

# **DEPARTMENT OF WATER AFFAIRS AND FORESTRY**



**PROJECT 2006-303**

## **RESOURCE MANAGEMENT PLAN FOR**



**FIKA PATSO DAM**

**AND**



**METSIMATSHO DAM**

### **REPORT 4: Resource Management Plan- February 2008**

**Prepared by:**

Vela VKE Consulting Engineers  
P O Box 1462  
Pinegowrie  
2123

**Contact Person:**

Heena Bhana  
Tel: 011 369 0600  
Fax: 011 886 4589

**Prepared for:**

DWAF  
Private Bag X313  
Pretoria  
0001

**Contact Person:**

Marinus de Wilde  
Tel: 016 371 3030  
Fax: 012 392 1408

## CONTRIBUTORS

This Resource Management Plan for Fika Patso and Metsimatsho Dams was compiled and is recommended by a Technical Task Team (TTT), a multi-disciplinary team consisting of stakeholder representatives from *inter alia* Government; the local communities; user groups and the business sector. Contributions made by the larger stakeholder group as indicated in Appendix A are also recognized.

## DOCUMENT REVIEW RECORD

| DATE       | REPORT STATUS | WRITTEN BY                             | REVIEWED BY           | RECEIVED BY   |                       |
|------------|---------------|--|-----------------------|---|-----------------------|
|            |               |  |                       | NAME  | FROM                  |
| 2007/09/27 | Draft         | M. Griffioen<br>J. Jacobs<br>M. Memani | D. Gertzen            | D. Koekemoer  | DWAF                  |
| 2007/09/28 | Draft         | M. Griffioen<br>J. Jacobs<br>M. Memani | D. Gertzen            | <ul style="list-style-type: none"> <li>• Chief Sekonyela</li> <li>• Chief Mohale</li> <li>• Mr. Nhlapo</li> <li>• Chief Molefe</li> <li>• Chief Mopeli</li> </ul> | TTT                   |
| 2007/10/30 | Draft 01      | M. Griffioen<br>J. Jacobs<br>M. Memani | D. Gertzen            | D. Koekemoer<br>L. Fick<br>TTT and Public   | DWAF<br>TTT<br>Public |
| 2008/01/08 | Draft 02      | H. Bhana<br>J. Jacobs<br>M. Memani     | D. Gertzen<br>J. Adam | M. de Wilde<br>L. Fick  | DWAF                  |
| 2008/01/15 | Draft 02      | H. Bhana<br>J. Jacobs<br>M. Memani     | D. Gertzen<br>J. Adam | Refer to Appendix A for stakeholders  | TTT and public        |
| 2008/02/18 | Final         | H. Bhana<br>J. Jacobs<br>M. Memani     | D. Gertzen            | Refer to Appendix A for stakeholders  | TTT and public        |

## APPROVALS

### RECOMMENDED:

| NAME AND TITLE  | DATE | SIGNATURE |
|---|------|-----------|
| Mr. M. de. Wilde<br><i>Project Manager</i>                    |      |           |
| Mr. M. de. Wilde<br><i>Area Manager</i>                       |      |           |
| Mr. W. vd. Westhuizen<br><i>Director: Central Operations</i>  |      |           |
| Mr L. Moloji<br><i>Chief Director: Operational Management</i> |      |           |

### APPROVED:

| NAME AND TITLE  | DATE | SIGNATURE |
|---|------|-----------|
| Hennie Smit<br><i>Acting Chief Director: Gauteng Region</i>                                   |      |           |
| Dr C Ruiters<br><i>Deputy Director General: National Water Resource Infrastructure Branch</i> |      |           |

### ANNUAL REVIEW

Due date: February 2009, 2010, 2011, 2012

### FIVE (5) YEARLY REVIEW

Due date: February 2013

## EXECUTIVE SUMMARY

This Resource Management Plan (RMP) is the management, development and institutional plan for Fika Patso and Metsimatsho Dams and has been compiled based on the framework set out in page v. It is to be reviewed annually and updated every five years.

Fika Patso and Metsimatsho Dams consist of the water surface as well as the surrounding State land, utilised by the Department of Water Affairs and Forestry (DWAF).

The plan compiled through the RMP process is based on the principles of sustainability, addressing environmental and community involvement aspects. It will guide the management of Fika Patso and Metsimatsho Dams and is based on the inputs of all stakeholders. The plan also serves as the base document for monitoring both performance and compliance regarding the various Key Performance Areas (KPAs) with respect to the National Water Act, (Act No. 36 of 1998) and other applicable legislation.

The primary purpose of the Fika Patso and Metsimatsho Dams is to provide potable water to the surrounding urban areas. However, the need to realise the full potential of the dams including recreational use, aquaculture activities and tourism related development required the compilation of a RMP.

Land and water use options identified as possibilities at Fika Patso and Metsimatsho Dams include:

- Conservation;
- Aquaculture;
- Accommodation and leisure activities, and
- Tourism activities.

The RMP consists of three principal sections:

- 1) *The Place* which addresses the background; encumbrances to the plan, and challenges facing the management authority (institution responsible for managing recreational water use as delegated).
- 2) *The People* outlines the stakeholders and associated relationships for the dams.
- 3) *The Plan* comprises an integrated environmental management plan and a conceptual zoning plan. This section incorporate four key KPAs, namely resource management, utilization, benefit flow management (community involvement and beneficiation) and institutional arrangements for implementation of the RMP. Within each key KPA area, the plan provides insight into the specific rationale regarding the KPAs, the objectives, the policy and strategies, as well as

operational guidelines and action projects which will focus the management decisions, actions and initiatives.

A conceptual zoning plan has been developed as part of this RMP and should be updated subsequent to the finalisation of data. Various zones have been proposed in the conceptual zoning plan for both Fika Patso and Metsimatsho Dams and include management interventions pertaining to access, utilisation and development. The zoning plans are depicted diagrammatically in Figure 12 and Figure 13 and are summarised as follows:

|                            | <b>Metsimatsho Dam</b>         | <b>Fika Patso Dam</b>    |
|----------------------------|--------------------------------|--------------------------|
| <b>Water Surface Zones</b> | Low impact activity zone       | Low impact activity zone |
|                            | Conservation zones             | Conservation zones       |
| <b>Water Front Zones</b>   | Low impact development zone    | To be finalised          |
|                            | Medium impact development zone | To be finalised          |

To effectively and efficiently manage the implementation of the plan, an institutional structure is proposed. The proposed institution is a public sector agent, supported by an advisory committee comprising interested and affected parties. It should be noted though that the ultimate responsibility regarding the implementation of the RMP will remain with DWAF.

Operationalisation of this RMP will facilitate the sustainable utilisation and development of Fika Patso and Metsimatsho Dams. It is imperative that the RMP informs and is incorporated into the Integrated Development Planning process of the local and district municipalities and other provincial and national planning frameworks.

The process for the compilation of the RMP is summarised in Figure 1.

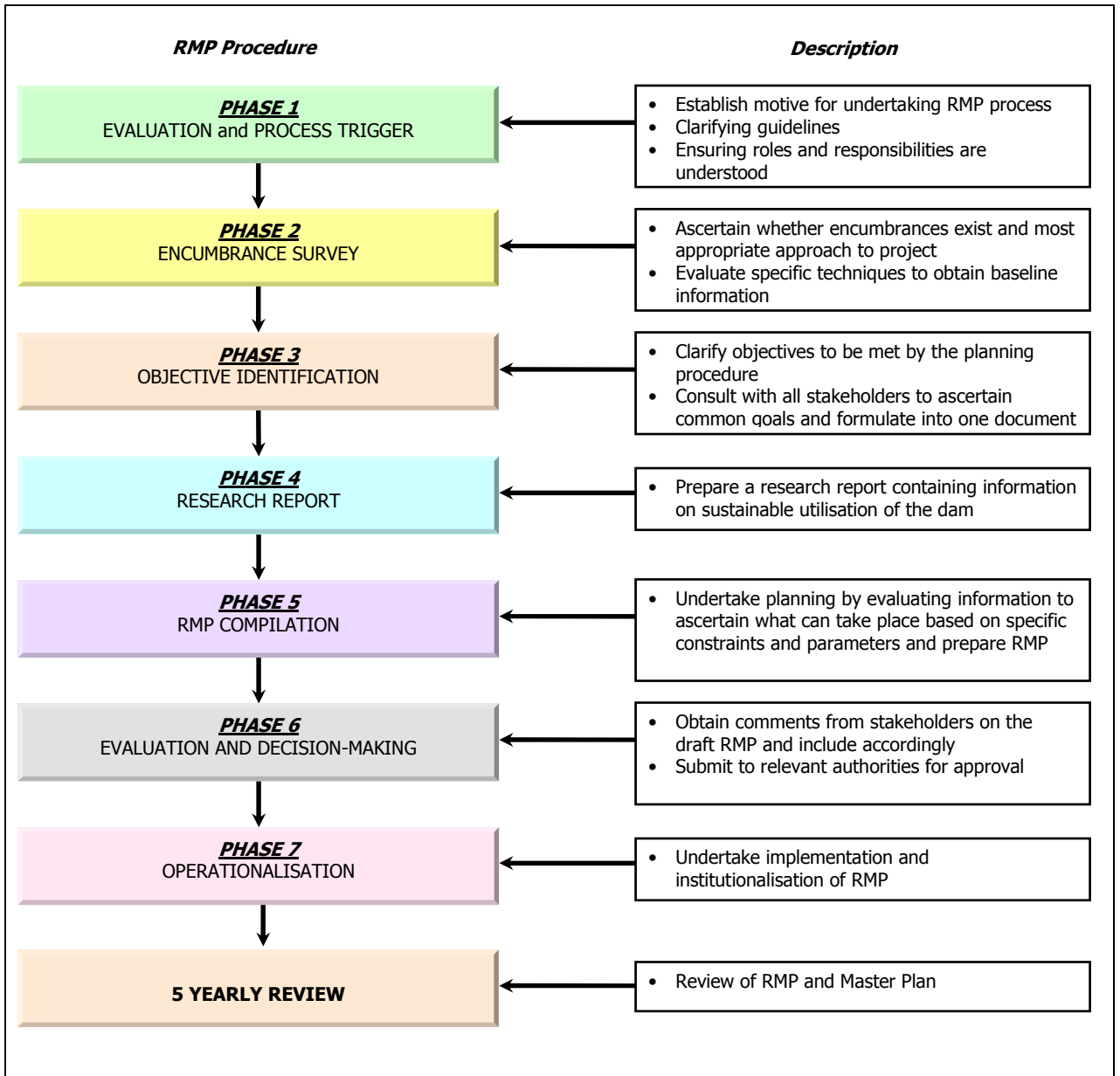


Figure 1: RMP Compilation Procedure

## **RMP REVIEW FRAMEWORK**

### **Overview**

The RMP process has an integrated planning component and operational planning component, each with a five year time frame for review.

### **Integrated Planning Components**

A RMP is the primary overarching planning document that describes the administrative and legal framework, contextual background, public participation process followed, vision/mission statements, prioritised management objectives, zoning as well as management policy framework and guidelines. The RMP forms the framework within which all the other planning components are developed. Within the framework of the RMP, a *Zoning Plan* provides a strategic guideline for the utilisation and development of the water resource and water resource infrastructure within the constraints of the receiving environment. Operational plans, programmes and procedures that support the RMP are either in place or will be compiled where these do not exist.

