whether they comply with internal policies, accepted practices and legal requirements.

Audits are conducted less frequently than monitoring, often annually or biannually. Possible methods for conducting an environmental audit vary from simple checklists to more complex programmes. These procedures use a systematic and structured approach to record whether an organisation is meeting its environmental objectives. It is important that all relevant aspects of the organisation are identified and included in the audit at an agreed level of detail.

3. OUTLINE OF THE AUDIT PROCESS

Figure 1 below is an overview of the audit process undertaken.

Prior to the audit, an introductory meeting was held. During the meeting Ms Naidoo, Lead Auditor, gave an overview of the audit process. Please refer to Appendix 1 for the minutes of the introductory meeting

It was explained that the first stage of the environmental audit was to determine the audit objectives, followed by the scope of the audit. The information required and tools used for gathering such information were discussed. A sample of all functions were taken and verified during the audit. The information was taken back and analysed to compile the formal audit report. This report formally presents the results of the audit conducted and will be used for decision making and any necessary corrective actions.

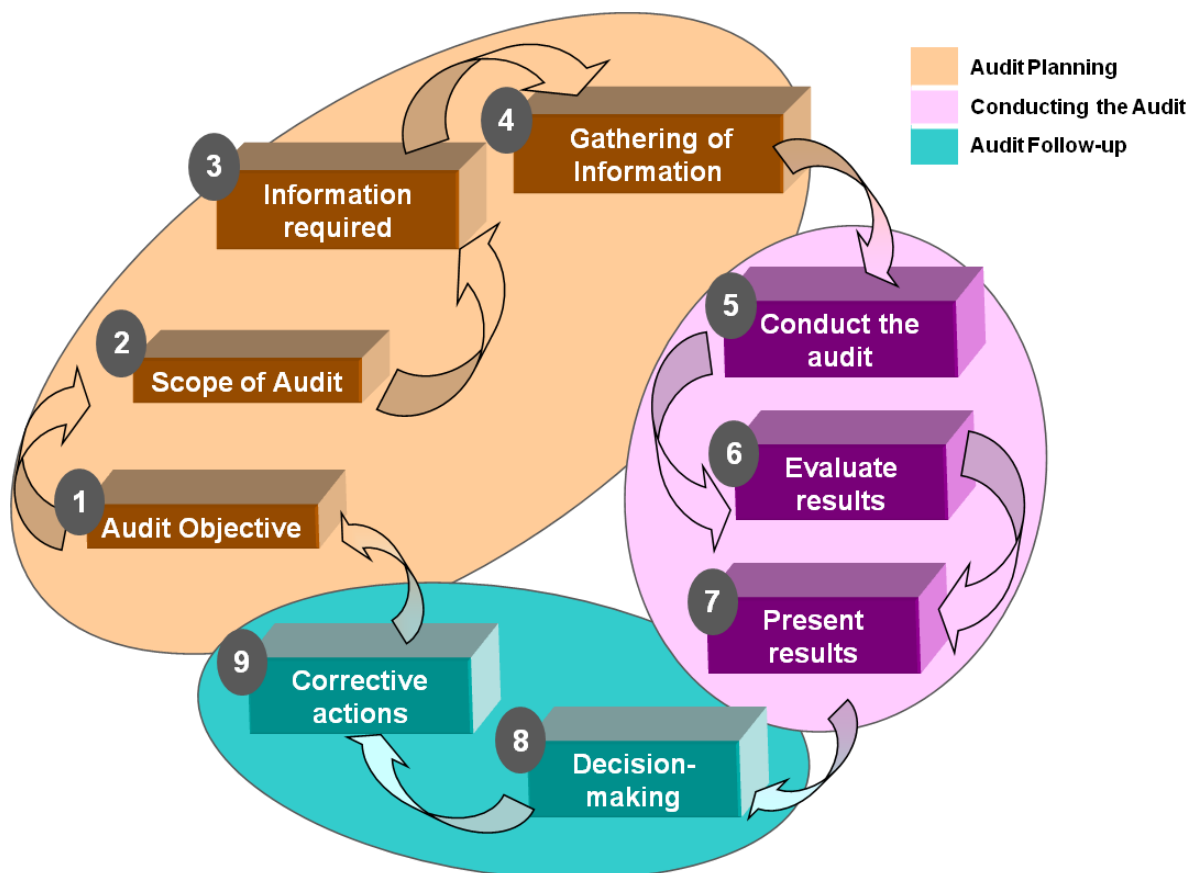


Figure 1: Outline of the Audit Process Followed at the MMTS-2 Audit.

4. DESCRIPTION OF AUDIT REPORT

During the introductory meeting it was explained that the following structure will be used to compile the audit report.

4.1 Description of Administrative Aspects of the Audit

This includes the date the audit was conducted, the objective and scope of the audit, who performed the audit, and any limitations or exclusions regarding the audit scope or methodology.

4.2 Supporting Data and Information

The audit report will include relevant supporting information such examples of verified information, schematic diagrams, photographs of the site, etc. All evidence of the audit will be verified by supporting documents. The Minutes of the introductory meetings and Programme Audit will also be provided.

4.3 Description of the Audit Findings

Each finding of the audit will be clearly described in terms of compliance, priority and effectiveness. The audit results will be represented in the form of simple graphs which show overall environmental performance. The proportions of objectives reached will also be represented graphically.

4.4 Recommendations

The report may suggest recommendations to address any issues that emanate from the audit.