### **Authorisation of RMPs**

These plans are authorised by the relevant Regional Chief Director of the DWAF in terms of Section 113 of the National Water Act (Act No. 36 of 1998) and operationalised through the following two operational planning components.

### **Operational Planning Components**

A five-year *Consolidated List of Action Projects* is included in the RMP that operationalises (or actions) the management authority's management objectives and any projects identified in the RMP. The action projects are operational management components that identify the activities and tasks that need to be undertaken in the achievement of the RMPs objectives and attaches responsibilities, timeframes, budgets and resources to each activity. The action projects are key planning actions that also inform the management authority's annual budgeting estimates and provide information for annual reports.

### **Authorisation of Business Plans**

Once the consolidated list of action projects has been approved by DWAF, the action projects are finalised according to the committed budget allocations and other expected financial income.

### **RMP Planning & Review**

The RMP requires both annual and five-yearly revisions to ensure that management objectives remain relevant and management actions are continually improved. Figure 2 illustrates the annual and five-yearly planning and review cycles.

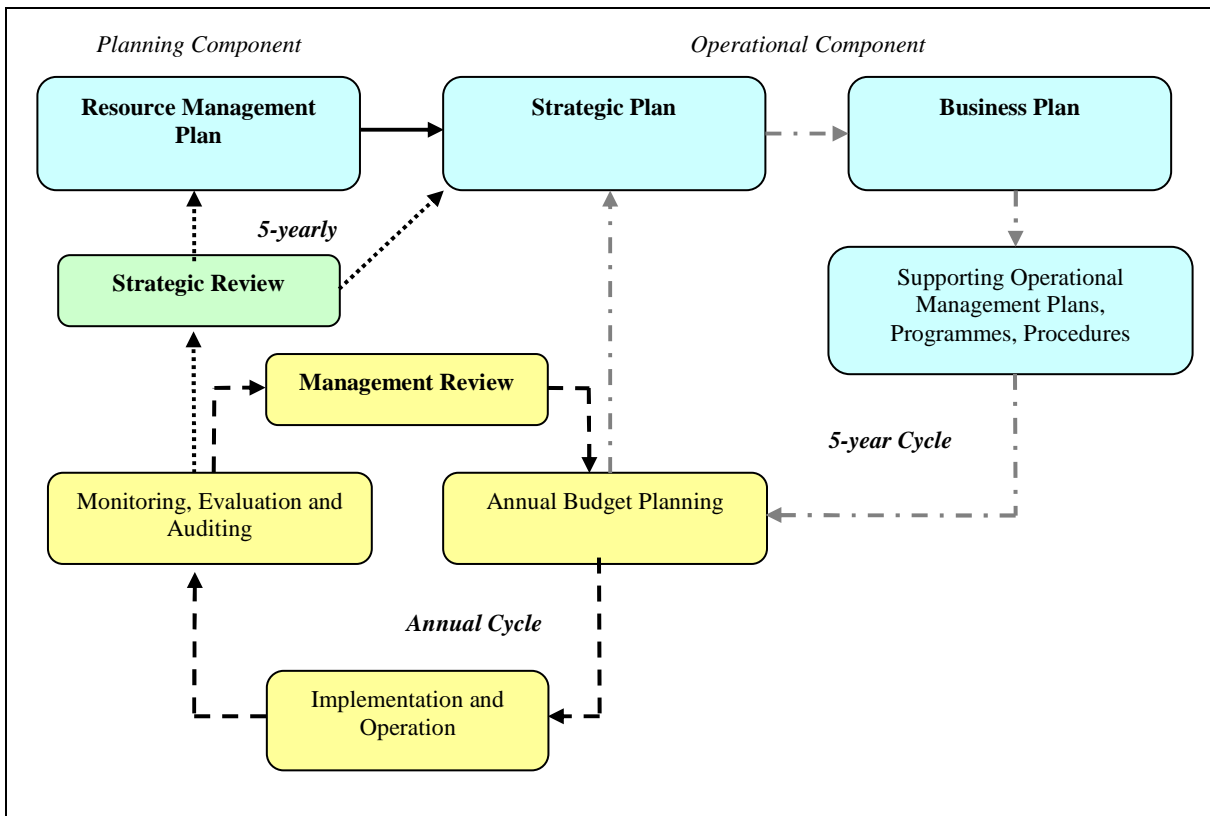


Figure 2: RMP Review Framework

### Planning Process

The rationale of a RMP is to assist DWAF and the management authority in ensuring sustainability by protecting the integrity and value of water resources, providing measurable benefits to host communities, and enhancing the satisfaction of users.

DWAF and the management authority can ensure that their objectives, as well as those of relevant stakeholders are attained in an acceptable and appropriate manner by addressing the needs and expectations of resource managers, communities, and users by defining the processes that contribute to sustainability and monitoring the performance of these processes.

Continual improvement can be achieved by using an ISO 9000 based management system as a framework, and the system provides DWAF and the management authority with confidence that their policies are relevant and acceptable to all stakeholders.

The procedure used during the planning process is based on DWAF's *Guidelines for the Compilation of Resource Management Plans* ensuring the involvement of all stakeholders, as well as interested and affected parties. Opportunity was provided to all participants to actively participate in the planning, discussions and compilation of the management plan, compliant to the prescripts of the National Environmental Management Act (Act 107 of 1998), as well as Chapter 3 of the Constitution of South



Africa (Act No. 108 of 1996). This approach ensures inclusivity, transparency and builds trusts between all participants.

The planning procedure for the dams' proposed RMP consisted of three distinct phases, namely:

Phase 1: The first phase aimed at ensuring the support of key stakeholders. This phase mainly addressed the encumbrances to the process, attaining institutional support and identifying participants to the process.

Phase 2: The second phase aimed at ensuring broad stakeholder involvement, building capacity within the stakeholders and providing the stakeholders with relevant information to assist in decision making.

Phase 3: The third aimed at achieving recommendation for the RMP, prior to submitting the plan to DWAF for approval.

## TABLE OF CONTENTS

|  |           |
|--|-----------|
| CONTRIBUTORS .....   | I         |
| DOCUMENT REVIEW RECORD.....  | I         |
| APPROVALS.....   | II        |
| EXECUTIVE SUMMARY .....  | III       |
| RMP REVIEW FRAMEWORK.....  | VI        |
| TABLE OF CONTENTS .....  | IX        |
| LIST OF FIGURES .....  | XI        |
| LIST OF TABLES.....  | XI        |
| LIST OF ACRONYMS AND ABBREVIATIONS.....  | XII       |
| <b>1. THE PLACE.....</b>   | <b>1</b>  |
| <b>1.1 INTRODUCTION .....</b>  | <b>1</b>  |
| <b>1.2 PURPOSE, SIGNIFICANCE AND CHALLENGES .....</b>                          | <b>4</b>  |
| <b>1.2.1 Purpose and Significance of Fika Patso and Metsimatsho Dams .....</b> | <b>4</b>  |
| <b>1.2.2 Challenges at Fika Patso and Metsimatsho Dams .....</b>               | <b>4</b>  |
| <b>1.3 ADMINISTRATIVE AND LEGAL FRAMEWORK .....</b>                            | <b>5</b>  |
| <b>1.3.1 Administrative .....</b>  | <b>5</b>  |
| <b>1.3.2 Legal Requirements .....</b>  | <b>5</b>  |
| <b>1.3.3 Regional Planning Concepts.....</b>                                   | <b>7</b>  |
| <b>1.4 BACKGROUND TO FIKA PATSO AND METSIMATSHO DAMS .....</b>                 | <b>8</b>  |
| <b>1.4.1 Bio-physical.....</b>   | <b>8</b>  |
| 1.4.1.1 Topography.....  | 8         |
| 1.4.1.2 Geology and Erodable Soils.....  | 9         |
| 1.4.1.3 Loss of Vegetation and Centre of Endemism.....                         | 9         |
| 1.4.1.4 Problem Plants.....  | 9         |
| <b>1.4.2 Hydrological Information .....</b>                                    | <b>9</b>  |
| <b>1.4.3 Water Sources .....</b>   | <b>9</b>  |
| 1.4.3.1 Water Quality .....  | 10        |
| 1.4.3.2 Sterkfontein Dam Water Supply Scheme – Water Master Plan .....         | 12        |
| 1.4.3.3 Water Treatment .....  | 13        |
| 1.4.3.4 Water Levels .....   | 14        |
| 1.4.3.5 Possible Impacts on Water Quality .....                                | 14        |
| <b>1.4.4 Heritage and Cultural Data .....</b>                                  | <b>15</b> |
| <b>1.4.5 Socio-economic Environment.....</b>                                   | <b>15</b> |

|              |   |           |
|--------------|---|-----------|
| 1.4.5.1      | Local Economic Development.....   | 15        |
| 1.4.5.2      | Proposed Initiatives.....   | 15        |
| 1.4.5.3      | Tourism Public Private Partnerships.....                                | 18        |
| 1.4.5.4      | Skills development.....   | 18        |
| 1.4.5.5      | Infrastructure development.....   | 18        |
| <b>2.</b>    | <b>THE PEOPLE.....</b>  | <b>21</b> |
| <b>2.1</b>   | <b><i>Current Institutional and Operational Arrangements</i>.....</b>   | <b>21</b> |
| <b>2.2</b>   | <b><i>Stakeholder Engagement Process</i>.....</b>                       | <b>22</b> |
| <b>2.3</b>   | <b><i>The Stakeholders</i>.....</b>                                     | <b>22</b> |
| <b>3.</b>    | <b>THE PLAN.....</b>  | <b>23</b> |
| <b>3.1</b>   | <b>STRATEGIC FRAMEWORK.....</b>   | <b>23</b> |
| <b>3.1.1</b> | <b><i>DWAF's Vision</i>.....</b>  | <b>23</b> |
| <b>3.1.2</b> | <b><i>DWAF's Mission</i>.....</b>                                       | <b>23</b> |
| <b>3.1.3</b> | <b><i>Key Objectives of the Department</i>.....</b>                     | <b>23</b> |
| <b>3.2</b>   | <b>VISION AND OBJECTIVES FOR THE DAMS.....</b>                          | <b>24</b> |
| <b>3.2.1</b> | <b><i>Vision for the Dams</i>.....</b>                                  | <b>24</b> |
| <b>3.2.2</b> | <b><i>Objectives for the Dams</i>.....</b>                              | <b>25</b> |
| <b>3.3</b>   | <b>MANAGEMENT APPROACH.....</b>   | <b>26</b> |
| <b>3.4</b>   | <b>KEY PERFORMANCE AREAS.....</b>                                       | <b>27</b> |
| <b>3.4.1</b> | <b><i>KPA 1: Resource Management</i>.....</b>                           | <b>27</b> |
| <b>3.4.2</b> | <b><i>KPA 2: Utilisation</i>.....</b>                                   | <b>33</b> |
| <b>3.4.3</b> | <b><i>KPA 3: Benefit Flow Management</i>.....</b>                       | <b>37</b> |
| <b>3.4.4</b> | <b><i>KPA 4: Institutional Arrangements for Implementation</i>.....</b> | <b>38</b> |
| <b>3.5</b>   | <b>CONCEPT MANAGEMENT PLAN.....</b>                                     | <b>41</b> |
| <b>3.6</b>   | <b>Process.....</b>   | <b>41</b> |
| <b>3.7</b>   | <b>The Zones.....</b>   | <b>42</b> |
| <b>3.7.1</b> | <b><i>Water Surface Zones: Fika Patso and Metsimatsho Dam</i>.....</b>  | <b>43</b> |
| <b>3.7.2</b> | <b><i>Waterfront Zones: Metsimatsho Dam</i>.....</b>                    | <b>45</b> |
| <b>3.8</b>   | <b>CONSOLIDATED LIST OF ACTION PROJECTS.....</b>                        | <b>49</b> |
|              | <b>REFERENCES.....</b>  | <b>52</b> |
|              | <b>APPENDIX A: STAKEHOLDER LIST.....</b>                                | <b>54</b> |