4.5 Conclusions

The requisite conclusions will be drawn regarding environmental performance and independent verification of data.

I was agreed that the draft Audit Report would be submitted to TCTA for comment after which all comments will be included in the final document.

5. ENVIRONMENTAL PROGRAMME AUDIT RESULTS

5.1. Administrative Details

The Environmental Programme Audit was performed on 29 September 2011 in the MMTS-2 boardroom on site. The environmental audit team consisted of the following members:

No.	Name	Organisation	Role
1	Nicky Naidoo	Nemai Consulting	Lead Auditor
2	Vanessa Brueton	Nemai Consulting	Junior Environmental Auditor
3	Kogi Govender	TCTA	Environmental Manager
4	Sandhisha Jay Narain	BKS	Environmental Monitor
5	Ryan Phelan	Group 5	Environmental Officer

5.2. Objectives of the Programme Audit

The objective of the environmental management programme audit is to determine whether environmental principles and best practices were being applied by TCTA in the execution of the MMTS-2 project.

Ms Naidoo emphasised that the programme audit was not a requirement of the RoD or EMP instead it was an audit that could add value to the environmental management of the MMTS-2 project.

Ms K Govender raised no objection to the audit and agreed that any measures that could improve the environmental management of the project was for the benefit of all parties.

5.3. Scope of the Programme Audit

The scope in terms of location and audit information was agreed upon during the programme audit and included the MMTS-2 project extent (Figure 2) and information relating to the environmental management approach for the MMTS-2 project.

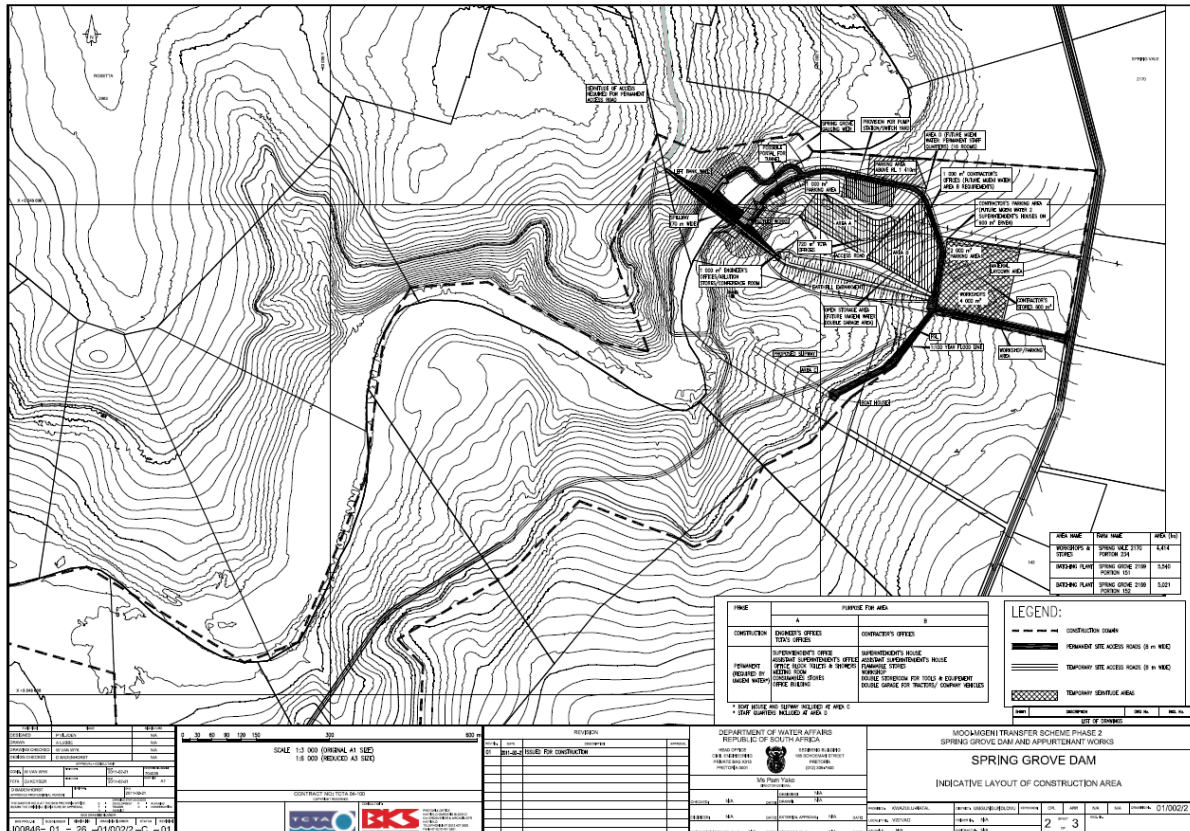


Figure 2: Extent of the MMTS-2 Project.

5.4. Environmental Management Programme Audit Report

COMPANY/DEPT AUDITED:		FORM NO.:	
Trans-Caledon Tunnel Authority (TCTA) Environmental Management of MMTS-2 Project		MMTS-2/01	
Audit date:		Audit leader and team:	
29 September 2011		D. Naidoo (Audit Leader) V. Brueton (Junior Environmental Auditor)	
Project/Programme/Activity audited:		Responsible manager:	
Mooi-Mgeni Transfer Scheme Phase 2 (MMTS-2)		K. Govender	
Audit type:		List of interviewees (including responsibilities and information reviewed):	

Environmental Management Programme Audit

K. Govender – Ms Govender is the TCTA Environmental Manager based on site. She oversees all environmental issues and ensure legislative compliance.

Objectives of the audit:

To determine environmental principles and best practices used in the environmental management of the MMTS-2 project. Specifically, how the project management plan implements environmentally sound principles through the project life cycle.

Scope of the audit:

The entire MMTS-2 project, including internal TCTA environmental policies, the planning, design, construction and operational phases of the project.

Tools used during the audit:

Checklist – see Appendix 4.

Description of the project/programme/activity audited:

The Mooi-Mgeni Transfer Scheme Phase 2 (MMTS-2) comprises the construction of a 38 meter roller compacted concrete dam with a storage capacity of 142 million m³ on the Mooi River upstream of the Mearns Weir with an associated water transfer system to Mpofana River. The Spring Grove Dam will be located 2 km south west of the Rosetta on the farms Rosetta and Spring Vale. The purpose of the MMTS-2 is to augment the growing water requirements of the Mgeni System by 60 million m³ per annum.

Audit Techniques:

Interview of K. Govender (Environmental Manager) based on Programme Audit checklist.

Evaluation of Audit Results:

Seven environmental conditions were audited namely:

- Environmental Policy;
- Reporting lines;
- Methods for identifying and reporting environmental incidences;
- External Mechanisms of Control;
- Environmental Budget;
- Flexibility in Timeframes; and
- Environmental Key Performance Indicators.

Key findings included the following:

Environmental Policy

TCTA has internal environmental policy. In addition, there is an environmental policy for the MMTS-2. The environmental policy guides the EMP. There is also the Environmental risk register which is a policy

to reduce environmental liability. It has a special component on the environment and identifies every foreseeable risk that could take place together with immediate actions.

Reporting Lines

There are different tiers of responsibility but with enough flexibility that there can be direct communication. However, formal reporting occurs once a week.

Method of Identifying and Reporting Incidences

The formal method of identifying and reporting environmental incidences includes the monitoring component of the Environmental Monitor and the Non Conformance Register and Non Conformance Site Directive which is the formal reporting tool

External Mechanisms of Control

The project has 7 different external mechanisms of control including the Panel of Experts (POE), Environmental Leader for the Engineers, the EMC with an independent Chairperson, The Environmental Control Officers and Specialist Expert Advisors for TCTA and External Specialists for the Contractors.

Environmental Budget

There is a budget for environmental incidences in the scope of work between BKS and TCTA. In addition, there is a budget for rehabilitation and environmental monitoring during the rehabilitation phase of the project.

Timeframe flexibility

There is some flexibility within the timeframes although it is a tight schedule. For example, the contractor has a calculated allowable of non working days based on past weather patterns. There is also the internal Risk Register for TCTA which has all foreseeable environmental incidences and immediate actions.

Environmental Key Performance Indicators

TCTA has internal environmental Key performance indicators (KPIs) which are monitored every six months. It is a formal monitoring process by the head of environmental and then the TCTA divisional head

Based on the information obtained during the Programme audit, the overall compliance score was calculated at 97%. Figure 2 provides a graphical representation of the compliance scores for each aspect. These scores were calculated using a scoring system which is provided in Appendix 4.

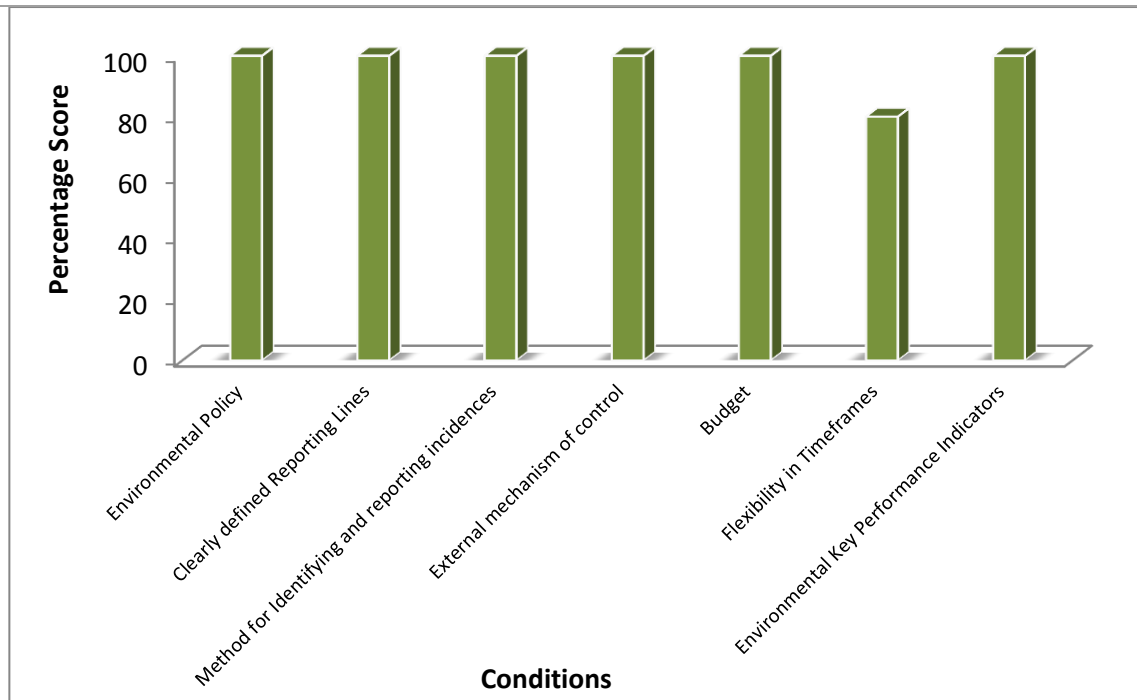


Figure 3: Compliance Scores of MMTS-2 Programme Audit from 29 September 2011.