## LIST OF FIGURES

|  |     |
|--|-----|
| Figure 1: RMP Compilation Procedure .....                                | v   |
| Figure 2: RMP Review Framework .....                                     | vii |
| Figure 3: Quaternary Catchments of the Area .....                        | 10  |
| Figure 4: Locality - Sterkfontein, Metsimatsho and Fika Patso Dams ..... | 13  |
| Figure 5: Fika Patso Dam Levels- 2005 to 2007 .....                      | 14  |
| Figure 6: Fika Patso Dam - River and Road infrastructure .....           | 19  |
| Figure 7: Metsimatsho Dam - River and Road infrastructure .....          | 20  |
| Figure 8: Relationship between Traditional Leaders .....                 | 21  |
| Figure 9: Management Framework .....                                     | 26  |
| Figure 10: Institutional Proposals .....                                 | 39  |
| Figure 11: Zoning Process .....  | 41  |
| Figure 12: Conceptual Zoning Plan – Fika Patso Dam .....                 | 47  |
| Figure 13: Conceptual Zoning Plan – Metsimatsho Dam .....                | 48  |

## LIST OF TABLES

|   |    |
|---|----|
| Table 1: RMP Triggers .....   | 1  |
| Table 2: Summary of Encumbrances .....                                    | 4  |
| Table 3: Water Resource Details .....                                     | 10 |
| Table 4: Water Quality Objectives - Elands River Below Qwa-Qwa .....      | 11 |
| Table 5: DEAT funded poverty relief projects - Metsimatsho Dam .....      | 17 |
| Table 6: Biodiversity .....   | 27 |
| Table 7: Alien Invasive Vegetation .....                                  | 29 |
| Table 8: Water Quality .....  | 30 |
| Table 9: Cultural Heritage Resource Management .....                      | 32 |
| Table 10: Public Access, Use and Development .....                        | 33 |
| Table 11: Physical Carrying Capacity .....                                | 34 |
| Table 12: Aquaculture .....   | 35 |
| Table 13: Infrastructure and Services .....                               | 36 |
| Table 14: Local Economic Development .....                                | 37 |
| Table 15: Institutional Arrangements .....                                | 38 |
| Table 16: Conceptual Zoning Plans .....                                   | 41 |
| Table 17: Level Data .....  | 42 |
| Table 18: Safety and Security Zone: Fika Patso and Metsimatsho Dams ..... | 43 |
| Table 19: Low Impact Activity Zone: Fika Patso Dam .....                  | 43 |
| Table 20: Low Impact Activity Zones: Metsimatsho Dam .....                | 44 |
| Table 21: Conservation Zones: Fika Patso and Metsimatsho Dams .....       | 44 |
| Table 22: Waterfront Zones .....  | 45 |
| Table 23: Consolidated Action Project List .....                          | 49 |

## LIST OF ACRONYMS AND ABBREVIATIONS

|                   |  |
|-------------------|--|
| BBBEE             | Broad Based Black Economic Empowerment                             |
| BEE               | Black Economic Empowerment   |
| DoA               | Department of Agriculture  |
| DEAT              | Department of Environmental Affairs and Tourism                    |
| DLA               | Department of Land Affairs   |
| DPLG              | Department of Provincial and Local Government                      |
| DPW               | Department of Public Works   |
| DST               | Department of Science and Technology                               |
| DWAF <sup>1</sup> | Department of Water Affairs and Forestry                           |
| ECA               | Environment Conservation Act (Act No. 73 of 1989)                  |
| EIA               | Environmental Impact Assessment                                    |
| EMP               | Environmental Management Plan                                      |
| EMS               | Environmental Management System                                    |
| FSDTEEA           | Free State Department of Tourism, Environment and Economic Affairs |
| I&AP              | Interested and Affected Party                                      |
| IDP               | Integrated Development Plan  |
| IGF               | Intergovernmental Forum  |
| IRFA              | Intergovernmental Relations Framework Act (Act No. 13 of 2005)     |
| KPA               | Key Performance Area   |
| LED               | Local Economic Development   |
| MAP               | Maluti-a-Phofung   |
| MFMA              | Municipal Finance Management Act                                   |
| NEMA              | National Environmental Management Act (Act No. 107 of 1998)        |
| NHRA              | National Heritage Resources Act (Act No. 25 of 1999)               |
| NGO               | Non-Governmental Organisation                                      |
| NWA               | National Water Act (Act No. 36 of 1998)                            |
| PFMA              | Public Finance Management Act (Act No. 1 of 1999)                  |
| PPP               | Public Private Partnership   |

---

<sup>1</sup> Some functions and responsibilities may be delegated to the proposed South African National Water Resources Infrastructure Agency.

|       |   |
|-------|---|
| RMP   | Resource Management Plan                |
| ROD   | Record of Decision                      |
| SAHRA | South African Heritage Resources Agency |
| SDF   | Spatial Development Framework           |
| SPC   | Strategic Plan for Commercialisation    |
| TTT   | Technical Task Team                     |
| WMA   | Water Management Area                   |
| WWTW  | Waste Water Treatment Works             |

# 1. THE PLACE

## 1.1 INTRODUCTION

The Minister of the DWAF, as the public trustee of the nation's water resources, must through the department ensure that Fika Patso and Metsimatsho Dam basins are inter alia protected and managed in a sustainable and equitable manner, for the benefit of all persons and in accordance with her constitutional mandate (see NWA, section 3).

The decision to undertake the compilation of a RMP for Fika Patso and Metsimatsho Dams was triggered by various factors summarised in Table 1.

Table 1: RMP Triggers

|   |
|---|
| <b>Water Quality</b>  |
| 80% of MAP Local Municipality's potable water is supplied by Fika Patso Dam while the remaining 20% is supplied by Metsimatsho Dam. DWAF is aware of several development and utilisation applications that have been submitted to FSDTEEA. DEAT has poverty relief programs planned for the dams and land surrounding the dams, such as aquaculture projects and a hotel at Metsimatsho Dam. Active management of the proposed developments are necessary to ensure that the water quality is maintained to provide potable water to Qwa-Qwa. It is hence essential that the environmental constraints in relation to utilisation and development are thoroughly investigated and stipulated. |
| <b>Water resource conservation value</b>  |
| Both water resources have conservation value and it is essential that the resources are effectively and efficiently managed. The RMP, together with DWAF's Geographic Decision Support System will provide resource managers with a platform to effectively and efficiently manage these water resources.   |
| <b>Zoning Plans</b>   |
| An integral component of water resource management is the development of new zoning plans of the water resources. The current zoning plans compiled for the dams are outdated and due for review.   |
| <b>Recreational Industry Involvement</b>  |
| It is essential that DWAF and other State Departments create an environment that is conducive to controlled commercial development. There were requests for development and such development has the potential for revenue generation as well as the promotion of job creation, black economic empowerment and local community participation.   |
| <b>Community Participation and Beneficiation</b>  |
| As part of the RMP, an institutional plan has been developed. This plan proposes an institutional structure for the management of the water resources and implementation of the RMP. The proposed formal structure will ensure that local communities have access to the water-based economy of the dams as well as the non-commercial recreational use of the dams.  |

In an effort to ensure that the biodiversity and resources of Fika Patso and Metsimatsho Dams are protected, used, developed, conserved, managed and controlled in a

sustainable and appropriate manner, and to ensure that the access to and use of the dams and surrounding land is equitable, the DWAF commissioned the compilation of an integrated RMP for Fika Patso and Metsimatsho Dams.

DWAF has appointed Vela VKE Consulting Engineers, supported by sub-consultants Exigent Engineering Consultants and Memani Consulting to compile a RMP for Fika Patso and Metsimatsho Dams (DWAF Project 2006-303).

The procedure applied during the planning process was designed and based on the Draft Guidelines for the Compilation of Resource Management Plans (DWAF 2006), ensuring the involvement of all stakeholders, as well as interested and affected parties. Opportunity was provided to all participants to actively participate in the planning, discussions and compilation of the management plan, compliant to the prescripts of the NEMA as well as Chapter 3 of the Constitution of South Africa (Act No. 108 of 1996). This approach ensures all-inclusiveness, transparency and builds trusts among all participants. Refer to Appendix A for a stakeholder list.

The purpose of the RMP for Fika Patso and Metsimatsho Dams is to ensure the attainment of the NWA Section 2 objectives, including that:

- access to water is equitable;
- past gender and racial discrimination is redressed;
- the utilisation of the water is efficient, sustainable and beneficial;
- social and economic development is facilitated;
- provision is made for the growing demand for water use, in particular the use of water for recreational purposes;
- both the aquatic and associated ecosystems, inclusive of their biodiversity, are protected;
- pollution and degradation of the water resource is reduced and prevented;
- international obligations can be met;
- dam safety is promoted, and
- a suitable institution to implement the RMP is proposed that is representative of the stakeholders and host community of Fika Patso and Metsimatsho Dams, both in racial and gender terms.

The aim thus of the Fika Patso and Metsimatsho Dams' RMP is to provide a broad policy framework, setting out key objectives, defining responsibilities and operational guidelines for sustainable management and development of the water resources and surrounding State owned land. As a planning tool the management authority<sup>2</sup> for Fika Patso and Metsimatsho Dams will use this plan for decision-making purposes, as well as an awareness tool for staff, neighbours and water users as to the vision and operational guidelines of the dams.

Additionally, the RMP for Fika Patso and Metsimatsho Dams will serve as regulation in terms of Section 26 and guide the management authority in its provision of general access to and use of the dams, while DWAF will be responsible and accountable for specific approvals such as water use authorisations; PPPs and management contracts.

The intention is also that the Fika Patso and Metsimatsho Dams RMP informs and is incorporated into the IDP process of the local and district municipalities as well as

---

<sup>2</sup> The management authority is an institution that is delegated the responsibility for managing recreational water use based on the RMP and associated Recreational Water Use Policy. KPA4 in section 3 of this document provides further detail regarding the management authority.



provincial and national planning frameworks. The RMP could serve as a management area plan, ensuring that development objectives are attained in a sustainable and co-operative manner; including projects such as the proposed DEAT poverty relief projects.

## 1.2 PURPOSE, SIGNIFICANCE AND CHALLENGES

### 1.2.1 Purpose and Significance of Fika Patso and Metsimatsho Dams

Fika Patso and Metsimatsho Dams were initially constructed for the storage of water and supply of potable water (DWAf 2006a, Chris Wilcock *pers. comm* 2007) to the densely populated Qwa-Qwa region.

Metsimatsho Dam, previously called Swartwater Dam, currently provides 20% of potable water to the MAP Local Municipality. Fika Patso Dam supplies 80% of potable water to Qwa-Qwa region (Chris Wilcock *pers. comm* 2007).

Because of the pristine environment both dams are being targeted for commercialisation in the form of aquaculture as well as for tourism development.

### 1.2.2 Challenges at Fika Patso and Metsimatsho Dams

Sustainability is a term that is often used, yet seldom understood in terms of its complexity and implications and is the overarching challenge facing the management authority of Fika Patso and Metsimatsho Dams. Without focus on sustainability, the dams will never reach their optimal potential nor contribute to the attainment of the objectives set out in the RMP and applicable legislation such as the NWA. Through the protection and sustainable utilisation of the resources of Fika Patso and Metsimatsho Dams, it is believed that substantial financial, social and environmental benefits could be generated, making the management thereof both meaningful and viable.

The following broad encumbrances, as listed in Table 2, exist and will have to be overcome in the planning and operation of the RMP:

Table 2: Summary of Encumbrances

| Encumbrance                                 | Description   |
|---|---|
| Safety Risks                                | The topography poses high safety risks regarding access to the dams, especially at Fika Patso Dam.                                  |
| Biophysical                                 | Lack of data on water quality.  |
| Species of Concern                          | Red Data listed species may occur at sites identified for proposed developments.  |
| Environmental Impact Assessment Regulations | Certain activities require authorisation, which will lead to a regularisation process for proposed projects being undertaken.       |
| Cooperative governance                      | In order to undertake an activity, the proposed activity must comply with all pieces of legislation. This may be a cumbersome task. |
| Political                                   | The relationship between the local government and the traditional leaders might result in setbacks for future development.          |
| Community Expectations                      | Benefits emanating from tourism and agriculture are expected from surrounding traditional communities.                              |

## 1.3 ADMINISTRATIVE AND LEGAL FRAMEWORK

### 1.3.1 Administrative

The NWA recognises the use of water for recreational purposes as a water use and provides the legislative framework enabling the Minister of DWAF, as custodian of the water resources, to ensure that Fika Patso and Metsimatsho Dams are protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner, for the benefit of all the people and users and in accordance with its constitutional mandate.

### 1.3.2 Legal Requirements

The principles underlying the RMP for Fika Patso and Metsimatsho Dams are based on general principles guiding the attainment of sustainability – sound resource management; equitable and appropriate community involvement and beneficiation; the creation of viable and sustainable business opportunities, and clear policies, objectives and operational guidelines.

A legal survey illustrated that within the South African context, ensuring compliance with relevant legislation is pivotal to the attainment of sustainability. At Fika Patso and Metsimatsho Dams, not only the NWA is applicable, and is it imperative that all actions are compliant with relevant legislation, regulations and planning frameworks such as:

- **National Water Act:** The National Water Act recognises that water is a scarce resource: it is a natural resource that belongs to all of South Africa's people. The National Government is responsible for the nation's water resources and their use, which the ultimate aim of water resource management is to achieve sustainable utilization of water.
- **National Environmental Management Act:** The principles underpinning environmental management contained in the National Environmental Management Act, must be taken into account by any organ of state in the exercise of any power that may impact on the environment.
- **National Environmental Management: Biodiversity Act:** The aim of this act is to provide for the management of South Africa's biodiversity with NEMA's framework.
- **National Environmental Management: Protected Areas Act:** The Protected Areas Act provides for the protection and conservation of ecologically viable areas, which are representative of South Africa's diversity, as well as natural landscapes and seascapes.
- **Conservation of Agricultural Resources Act:** Regulations 7 and 8 deals with the protection of wetlands and water courses, while regulations 15 and 16 deals with invasive plant species and bush encroachment.
- **Convention of Biological Diversity:** South Africa is a signatory of the Convention on Biological Diversity, and therefore has a duty to conserve and rehabilitate biological resources which are considered important for the conservation of biological diversity.
- **Species of Concern:** The IUCN has a system in place which classifies species as threatened. Threatened species are those that are in danger of becoming extinct and the protection of these species is vital.
- **Environmental Impact Assessment Regulations:** The process required for obtaining environmental authorization in terms of the National Environmental Management Act involves one of two pathways. Depending on the regulation the

activity is listed under, the authorization process will either follow the Basic Assessment Process or the Scoping/Environmental Impact Assessment Process.

- **Operational Policy Document on Using Water for Recreational Purposes:** This policy is the main guideline in support of the RMP process with regards to the basic principles, policy, strategies and actions for regulating the use of water for recreational purposes.
- **Guidelines for the Compilation of Zoning Plans for Government Waterworks:** The Policy is a framework policy designed to establish the objectives and principles regarding the recreational water use of government waterworks as well as the various tools for policy implementation.
- **Decision Support System for the Policy on Development at State Dams:** Uncontrolled development increasingly takes place at Government Dams, which affects the operation of the dams in respect of the yield, water quality and safety and places the Department at risk to claims for damages and loss of life.
- **Merchant Shipping (National Small Vessel Safety) Regulations, 2007:** The Department of Transport has published the said regulations during August 2007, to regulate inland motor vessels, regarding aspects such as classification, vessel safety and certification, authorization, enforcement etc.
- **National Treasury PPP Toolkit for Tourism (December 2005):** This toolkit is to assist the process of development of tourism-based businesses on state-owned land. The Toolkit should make it easier for institutions and the private sector to enter into tourism-related partnerships on state property managed by national and provincial government institutions.
- **General Public Participation Guidelines:** Public participation refers to the ongoing interaction between role-players, such as interested and affected parties, stakeholders and compliance organisations in order to achieve informed decision making during the RMP process.
- **Considerations on the Institutional Arrangements for Managing Use of Water for Recreational Purposes:** This paper outlines some of the institutional issues at a local level and makes recommendations about the conditions under which different institutional management arrangements may be considered.
- **Methodology for Carrying Capacity Assessment for the Use of Water for Recreational Purposes (April 2003):** The carrying capacity of a water resource represents the maximum level of visitor/recreational use and related infrastructure that the water resource and surrounding area can accommodate, without diminishing user satisfaction or adverse impacts upon the local or host community, the economy and culture of the area.
- **National Water Resource Strategy:** The First Edition of the National Water Resource Strategy (NWRS) describes how the water resources of South Africa will be protected, used, developed, conserved, managed and controlled in accordance with the requirements of the policy and law. The central objective of managing water resources is to ensure that water is used to support equitable and sustainable social and economic transformation and development.
- **Government Notice R 654 of 1964:** Regulations framed in terms of paragraph the Water Act, 1956 (Act No. 54 of 1956) to regulate access and use of government waterworks for recreational purposes.

The RMP process also takes cognizance of the following legislation:

- Broad-based Black Economic Empowerment Act (Act No. 53 of 2003).
- Communal Land Rights Act (Act No. 11 of 2004)
- The Constitution of South Africa (Act No. 108 of 1996).
- Department of Water Affairs and Forestry: Authorisation Protocol on the Use of Water for Aquaculture (Draft: November 2006).

- Department of Water Affairs and Forestry: Guideline for Authorising the Use of Water For Aquaculture (Draft: March 2007),
- Development Facilitation Act (Act No. 67 of 1995),
- Environmental Conservation Act (Act No. 73 of 1989),
- Free State: State of the Environment Report,
- Intergovernmental Relations Framework Act (Act No. 13 of 2005),
- Land Administration Act, 1995 (Act 2 of 1995),
- Local Government: Municipal Systems Act (Act No. 32 of 2000),
- National Heritage Resources Act (Act No. 25 of 1999),
- Human Tissue Act (Act 65 of 1983 as amended),
- Intergovernmental Relations Framework Act, 2005 (Act 13 of 2005),
- Disaster Management Act (Act No. 57 of 2002),
- Merchant Shipping Act, 1951 (Act no. 57 of 1951) – National Small Vessel Safety Regulations (2007),
- Municipal By-laws,
- Municipal Demarcation Act (Act No. 27 of 1998), especially Sections 24 and 25,
- Municipal Finance Management Act (Act no. 56 of 2003),
- Municipal Systems Act (Act No. 32 of 2000),
- Municipal Structures Act (Act No. 117 of 1998),
- National Heritage Resources Act (Act No. 25 of 1999),
- Occupational Health and Safety Act (Act No. 85 of 1993),
- Policy for the Development of a Sustainable Freshwater Aquaculture Sector in South Africa,
- Public Finance Management Act (Act No. 1 of 1999),
- Relevant Integrated Development Plans (Thabo Mofutsanyana District Municipality's IDP; Maluti-a-Phofung Local Municipality's IDP),
- Restitution of Land Rights Act (Act No. 22 of 1994),
- State Land Disposal Act (Act No 48 of 1961),
- Traditional Leadership and Governance Framework Act (Act No. 41 of 2003),
- Water Services Act (Act No. 108 of 1997).

Not only do these Acts, regulations and frameworks guide specific decisions and actions, they also provide the framework for monitoring performance and compliance, and provide guidelines regarding contravention, offences and penalties. This list is not exhaustive and other legislation could be applicable.

### **1.3.3 Regional Planning Concepts**

Fika Patso and Metsimatsho Dams fall within the jurisdiction of the MAP Local Municipality and Thabo Mofutsanyane District Municipality. There are also four tribal/traditional community structures in the vicinity of the dams, details of which can be found in 'THE PEOPLE' section of this document.

National legislation has the highest priority, followed by provincial and then the local government. Traditional leaders play a role in South Africa, especially within the Qwa-Qwa area. The Traditional Leadership and Governance Framework Act (Act No. 41 of 2003) states that the institution of traditional leadership must be transformed to be in harmony with the government as to ensure democratic governance as well as gender equality within the institution.

Fika Patso and Metsimatsho Dams are also the focus of three DEAT funded poverty relief projects and the DoA/DST/DWAF aquaculture initiative.

From the above, it is clear that the necessary linkages must be established with relevant local, provincial and national government departments. The RMP must inform and be incorporated into local, provincial and national planning frameworks.

#### **1.4 BACKGROUND TO FIKA PATSO AND METSIMATSHO DAMS**

A comprehensive Research Report has been prepared during the RMP Process and has been reviewed during the Research Phase of this process. Provided below is a summary of this information.

Fika Patso and Metsimatsho Dams are located in the Qwa-Qwa district (previously known as Witsieshoek) in the eastern Free State, south east of the town of Phuthaditjhaba. This area is located west of KwaZulu-Natal and north of Lesotho. Qwa-Qwa is located approximately 45 km southwest of Harrismith and 30 km south east of the town Kestell.