The project's environmental programme received 100% for all aspects except flexibility in timeframes. The timeframes are relatively tight. However, there are allowances made for environmental issues hence the compliance score was 4 out of 5 (80%). The presence of numerous external mechanisms of control, comprehensive environmental policy, environmental budget for monitoring and rehabilitation, defined reporting lines and key performance indicators based on environmental factors suggest that the MMTS-2 project is based on sound environmental management principles and best practices.

Description of non-compliance noted during the audit:

No direct non-compliance was noted. However as mentioned previously, the project schedule is tight and there is relatively little flexibility in time frames and environmental issues is not a specific item on the critical path.

List of supporting documents:

Appendix 3: Minutes of Programme Audit Interview

Appendix 4: Environmental Scoring System and Scores

Two main documents were verified on site by the lead auditor, N. Naidoo. These include the Environmental Risk Register as well as the Environmental Key Performance Indicators. These are internal documents and copies were not made available.

Recommendations and Conclusions:

The level of environmental management compliance must be maintained at the current high level for the duration of the project. The project timeframes have already been accepted and recorded in the overall

project programme, however special cognizance of the need for flexible timeframes must be taken. Any environmental incidences that may cause deviations from the current schedule must be dealt with immediately using environmental best practices even if this results in deviation from the project programme.

Signed/date:

N. Naidoo

Lead Auditor:

Responsible Manager/Licence Holder

K. Govender

6. ENVIRONMENTAL COMPLIANCE AUDIT RESULTS

6.1. Administrative Details

The Environmental Compliance Audit was performed on 29 September 2011 in the MMTS-2 boardroom on site. The environmental audit team consisted of the following members:

No.	Name	Organisation	Role
1	Nicky Naidoo	Nemai Consulting	Lead Auditor
2	Vanessa Brueton	Nemai Consulting	Junior Environmental Auditor
3	Kogi Govender	TCTA	Environmental Manager
4	Sandhisha Jay Narain	BKS	Environmental Monitor
5	Ryan Phelan	Group 5	Environmental Officer

Ms S Jay Narain, the BKS Environmental Monitor and Mr R Phelan, the Group 5 Environmental Officer were interviewed during the Environmental Compliance Audit according to a checklist based on the conditions of the RoD and EMP. In addition, one random site interview was also undertaken. The Social Monitor, Ms K. Maasdorp and Mr D Cook, Chairperson of the Environmental Monitoring Committee (EMC) were not present. A telephone interview was conducted with Ms Maasdorp while proof all tasks undertaken by Mr Cook were provided at the audit hence there was no need to interview him. A photocopy of all verified material is provided in Appendix 7: Verified Information Sample.

6.2. Objective of the Environmental Compliance Audit

The objectives of the audit include:

- Verifying MMTS-2's performance against the requirements of the RoD and the EMP; and
- Independently verifying through sampling that compliance is being achieved and that information provided is accurate.

6.3. Scope of the Environmental Compliance Audit

The scope of the audit was limited to compliance against the conditions and requirements of the RoD and EMP. The RoD and EMP covered the entire footprint of the MMTS-2 project, including the infrastructure components, construction domain, construction activities and access roads. Verification of compliance included the following activities:

- Determining and verifying whether all conditions stipulated in the RoD are being adhered to;
- Determining and verifying whether environmental targets prescribed in the EMP are being adhered to, by checking against pre-determined indicators;
- Determining and verifying whether all environmental requirements, criteria and mitigation measures prescribed in the EMP are being adhered to;
- Determining and verifying whether the implementation of the EMP has been successful to prevent environmental pollution and damage; and
- Determining and verifying the overall effectiveness of environmental management practices.

Environmental issues investigated included:

- The complaints register for the audit period was checked and the manner and turn-around period for attending to the complaints were appraised;
- Performance of environmental management measures for non-conformances and incidents; and
- Determining that information required by the RoD is present and available as well as easily accessible.

6.4. Information Verified

An audit checklist based on the requirements of the RoD and approved EMP was developed. Information resources from the Environmental Monitor and Environmental Officer were audited. The checklist included the environmental objectives (environmental, social or economic) and mechanisms to achieve these objectives. Information verified included the following:

- Environmental Non-Conformance / Incident Register, maintained by Environmental Monitor;
- Issues Register, maintained by Social Monitor;
- Sampling and analyses results, maintained by Environmental Officer;
- Waste disposal certificates, maintained by Environmental Officer;
- Toolbox talks registers, maintained by Environmental Officer;
- Public notifications (e.g. blasting), maintained by Social Monitor (amongst others);
- Weekly and monthly ECO monitoring reports, maintained by ECO; and
- Environmental and administrative records, as required by RoD and EMP.

6.5. Environmental Compliance Audit Report

COMPANY/DEPT AUDITED:		FORM NO.:	
MMTS-2 Project		MMST-2^02	
Audit date:		Audit leader and team:	
29 September 2011		N. Naidoo (Audit Leader) V. Brueton (Junior Environmental Auditor)	
Project/Programme/Activity audited:		Responsible manager:	
MMTS-2 Project		K. Govender (Environmental Manager)	
Audit type:		List of interviewees (including responsibilities and information reviewed):	
		S. Jay Nairain (Environmental Monitor)	

Environmental Compliance Audit

R. Phelan (Environmental Officer)

Objectives of the audit:

The objectives of the audit include:

- Verifying MMTS-2's performance against the requirements of the RoD and the EMP; and
- Independently verifying through sampling that compliance is being achieved and that information provided is accurate.