Qwa-Qwa has a rural setting, where villages are remotely located and are connected to the core by a system of rudimentary roads. People in this area rely on small-scale subsistence farming and the population density is low (MAP Local Municipality IDP 2007/2008). Both dams are located within the jurisdiction of the MAP Local Municipality which is in turn within the jurisdiction of Thabo Mofutsanyane District Municipality. Census 2001 data indicates that within the MAP Local Municipality boundaries, the total population is approximately 360 790. The ethnic profile indicates that of the 360 790 people, 98,51% are black, 0,12% are coloured, 0,11% are Asian and 1,26% are white.

Fika Patso and Metsimatsho Dams were initially constructed for the storage of water and supply of potable water (DWAF 2006a, Chris Wilcock *pers. comm* 2007). Fika Patso Dam supplies 80% of potable water to the Qwa-Qwa region. Previously, water was treated by chlorination. However, the water is currently only stabilised and disinfected. Filtration is planned due to the occasional high turbidity. There are plans to upgrade the Fika Patso WWTW to a full conventional WWTW in approximately 2-3 years.

Metsimatsho Dam, previously called Swartwater Dam, currently provides 20% of potable water to the MAP Local Municipality. Since 1978 a filter system was in place at the dam. Currently there is Makwane Water Treatment Works at Makwane Village, downstream of the dam. The local communities utilise the dam for fishing and drinking water for their livestock (MAP Water Official *pers. com* 2007).

##### **1.4.1 Bio-physical**

###### **1.4.1.1 Topography**

The topography of the Qwa-Qwa region is mostly steep slopes of the Drakensberg and Maloti mountain ranges. Both dams are elevated higher than 1 800m above sea level. Due to the steepness of the slopes surrounding Fika Patso Dam and near the dam wall of Metsimatsho Dam, construction costs for bulk services such as road infrastructure, electricity and sewage for potential future developments and tourist facilities will be relatively high. The slopes along the upper reaches of Metsimatsho Dam and along the western boundaries of the dam are slightly gentler, providing potential areas for recreational and or tourist facilities.

#### **1.4.1.2 Geology and Erodeable Soils**

The dams are located within the Karoo Sequence, Drakensberg Formation. This formation's rocks cap the highlands of Lesotho and the neighbouring areas. Fika Patso dam's geology consists of arenite, basalt and mudstone and Metsimatsho Dam arenite and basalt.

A number of small terraces occur on the slopes surrounding the dams. These terraces are formed by the freezing of the top layer of soil in winter, causing the soil structure to change. This weakens the stability of the soil and the top layer (subjected to freezing) slips down slope (Bredenkamp pers. com, 2007). These terraces increase the possibility of erosion around the dam and further limit development potential within these areas. There is existing evidence of soil erosion on the slopes surrounding both dams. This may be aggravated by overgrazing and future activities surrounding the dams. Erosion on the slopes will eventually contribute to sedimentation within the dams, which could influence the water quality of the dams.

#### **1.4.1.3 Loss of Vegetation and Centre of Endemism**

Fika Patso and Metsimatsho Dams are located within the Northern Drakensberg Highland Grassland (Mucina and Rutherford, 2006) and also within the Drakensberg Alpine Center of plant endemism. Van Wyk and Smith (2001) have classified the entire mountainous area above 1 800m as being part of the Drakensberg Alpine Centre. Even though the Northern Drakensberg Highland Grassland is considered least threatened, the dams and surrounding vegetation are considered as areas having a high biodiversity and a high number of endemic species. Conservation of this area is therefore very important for biodiversity planning. The wetlands surrounding the Metsimatsho Dam further increase the conservation value of the surrounding vegetation and these wetlands should be delineated to ensure that all the proposed activities stay outside the buffer zone of the temporary zone of the wetlands. Proposed activities such as construction of resorts and lodges will result in loss of vegetation and ultimately biodiversity. These activities could have a high impact on the potential red data listed species. It is recommended that adequate ecological and wetland studies by specialists should be conducted to determine the occurrence of any red listed flora and fauna species.

#### **1.4.1.4 Problem Plants**

According to Mucina and Rutherford (2006), alien plant invasions are generally localised, but can be severe. Some important problem species that is found in this vegetation type include: *Acacia dealbata*, *A. mearnsii*, *Hypericum perforatum*, *Pinus patula*, *Populus canescens*, *Pyracantha angustifolia*, *P. crenulata*, *Robinia pseudoacacia*, *Rubus cuneifolius* and *Salix fragilis*.

*Acacia mearnsii* (Category 2: Declared invader plant) was observed at both dams during site visits. When activities are planned surrounding the dams, care should be taken to prevent further alien infestations.

### **1.4.2 Hydrological Information**

#### **1.4.3 Water Sources**

Both dams are located with the Quaternary Catchment C81F, as illustrated in Figure 3. Fika Patso Dam was constructed within the Namahadi River and Metsimatsho Dam was

built in the Metsimatsho stream. Due to the steep slopes in the Qwa-Qwa region run-off water concentrates in streams and water courses, and eventually ends up in the Wilge River and Upper-Vaal system. Water can only be abstracted via the outlets of the dam walls; and the potential for ground water as a primary water source in this region is low. Ground water is also limited due to the scattered dolerite dykes (MAP Local Municipality & Miletus Consulting Engineers, 2006).

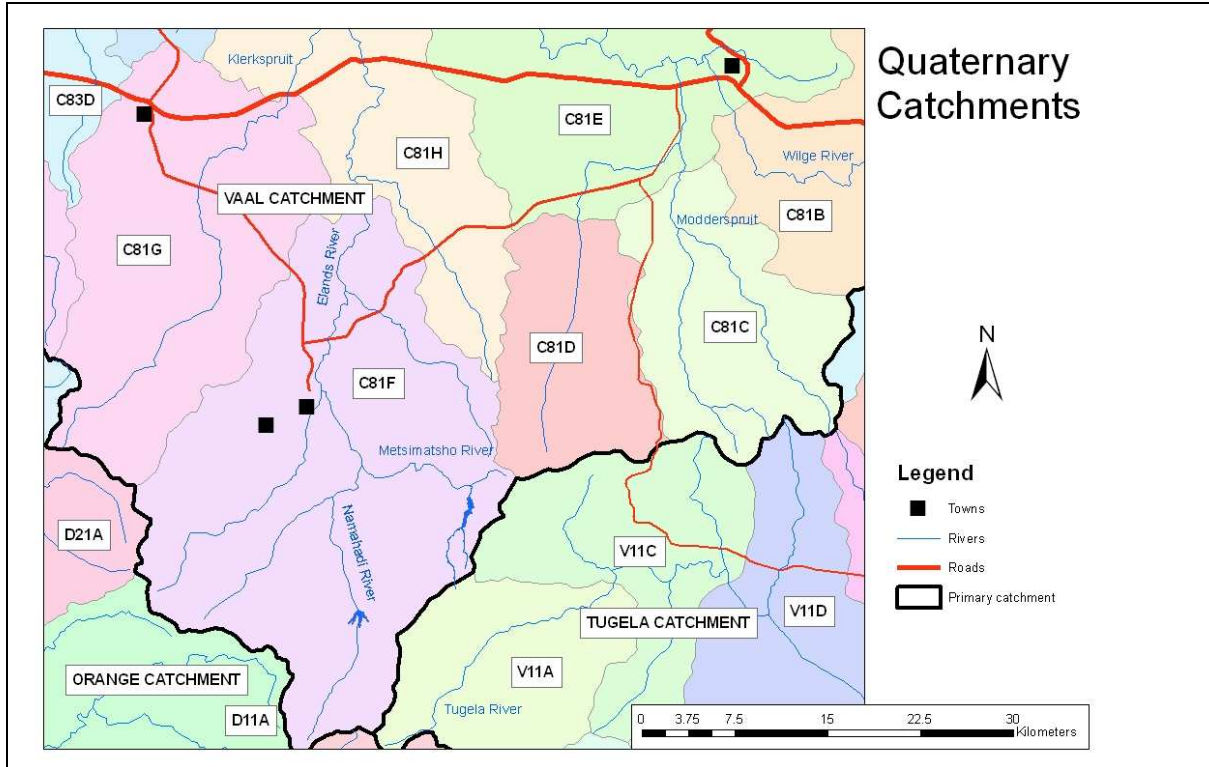


Figure 3: Quaternary Catchments of the Area

The Namahadi River flows into Fika Patso Dam and the Metsimatsho River flows into Metsimatsho Dam. Details of the water resources are included in Table 3.

Table 3: Water Resource Details

| Name of dam     | Capacity (m <sup>3</sup> ) | Catchment area (km <sup>2</sup> ) | Mean annual run-off (m <sup>3</sup> ) | Assured yield (m <sup>3</sup> /year) | Top water level (m.a.s.l) |
|-----------------|----------------------------|-----------------------------------|---------------------------------------|--------------------------------------|---------------------------|
| Fika Patso Dam  | 28 million                 | 650                               | 39,1 million                          | 23,5 million                         | 1 868                     |
| Metsimatsho Dam | 4,5 million                | 146                               | 4,85 million                          | 2,95 million                         | 1 855                     |

Source: MAP Local Municipality & Miletus Consulting Engineers, 2006.

#### 1.4.3.1 Water Quality

Limited water quality data was available at the time of compilation of this report.

During June 2007 the pH for Fika Patso Dam was 8.8 (slightly alkaline) indicating the following:



- Slightly above water quality range for Aquatic Ecosystems. According to the SA water Quality Guidelines an un-impacted system will have a pH value of between 6 – 8 (DWAF, 1996b, South African Water Quality Guidelines (second edition), Volume 7 Aquatic Ecosystems);
- Within target water quality range for Domestic Use (6.0 - 9.0). Water Quality Guidelines for Domestic Use (DWAF, 1996e. South African Water Quality Guidelines (second edition) Volume 1; and
- Slightly above the target water quality range for recreational use (6.5 – 8.5). However, safe for full contact recreational use.

During June 2007, the pH for Metsimatsho Dam was 7.46, which implies the following:

- Within the water quality range for Aquatic Ecosystems. According to the SA Water Quality Guidelines an un-impacted system will have a pH value of between 6 – 8 (DWAF, 1996b, South African Water Quality Guidelines (second edition), Volume 7 Aquatic Ecosystems);
- Within target water quality range for Domestic Use (6.0 - 9.0). Water Quality Guidelines for Domestic Use (DWAF, 1996e. South African water Quality Guidelines (second edition) Volume 1; and

The water quality objectives for this catchment follow those of the Wilge River Catchment and are indicated in Table 4 below.

Table 4: Water Quality Objectives - Elands River Below Qwa-Qwa

| Variable<br>Abbreviation | Units    | Limit name  | Value |
|--------------------------|----------|-------------|-------|
| pH-Diss-Water            | pH units | Lower Limit | 6.4   |
| pH-Diss-Water            | pH units | Upper Limit | 8.5   |
| NH4-N-Diss-Water         | mg/L     | Upper Limit | 0.05  |
| F-Diss-Water             | mg/L     | Upper Limit | 0.05  |
| PO4-P-Diss-Water         | mg/L     | Upper Limit | 0.05  |
| SO4-Diss-Water           | mg/L     | Upper Limit | 5     |
| Cl-Diss-Water            | mg/L     | Upper Limit | 5     |
| EC-Phys-Water            | mS/m     | Upper Limit | 10    |
| COD                      | mg/L     | Upper Limit | 5     |
| HCO3-Diss-Water          | Mg/g     | Upper Limit | 30    |
| NO3-N-Diss-Water         | mg/L     | Upper Limit | 0.25  |

Source: DWAF 2007.