Scope of the audit:

The entire MMTS-2 project, including the infrastructure components, construction domain, construction activities and access roads were audited in terms of whether the environmental objectives and requirements of the RoD and EMP are being met.

Tools used during the audit:

Checklist – see Appendix 5.

Telephone Verification

Site Verification through Interview with randomly selected labourer – see Appendix 6

Description of the project/programme/activity audited:

The Mooi-Mgeni Transfer Scheme Phase 2 (MMTS-2) comprises the construction of a 38 meter roller compacted concrete dam with a storage capacity of 142 million m³ on the Mooi River upstream of the Mearns Weir with an associated water transfer system to Mpofana River. The Spring Grove Dam will be located 2 km south west of the Rosetta on the farms Rosetta and Spring Vale. The purpose of the MMTS-2 is to augment the growing water requirements of the Mgeni System by 60 million m³ per annum.

Audit Techniques:

The RoD and EMP were simplified into a checklist. S. Jay Narain and R. Phelan were asked to produce the necessary information for verification. In addition, a site verification was conducted through an interview with a randomly chosen worker.

Evaluation of Audit Results:

The Environmental Compliance Audit provided information of the overall compliance of the MMTS-2 project to the RoD and the EMP. The project is performing well in the majority of categories (Figure 4). An index of information contained in different locations needs to be added to the Environmental Manager's filing system. However no other problems were noted that cannot be easily remedied. In general, the Environmental Monitor and Environmental Manager have an up to date filing system containing all the information required from the RoD. In addition, the reporting lines regarding environmental concerns and incidents appear to be clear. The Non-Conformance register provides an adequate form of reporting environmental incidences together with the necessary time frames. In addition, toolbox talk registers and information suggests that there is quick action taken to remedy any environmental incidences. The site verification interview showed that MMTS-2 workers are knowledgeable about issues such as littering, protocol in cleaning spillages and safety.

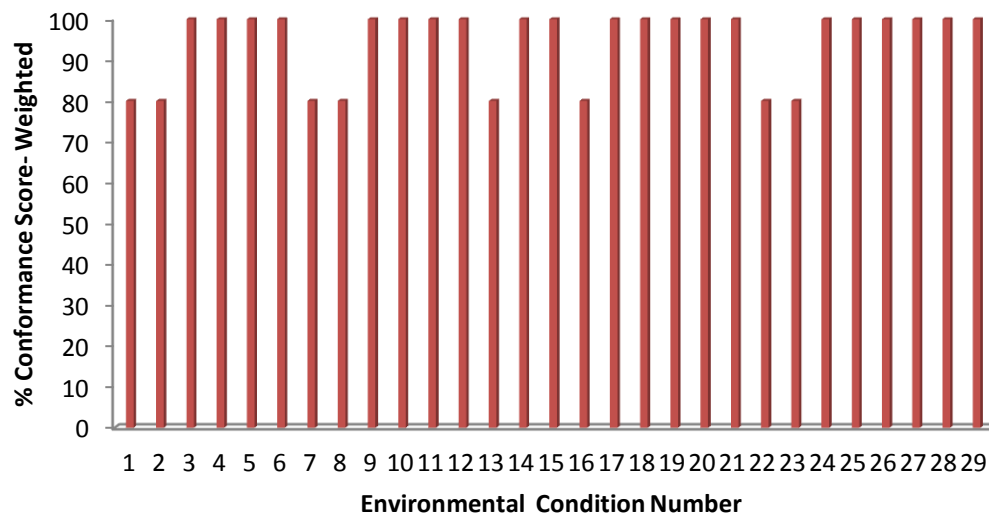


Figure 4: Weighted Conformance Percentages for the Environmental Conditions Audited

Table 1: Environmental Conditions Audited

1	Notification of DEA for any project changes / deviations
2	Notification of stakeholders of the DEA authorisation
3	A daily site diary to be maintained on site by the ECO
4	A non-conformance register to be maintained on site by the ECO
5	A public complaints register to be maintained on site by the ECO
6	Monitoring reports of the contractor/s to be maintained on site by the ECO
7	Compliance and audit reports to be maintained on site by the ECO
8	Training registers to be maintained on site by the ECO
9	Copies of the ROD and EMP to be maintained on site by the ECO
10	Waste disposal certificates to be maintained on site by the ECO
11	Copies of all permits required during the construction phase to be maintained on site by the ECO
12	A copy of the ROD to be available on site during construction
13	All staff, contractors and sub-contractors to be familiar with or be made aware of the ROD contents
14	All public complaints during construction must be adhered to as soon as possible
15	A complaints register to be kept up to date and produced upon request
16	Copies of method statements to be maintained on site by the ECO
17	Compliance/non-compliance records must be kept and shall be made available upon request from the relevant authorities within five days of receipt of the request
18	A record of all types and quantities of hazardous materials on site to be kept
19	Hazardous substances to be stored safely and in secondary containers within a bunded area
20	Hazardous material management plan for safe handling, storage and use of hazardous substances to be complied with
21	Organogramme of Contractor's Management Structure
22	Filing system for environmental documentation to be kept on site and be up to date
23	Environmental document control procedure to ensure that the environmental file contains all the environmental information including the CEMP, ROD Authorization, environmental induction information; etc.
24	Environmental induction programme to ensure that all contractors attend the environmental induction training and records of this training are kept in the environmental file on site
25	Records of all environmental training sessions to be kept on site
26	The concept of "clean site" policy to be explained to all construction workers
27	A waste register regarding materials removal from the site, the type of material, the quantity, the date