The raw water quality of both dams is good and variation is minimal during the year. The pH of the raw water is within the standards of SABS 241 (MAP Local Municipality & Miletus Consulting Engineers, 2006).

### **1.4.3.2 Sterkfontein Dam Water Supply Scheme – Water Master Plan**

Fika Patso Dam supplies 80% and Metsimatsho Dam 20% of potable water to the MAP Local Municipality (Chris Wilcock pers. com 2007). There is no alternative source for bulk water for the Qwa-Qwa region. Fika Patso WWTW and Makwane WWTW can only meet the current average annual daily demands of 41.50 Mℓ/day for this region, with the assumption that the water levels are high enough. During the winter months of 2004/05 and 2005/06 the levels at Fika Patso Dam were below 50% capacity and water restrictions for this area had to be implemented (MAP Local Municipality & Miletus Consulting Engineers, 2006).

A feasibility study was conducted to determine possible alternative water sources and the most feasible was found to be the Sterkfontein-Qwa-Qwa Water Supply Scheme. This scheme will assist in providing potable water to the northern parts of Qwa-Qwa region. It will primarily provide water for residential use, especially for the new residential developments and still expanding residential areas including Bluegum Bosch, Mphatlatatsane, Phuthaditihaba and Kestell (MAP Local Municipality & Miletus Consulting Engineers, 2006). Fika Patso Dam will remain the primary water source for the southern, central and western rural areas of Qwa-Qwa (Dries Lategan pers. com 2007). Figure 4 indicates the locality of the Sterkfontein Dam in relation to Metsimatsho Dam and Fika Patso Dam.

The other activities planned to implement the scheme are the construction of supply pipelines between Sterkfontein Dam and the northern regions of Qwa-Qwa. The time it will take to set the new supply system into place poses a constraint on the water quantity being supplied to Qwa-Qwa. To optimise the supply from Metsimatsho Dam, an additional gravity main from the dam to Makwane WWTW is proposed and the capacity of the treatment plant will therefore have to be increased. The aim is that Metsimatsho Dam should remain the primary water source for the eastern rural areas of Qwa-Qwa (Dries Lategan pers. com 2007). .

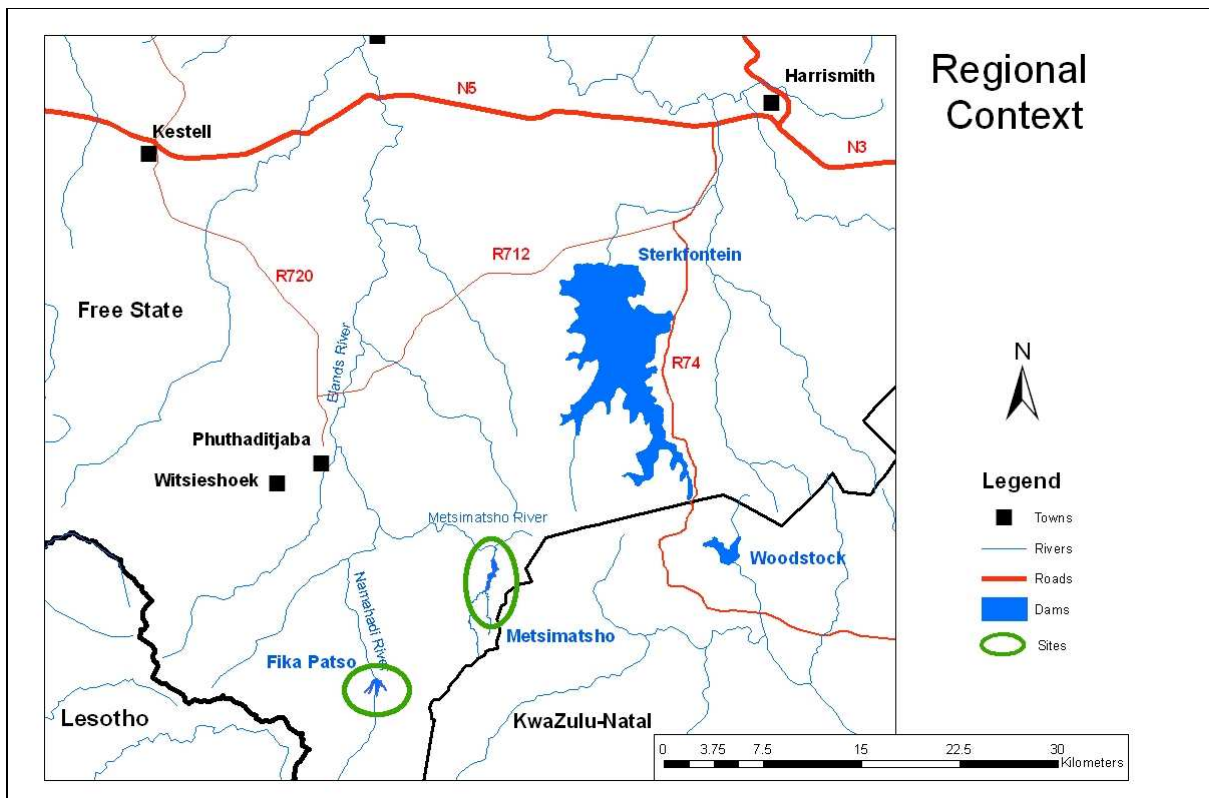


Figure 4: Locality - Sterkfontein, Metsimatsho and Fika Patso Dams

#### 1.4.3.3 Water Treatment

DWAF is the custodian of both dams but the water service provider for this area is MAP Water who is responsible for the water and sanitation services in the MAP Local Municipality.

Currently no water sampling or testing is taking place at Fika Patso Dam.

Water samples are taken twice a week up- and downstream of Metsimatsho Dam. The Tuesday and Thursday samples are taken to a registered laboratory to determine the levels of PO<sub>4</sub> (Phosphates), NO<sub>3</sub> (Nitrates), NH<sub>4</sub> (Ammonia), PH, EC (Solids), COD of Dissolved Oxygen and VOC (Volatile Organic Compounds). A monthly summarised report of the status of the water quality is prepared at MAP Water.

The raw water from Fika Patso Dam is treated at the Fika Patso WWTW at a capacity of 36.2 Ml/day through stabilisation and disinfection. Filtration is planned due to the occasional high turbidity caused during high inflow into the dam. There are plans to upgrade the Fika Patso WWTW to a full conventional WWTW in approximately 2-3 years from the compilation of the report.

Water from Metsimatsho Dam is treated at Makwane WWTW at a capacity rate of 5.1 Ml/day. The treatment for raw water from Metsimatsho Dam includes flocculation, flotation, filtration (sand), chlorination and stabilization with lime stone (Sylvia Tshivhunge *pers. comm* 2008). The water is effectively treated and the purified water complies with Class I water. Both dams are however very vulnerable to deterioration. If the water quality of Metsimatsho Dam deteriorates the treatment process might not be able to produce SANS 241 compliant water. This poses a constraint for future proposed activities such as aquaculture.

The water treatment capacities at both dams are however not adequate for the Qwa-Qwa region, especially during winter months (Maluti-a-Phofung Local Municipality & Miletus Consulting Engineers, 2006). Fika Patso and Metsimatsho Dam have a total capacity of 32 500 Mℓ when the dams are at full capacity. The daily average use for the Qwa-Qwa supply system was estimated in 2006 as 41.5 Mℓ/day. The total capacity of potable water supplied by Fika Patso WWTW and Makwane WWTW on a daily basis is currently only 41.3 Mℓ/day (MAP Local Municipality & Miletus Consulting Engineers, 2006).

#### 1.4.3.4 Water Levels

The water level of Fika Patso Dam varies considerably and poses a risk to the water supply of the region. The water level of the dam is measured on a weekly basis to assist in the management of the water supply of the Qwa-Qwa region. The monthly average water levels from the year 2005 until 2007 are graphically represented in Figure 5.

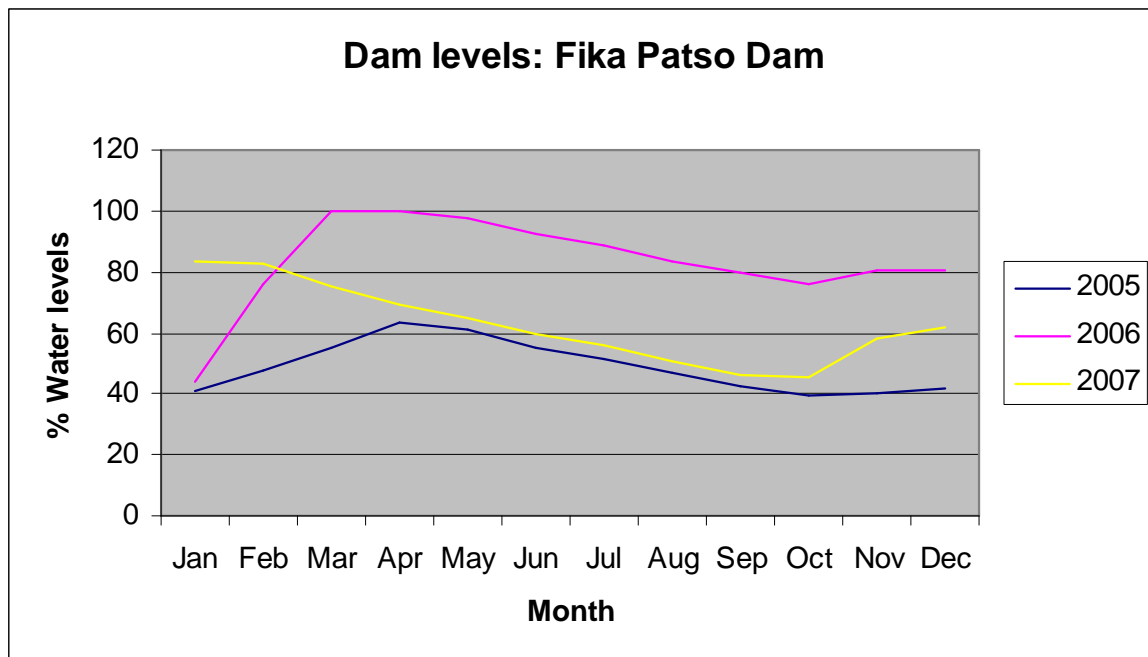


Figure 5: Fika Patso Dam Levels- 2005 to 2007

The water level of Metsimatsho Dam usually only varies between 80-100% and it does not pose a risk to the water supply of the Qwa-Qwa region. As a result, the water level of the dam is not sampled.

#### 1.4.3.5 Possible Impacts on Water Quality

The DEAT poverty relief projects proposed for Metsimatsho Dam and possible projects proposed for Fika Patso Dam provide an opportunity for the utilisation and development of the dams and surrounding areas such as aquaculture farming and a new hotel and accommodation facilities. If the proposed developments are not actively managed the water quality may deteriorate. Proposed activities such as aquaculture can cause an increase in the levels of phosphates in the water and it should be determined if the WWTW's can accommodate such changes before such projects commences. If the water quality will be influenced by the proposed activities, the implementer of such projects will be responsible for the upgrading of the WWTWs. As this may have major

implications with regards to human consumption of water from the two dams. Therefore, before any activities take place at these dams, the possible impacts on the water quality should be determined.

The water quality of Sterkfontein Dam is very high, due to the dam acting as a sedimentation tank. Small variance in the water quality is expected when the Sterkfontein-Qwa-Qwa Water Supply Scheme goes ahead and therefore the purification costs are expected to be low (MAP Local Municipality & Miletus Consulting Engineers, 2006).

#### **1.4.4 Heritage and Cultural Data**

Heritage and cultural uses of the dams could present opportunities for tourism development. An example hereof is the proposed cultural village in the vicinity. Additionally, heritage and cultural resources must be conserved and managed in accordance with the relevant legislation.

In caves surrounding the Fika Patso Dam, rock paintings have been discovered. There is a possibility that this is also the case for the caves in the Metsimatsho Dam area, however, the shepherds who are living at the entrance to the caves pose a constraint regarding tourism development.

#### **1.4.5 Socio-economic Environment**

##### **1.4.5.1 Local Economic Development**

The fact that the MAP area is rural in nature poses several challenges for socio-economic development. In terms of the IDP (2007/8), the MAP area is classified as the poorest in the Free State Province. Through public consultation during the RMP process, it became clear that many stakeholders are interested in job opportunities and skills development.

To promote socio-economic development, it is hence imperative that the true recreational potential of the dams is realised. The dams should be managed and utilised in a manner that would contribute positively to the challenges faced by the communities in the region.

##### **1.4.5.2 Proposed Initiatives**

The MAP Local Municipality states in its LED Strategy (no date) that the vision of the local municipality includes becoming a “*tourist destination*” through creating an enabling environment that provides for economic growth and employment. Several tourist opportunities have been identified, e.g. Golden Gate Highlands National Park and the N3 route passing through the local municipality.

Opportunities for job creation, poverty alleviation, beneficiation to the community at large and LED strategies can be applied. These include attracting investment into a local area, developing infrastructure and retaining existing business. Summarised below are government and private sector proposed initiatives for the area which will promote local economic development.

#### 1.4.5.2.1 Aquaculture Project Proposals

To date, the water quality and provision of potable water to the Qwa-Qwa region has been the main priority for Fika Patso and Metsimatsho Dams. The DWAF, DoA and DST are in the process of developing and implementing various aquaculture projects within South Africa. The Sterkfontein Dam has been identified as a site for a pilot study for such a project. It is envisaged that Fika Patso or Metsimatsho Dam could be utilised as a satellite study to the afore-mentioned site. The details of the proposed sites and activities have however not been finalised. It will be important to establish prior to the commencement of aquaculture activities the aquaculture carrying capacity of the dams to ensure that the water quality of the dams is not compromised.

#### 1.4.5.2.2 DEAT funded poverty relief projects

During the RMP process, it became apparent that for Metsimatsho Dam, there are three poverty relief projects funded by the DEAT. There is currently no knowledge of any such projects for Fika Patso Dam. Summarised in Table 5 are the DEAT funded poverty relief projects.

None of the proposed developments in Table 5 have received approval from DWAF for the proposed activities. Consultation with DWAF is proposed to determine which applications or licenses should be applied for.

It should also be noted that in addition to the DWAF/DoA/DST aquaculture proposals, one of the DEAT poverty relief projects also includes aquaculture. It is imperative that linkages are established between various government departments in this regard.

Table 5: DEAT funded poverty relief projects - Metsimatsho Dam

| <b>Project name</b>   | <b>DEAT ref number</b> | <b>Proposed activity</b>   | <b>Legislation and Concerns</b>  | <b>Implementer</b>                                  |
|---|------------------------|--|--|---|
| Black water Fly Fishing and Trout breeding (Aquaculture) at Metsimatsho Dam | 14/14/4/142            | Fly fishing resort and trout hatchery. Trout hatchery, annual production of less than 7 tons. Total transformed area less than 1 hectares. | EIA approval is not required if the development stays within mentioned limits. But approval should be obtained from DWAF regards to the utilisation of the dam. PPP tender must be submitted to utilise a state dam. Activities must stay outside the temporary zone of the wetlands and must comply with applicable legislation (NEMA, NWA and NHRA).                     | River Rangers Management Section 21.                |
| Maluti Thusa Bato Trail at Metsimatsho Dam                                  | 15/14/2/127            | Accommodation including 6x4 bed chalets, 1x20 bed chalet restaurant, conference and administration centre and kitchen.                     | ROD in terms of NEMA was issued on 8 May 2007 and conditions apply. Concerns were raised during the TTT meetings, that the public participation process was inadequate according NEMA Regulation 385. No application has been submitted to DWAF in terms of NWA for the usage of dam or any listed activities. Activity must also comply with NHRA in terms of Section 38. | Nambo Property & Project Manager CC t/a Nomba Mabh. |
| Accommodation facilities at Metsimatsho Dam                                 | 15/14/2/834            | Self catering accommodation, overnight accommodation and restaurant.   | The proposed site falls within the purchase line of Metsimatsho Dam and consultation with DWAF is proposed to establish a site outside the boundary. No application in terms of NEMA or NWA has been submitted. The activity must also comply with NHRA in terms of Section 38.  | Se Yana Marena Trading Enterprises CC.              |

#### 1.4.5.2.3 Cultural Village

There is a proposed Lejoaneng Cultural Village, but this proposed development falls outside the boundary line of the dam. It should however, still adhere to applicable legislation such as NEMA, NWA and NHRA. There is potential for this proposed village to utilise the dam in the future for recreational activities but currently the only vehicular access to Fika Patso Dam is within the safety and security zone of the dam which is not accessible to the general public.

#### 1.4.5.2.4 Metsimatsho Dam Resort

As part of the tourism programmes/projects, Metsimatsho Dam Resort has been identified in the local municipality's IDP. In the 2007 budget, a value of R2 million has been allocated to this project. It is stated that this facility will include accommodation facilities, hiking trails, a trout breeding facility and fly fishing. Further budget has been allocated to the grading of tourism establishments. The idea is for all tourism establishments to be graded in accordance with the requirements set down by the Tourism Grading Council. An overall budget of R100 million has been identified for the upgrading of the tourism routes to KwaZulu-Natal. The timeframe for these upgrades are during 2007 and 2008.

It is essential that DWAF is consulted with respect to authorisation for use of the dams.

### **1.4.5.3 Tourism Public Private Partnerships**

The public private partnership mechanism is an effective procurement strategy and can be utilised to engage the private sector, attract investment and simultaneously promote local economic development. Tourism PPPs can be effectively implemented through the use of National Treasury's PPP Toolkit for Tourism, ensuring poverty alleviation, skills development, BBBEE and overall local economic development within the MAP area.

### **1.4.5.4 Skills development**

The nature of bringing investment into the MAP area and implementing the programmes and projects as articulated in the Municipality's LED strategy will require investment in human capital. An investment into skills development will provide an opportunity for the unskilled and semi-skilled to participate meaningfully in the mainstream economy. Existing and potential opportunities are missed out due to lack of knowledge and information. Appropriate skills will ensure that communities are empowered to identify opportunities and have the capability to create wealth for themselves and their families.

### **1.4.5.5 Infrastructure development**

The demand for land and water based tourism around Fika Patso and Metsimatsho Dams will bring new infrastructure investment due to the topography/location of the dams. Without the necessary infrastructure the proposed developments for the dams will not reach its full potential.

#### FIKA PATSO DAM

There is a need for infrastructure such as roads, telecommunications, electricity, sewerage and water to be developed for land based tourism to be viable. However, steep slopes around the dam provide limited opportunities for the development of land based tourism. The only people that currently walk the steep slopes are shepherds who



mind livestock. The only access road to the dam leads to the dam wall which is a security area where public access is not allowed. Illustrated in Figure 6 below is the road and river infrastructure surrounding the dam.

To develop walking trails to visit the caves which are in awkward steep slopes will require capital investments in infrastructure.

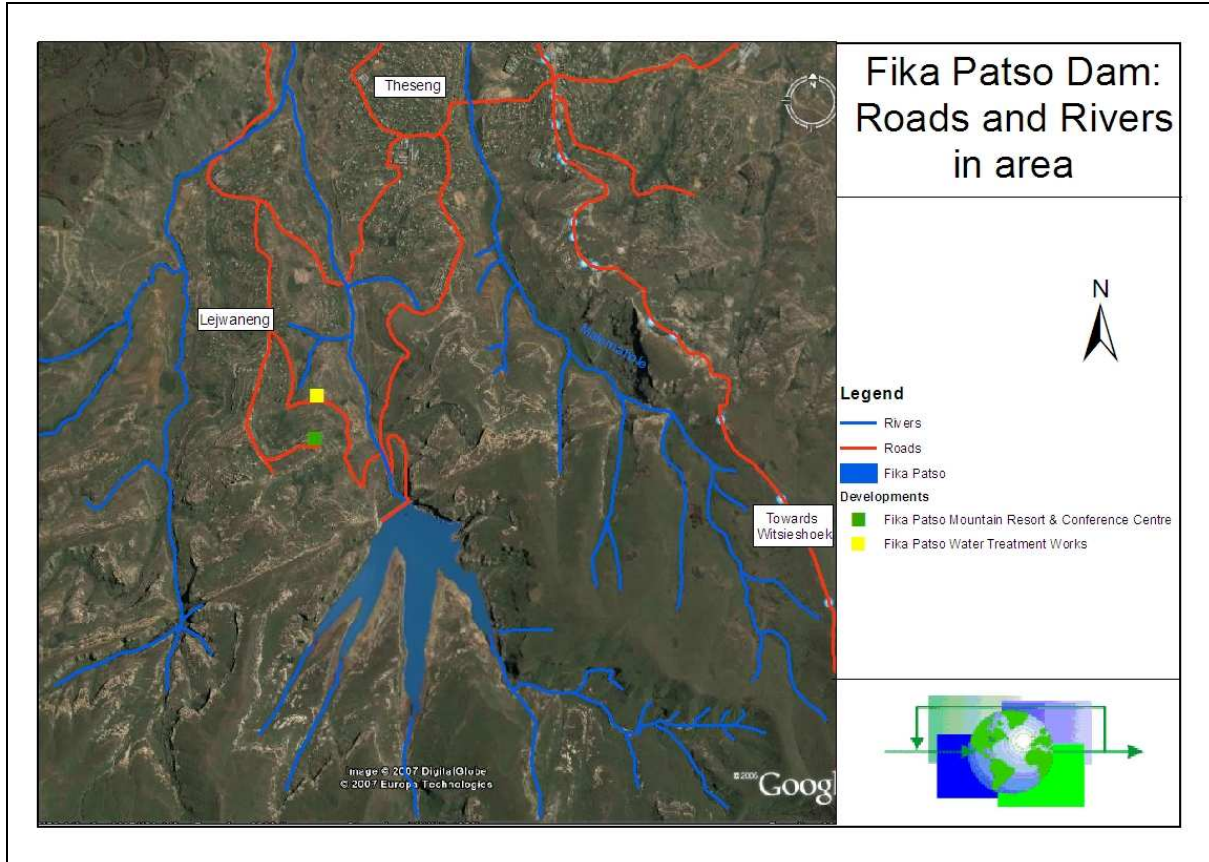


Figure 6: Fika Patso Dam - River and Road infrastructure

### METSIMATSHO DAM

Similar to Fika Patso Dam, road upgrades and construction of infrastructure will be needed for potential developments around the Metsimatsho Dam to be fully realised. Currently the dam is only accessible from the western side as no infrastructure is available on the eastern side of the dam. The possibility for the construction of infrastructure on the eastern side of the dam is slim due to the wetlands and steep slopes. Illustrated in Figure 7 is the road and river infrastructure surrounding the dam.