removed, the haulage contractor, the disposal site to be maintained

28 All staff to be trained regarding storage practices for hazardous materials

29 Employees training to include spillage prevention; containment and cleanup and reporting of spills

Table 2: Overall Conformance Score for the Environmental Compliance Audit

Environmental Compliance Audit	Total	%
Number of Items Scored for this Monitoring Event	29	
Highest Possible Conformance Score for this Monitoring Event	145	0
Actual Conformance Score	131	90.34
Actual Score- weighted		118.80
Total Conformance Score- Weighted		130..2
Actual Conformance Score including weighting (%)		91.24

Description of non-compliance noted during the audit:

In some cases information is kept with the Environmental Officer or in the general filing room and not with the Environmental Monitor. In order to ensure a proper paper trail, an all inclusive index of information kept in other locations is required.

Although DEA was notified that the ECO would not be full time on site no approval for the deviation from the RoD was provided by DEA however TCTA has continued without such approval. The impact is minimal therefore the non compliance was not severely scored.

List of supporting documents:

Please see Appendix 7

Recommendations and Conclusions:

An all inclusive index of information kept in other locations is required.

DEA must approve the deviation of full time site functions of the ECO or else the current arrangement will remain a non compliance.

Signed/date:

Nicky Naidoo

Responsible Manager/Licence Holder

K. Govender

Lead Auditor:

7. CONCLUSION

Audits are conducted less frequently than monitoring, often annually or biannually. In this case, the environmental audit of the MMTS-2 project will occur biannually and used two main tools: a checklist and site verification through interviews. Two separate audits were conducted.

The first was an environmental programme audit of the MMTS-2 project shows that the environmental function of management complies with environmental principles and best practices. The environmental management programme audit scored a result of 97%.

The second was an environmental compliance audit in line with the condition of the RoD. The environmental compliance audit scored a result of 91%.

Both audits show a high level of compliance and excellent environmental performance. No major recommendations and/or corrective actions were made as the non-compliances are insignificant.

Going forward the environmental team must ensure an all inclusive index of information kept in other locations is required. DEA must approve the deviation of the full time site functions of the ECO or else the current arrangement will remain a non compliance.

APPENDIX 1- AUDIT AGENDA

APPENDIX 2- MINUTES OF INTRODUCTORY MEETING

APPENDIX 3: MINUTES OF PROGRAMME AUDIT INTERVIEW

APPENDIX 4: ENVIRONMENTAL PROGRAMME AUDIT CHECKLIST AND SCORING SYSTEM WITH RESULTS

ENVIRONMENTAL PROGRAMME AUDIT REPORT:

CONFORMANCE SCORES	DESCRIPTION
1	Task not achieved
2	Task 20% complete
3	Task 50% complete
4	Task 80 % complete
5	Task 100% completed in accordance with the EMP
IMPACT SCORES	IMPACT
1	Low – mitigation not needed/ mitigation measures to be maintained
2	Medium – mitigation should be considered
3	High – mitigation compulsory
PENALTY SCORES	DESCRIPTION
0	Not Applicable / Impact or Non-Conformance occurred in area of low Environmental Significance
1	Moderate – Impact/Non-Conformance occurred in area of moderate Environmental Significance (1% Deduction from total conformance score)
2	High – Impact/Non-Conformance occurred in area of high Environmental Significance (3% Deduction from total conformance score)
3	Very High – Impact/Non-Conformance Occurred in area of very high Environmental Significance (5% Deduction from total conformance score)

MMTS-2 Environmental Audit 01

Table 3: Programme Audit Conditions and Conformance Score.

No.	Conditions	Conformance Score	Penalty Deduction (%)	Total Conformance score including penalty deduction	Total Conformance - Percentage	Comments
1	Environmental Policy	5	0	5	100	TCTA has internal environmental policy. In addition, there is an environmental policy for the MMTS-2. The environmental policy guides the EMP. There is also the Environmental risk register which is a policy to reduce environmental liability. It has a special component on the environment and identifies every foreseeable risk that could take place together with immediate actions.
2	Clearly defined Reporting Lines	5	0	5	100	There are different tiers of responsibility but with enough flexibility that there can be direct communication. However, formal reporting occurs once a week.
3	Method for Identifying and reporting incidences	5	0	5	100	The formal method of identifying and reporting environmental incidences includes the monitoring component of the Environmental Monitor and the Non Conformance Register and Non Conformance Site Directive which is the formal reporting tool
4	External mechanism of control	5	0	5	100	The project has 7 different external mechanisms of control including the Panel of Experts (POE), Environmental Leader for the Engineers, the EMC with an independent Chairperson, The Environmental Control Officers and Specialist Expert Advisors for TCTA and External Specialists for the Contractors.
5	Budget	5	0	5	100	There is a budget for environmental incidences in the scope of work between BKS and TCTA. In addition, there is a budget for rehabilitation and environmental monitoring during the rehabilitation phase of the project.
6	Flexibility in Timeframes	4	0	4	80	There is some flexibility within the timeframes although it is a tight schedule. For example, the contractor has a calculated allowable of non working days based on past weather patterns. There is also the internal Risk Register for TCTA which has all foreseeable environmental incidences and immediate actions.
7	Environmental Key Performance Indicators	5	0	5	100	TCTA has internal environmental Key performance indicators (KPIs) which are monitored every six months. It is a formal monitoring process by the head of environmental and then the TCTA divisional head

APPENDIX 5: ENVIRONMENTAL COMPLIANCE AUDIT CHECKLIST AND SCORING SYSTEM WITH RESULTS

ENVIRONMENTAL COMPLIANCE AUDIT REPORT:

CONFORMANCE SCORES	DESCRIPTION
1	Task not achieved
2	Task 20% complete
3	Task 50% complete
4	Task 80 % complete
5	Task 100% completed in accordance with the EMP
IMPACT SCORES	IMPACT
1	Low – mitigation not needed/ mitigation measures to be maintained
2	Medium – mitigation should be considered
3	High – mitigation compulsory
PENALTY SCORES	DESCRIPTION
0	Not Applicable / Impact or Non-Conformance occurred in area of low Environmental Significance
1	Moderate – Impact/Non-Conformance occurred in area of moderate Environmental Significance (1% Deduction from total conformance score)
2	High – Impact/Non-Conformance occurred in area of high Environmental Significance (3% Deduction from total conformance score)
3	Very High – Impact/Non-Conformance Occurred in area of very high Environmental Significance (5% Deduction from total conformance score)

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Table 5: Environmental Compliance Audit Conditions and Scores

No.	Conditions / Mitigation Measures	Conformance Score	Conformance Weighting	Conformance Score-Weighted	Percentage Conformance score	Comments	Appendix	Mitigation
1	Notification of DEA for any project changes / deviations	4	0.8	3.2	80	Although the letter to the DEA regarding changes in the scope of the project has been sent to the ECO, the letter should also be kept in the EM's files	-	The letter is to be added to the EM's files
2	Notification of stakeholders of the DEA authorisation	4	0.8	3.2	80	A letter notifying stakeholders of the authorisation as well as methods of appeal was verified by the lead auditor.	No photocopy taken-verified by lead auditor.	The letter is to be added to the EM's files
3	A daily site diary to be maintained on site by the ECO	5	1	5	100	The Environmental Monitor's Daily Diary was verified and a sample was taken from the 17/06/2011. A specific concern regarding littering was noted. Reference number J00846-MMTS-2_weekly environmental report_2011_06_17SJN_06. The photo record number was LST_2011_06_17080. The weekly report and the Concerns Register was verified. It is attached to the EM's weekly reports. The concern regarding litter which was mentioned in the Daily Report also occurred in the Weekly Concern's register for the week of 13/06/2011 to 17/06/2011.	Appendix 5.1	None
4	A non-conformance register to be maintained on site by the ECO	5	1	5	100	The non conformance register was checked and the incident SC/MMTS2/042/NCR03 was noted. In order to verify the situation was rectified, toolbox talk registers were verified. All vehicles entering the site underwent training.	Appendix 5.2	
5	A public complaints register to be maintained on site by the ECO	5	1	5	100	The Issues Register is maintained by K. Maasdorp who was not present. However the Issues Register was verified. An issue from the 7/06/2011 regarding lack of notification of blasting was noted (Ref: 0024). The complaint was made by Brett Scott who verified telephonically that he was notified of all blasts after the concern was raised.	No photocopy taken-verified by lead auditor.	Information kept with SM- an index with information on where the documents are being stored should be kept in EM's files.
6	Monitoring reports of the contractor/s to be maintained on site by the ECO	5	1	5	100	The EO's Daily Diary's are kept in an A4 triplicate book, one copy is given to the EM for filing. Verified by Lead Auditor.	No photocopy taken-verified by lead auditor.	-

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7	Compliance and audit reports to be maintained on site by the ECO	4	0.5	2	80	A section for the Audit report needs to added to EM's files. This was the first audit event and thus no section existed previously,	-	Add to Audit Report Sections to EM's files
8	Training registers to be maintained on site by the ECO	4	1	4	80	In order to verify the corrective action needed for the concern regarding litter of the 17/06/2011, the toolbox talks registers held by the EO were verified. A litter and housekeeping toolbox talk occurred on the 18/06/2011. This was verified by the lead auditor.	Appendix 5.3	Information kept with EM- an index with information on where the documents are being stored should be kept in EM's files.
9	Copies of the ROD and EMP to be maintained on site by the ECO	5	0.8	4	100	The copies of the ROD and EMP were maintained in the EM's files and verified by the lead auditor.	No photocopy taken- verified by lead auditor.	-
10	Waste disposal certificates to be maintained on site by the ECO	5	0.8	4	100	The general waste disposal certificates are kept in an A4 triplicate book by the EO. The EM receives a copy from the triplicate book. Hazardous Waste certificates are kept by the EM and EO	No photocopy taken- verified by lead auditor.	-
11	Copies of all permits required during the construction phase to be maintained on site by the ECO	5	0.8	4	100	Permits are kept with the EM and were verified by the lead auditor. The Heritage Permit/Certificate has not been provided as still waiting for the family to sign off. They will be filed. Currently all material moved on or off site has permit kept with the EO or EM.	No photocopy taken- verified by lead auditor.	-
12	A copy of the ROD to be available on site during construction	5	1	5	100	The RoD was available- verified by lead auditor.	No photocopy taken- verified by lead auditor.	-
13	All staff, contractors and sub-contractors to be familiar with or be made aware of the ROD contents	4	0.8	3.2	80	Verified by interview	Appendix 5.7	All works who have worked for more than 6 months should have received tool box talks. Overall register or list was suggested as a means to ensure that all personnel receive all tool box talks.
14	All public complaints during construction must be adhered to as soon as possible	5	1	5	100	The Issues Register is maintained by K. Maasdorp who was not present. However the Issues Register was verified. An issue from the 7/06/2011 regarding lack of notification of blasting was noted (Ref: 0024). The complaint was made by Brett Scott who verified telephonically that he was notified of all blasts after the concern was raised.	EA	Information kept with SM- an index with information on where the documents are being stored should be kept in EM's files.

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15	A complaints register to be kept up to date and produced upon request	5	1	5	100	The Issues Register is maintained by K. Maasdorp who was not present. However the Issues Register was verified. An issue from the 7/06/2011 regarding lack of notification of blasting was noted (Ref: 0024). The complaint was made by Brett Scott who verified telephonically that he was notified of all blasts after the concern was raised.	-	Information kept with SM- an index with information on where the documents are being stored should be kept in EM's files.
16	Copies of method statements to be maintained on site by the ECO	4	1	4	80	Method statements were verified at random. This included COA-ENV-WOR-003 (regarding toolbox talks related to spills).	-	Information kept with EO- an index with information on where the documents are being stored should be kept in EM's files.
17	Compliance/non-compliance records must be kept and shall be made available upon request from the relevant authorities within five days of receipt of the request	5	1	5	100	The non conformance register was checked and the incident SC/MMTS2/042/NCR03 was noted. In order to verify the situation was rectified, toolbox talk registers were verified. All vehicles entering the site underwent training.	Appendix 5.2	The Concerns Register was verified. It is attached to the EM's weekly reports. The concern regarding litter which was mentioned in the Daily Report also occurred in the Weekly Concern's register for the week of 13/06/2011 to 17/06/2011.
18	A record of all types and quantities of hazardous materials on site to be kept	5	1	5	100	The materials registers were verified by the lead auditor. Specifically, the Hazardous Materials register for August 2011 was verified.	Appendix 5.4	Information kept with EO- an index with information on where the documents are being stored should be kept in EM's files.
19	Hazardous substances to be stored safely and in secondary containers within a bunded area	5	0.8	4	100	In order to verify that proper documentation regarding proper storage was kept, the Diesel bund area weekly checklist for 22/06/2011 was verified	Appendix 5.5	Information kept with EO- an index with information on where the documents are being stored should be kept in EM's files.
20	Hazardous material management plan for safe handling, storage and use of hazardous substances to be complied with	5	0.8	4	100	The chemical management plan was verified.	Appendix 5.6	Information kept with EO- an index with information on where the documents are being stored should be kept in EM's files.
21	Organogramme of Contractor's Management Structure	5	0.5	2.5	100	The organogram is kept in both EM and EO's files as well as on the wall in the offices.	No photocopy taken- verified by lead auditor.	

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22	Filing system for environmental documentation to be kept on site and be up to date	4	1	4	80	All filing was up to date however specific mention should be made in the file if or when information is missing. For example, water monitoring by the contractor was unable to occur while the monitoring tools were being fixed in Johannesburg. A letter stipulating this should be placed in the file.	-	Letters explaining any missing information should be placed in the files.
23	Environmental document control procedure to ensure that the environmental file contains all the environmental information including the CEMP, ROD Authorization, environmental induction information; etc.	4	1	4	80	All filing was up to date however specific mention should be made in the file if or when information is missing. For example, water monitoring by the contractor was unable to occur while the monitoring tools were being fixed in Johannesburg. A letter stipulating this should be placed in the file.	-	Letters explaining any missing information should be placed in the files.
24	Environmental induction programme to ensure that all contractors attend the environmental induction training and records of this training are kept in the environmental file on site	5	1	5	100	Basic Induction training and toolbox talks were verified.	Appendix 5.8	-
25	Records of all environmental training sessions to be kept on site	5	1	5	100	Basic Induction training and toolbox talks were verified.	Appendix 5.9	-
26	The concept of "clean site" policy to be explained to all construction workers	5	1	5	100	Verified by interview	Appendix 5.7	All works who have worked for more than 6 months should have received tool box talks. Overall register or list was suggested as a means to ensure that all personnel receive all tool box talks.
27	A waste register regarding materials removal from the site, the type of material, the quantity, the date removed, the haulage contractor, the disposal site to be maintained	5	0.7	3.5	100	The materials registers were verified by the lead auditor. Specifically, the Hazardous Materials register for August 2011 was verified.	Appendix 5.4	Information kept with EO- an index with information on where the documents are being stored should be kept in EM's files.
28	All staff to be trained regarding storage practices for hazardous materials	5	1	5	100	Verified by interview	Appendix 5.7	All works who have worked for more than 6 months should have received tool box talks. Overall register or list was

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								suggested as a means to ensure that all personnel receive all tool box talks.
29	Employees training to include spillage prevention; containment and cleanup and reporting of spills	5	1	5	100	Basic Induction training and toolbox talks were verified.	Appendix 5.9	-

APPENDIX 6: PHOTOS



Figure 5: Site Verification



Figure 6: Site Verification of Hazardous Store

APPENDIX 7: SUPPORTING DOCUMENTS