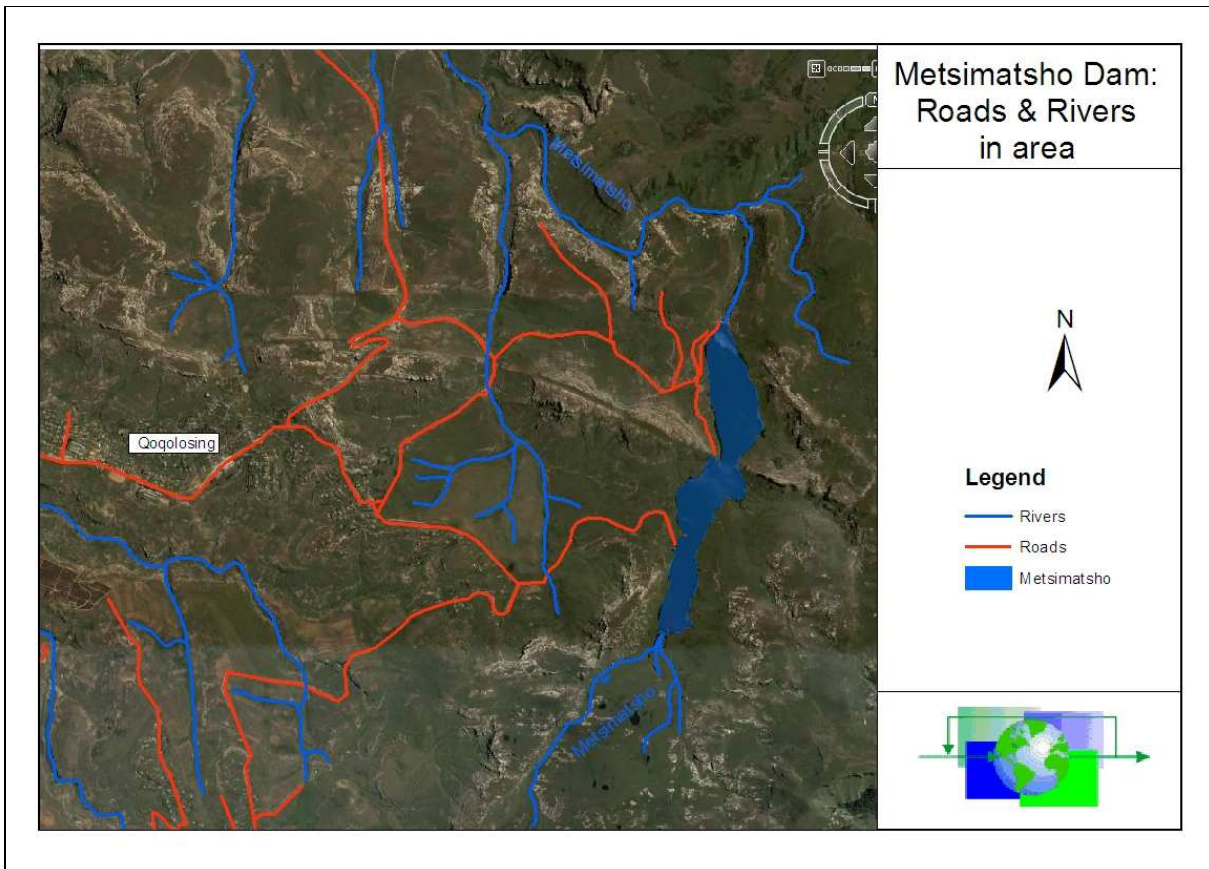


Figure 7: Metsimatsho Dam - River and Road infrastructure

## 2. THE PEOPLE

### 2.1 Current Institutional and Operational Arrangements

Fika Patso and Metsimatsho Dams fall within the jurisdiction of the MAP Local Municipality and Thabo Mofutsanyane District Municipality. In areas adjacent to the dams, there are also traditional community structures in place. Thaba-Tsoeu and Thibella Tribal Councils are operational in the vicinity of Fika Patso Dam and the Dinkweng and Thaba Bosiu Tribal Councils operate in the vicinity of Metsimatsho Dam. Illustrated Figure 8 is the relationship between the traditional leaders.

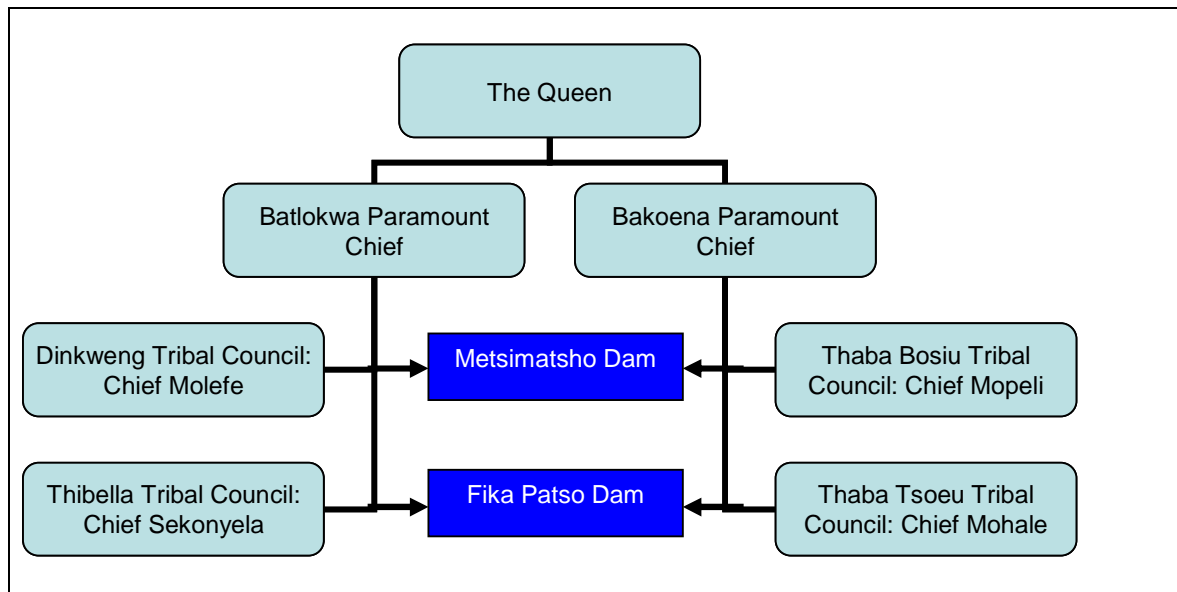


Figure 8: Relationship between Traditional Leaders

At the commencement of the RMP process, tensions between public sector representatives, traditional leaders and private parties were observed regarding the utilisation of the dams for recreational and commercial purposes. Subsequent to phases of the RMP process, relations have improved amongst most stakeholders as there is recognition that the RMP will be used as a guiding document for the management, utilisation and conservation of the water resources.

The DWAF is ultimately the custodian of the dams and adjacent State-owned land within the dam boundary line. The DLA is in the process of vesting this land with DWAF. The DLA is the custodian of the State-owned land external to the dam boundary line.

MAP Water, the water and sanitation service provider for the MAP area, operate the dams on behalf of the DWAF. Current operational activities include the weekly monitoring of water levels and release of water when necessary.

## 2.2 Stakeholder Engagement Process

The success of the RMP for Fika Patso and Metsimatsho Dams and its implementation is dependent on the level of involvement by stakeholders and beneficiation and as such, the dams should not function in isolation from these stakeholders.

To meaningfully engage stakeholders, a public participation process was formulated to objectively identify the needs and expectations of all I&APs. The process included the following phases:

- **Planning Phase:** The first phase was aimed at ensuring the support of key stakeholders. This phase mainly addressed the encumbrances to the process, attaining institutional support and identifying participants to the process.
- **The Participation Phase:** The second phase was aimed at ensuring broad stakeholder involvement, building capacity within the stakeholders and providing the stakeholders with relevant information to assist in decision making.
- **The Exit Phase:** The third phase was aimed at achieving recommendation for the RMP, prior to submitting the plan to DWAF for approval and implementation.

A detailed description of the entire public participation process is contained in the Objective Definition Report, prepared during the Objective Identification Phase of the project.

It should be noted that the process of public input and participation will undoubtedly continue to reveal needs, expectations and issues, even beyond the approval of the RMP. Every effort should be made to ensure that these are acknowledged and addressed through the management authority. Ongoing public interest, support and engagement are vital to unlock the true potential of the dam.

## 2.3 The Stakeholders

At the initial public meetings on 3 April 2007 and 19 April 2007, different user groups were identified and representatives of each group were identified to participate in Technical Task Team (TTT) meetings, where specific objectives for each group were developed. These user groups are summarised below:

- 1) Federations and Operators;
- 2) Aquaculture;
- 3) Thaba Bosiu Tribal Council (Metsimatsho);
- 4) Dinkweng Tribal Council (Metsimatsho);
- 5) Hospitality Industry;
- 6) Thibella Tribal Council (Fika Patso);
- 7) Thaba-Tsoeu Tribal Council (Fika Patso);
- 8) Government Department and Initiatives ; and
- 9) PSP's and other.

Appendix A contains the Stakeholder list for Fika Patso and Metsimatsho Dams and indicates the user group for each entry.

The objectives set by the user groups 1-9 above are contained in the following section of this document.

### **3. THE PLAN**

#### **3.1 STRATEGIC FRAMEWORK**

DWAF is the custodian of South Africa's water and forestry resources. It is primarily responsible for the formulation and implementation of policy governing these two sectors. It also has override responsibility for water services provided by local government.

While striving to ensure that all South Africans gain access to clean water and safe sanitation, the water sector also promotes effective and efficient water resources management to ensure sustainable economic and social development.

##### **3.1.1 DWAF's Vision**

DWAF has a vision of being: “a country that uses water and forests productively and in a sustainable manner for social and economic activities; in a manner that promotes growth, development and prosperity of all people to achieve social justice and equity.”

##### **3.1.2 DWAF's Mission**

As sector leader, the mission of DWAF is to serve the people of South Africa by:

- guiding, leading, developing legislative framework, regulating and controlling the water and forestry sectors;
- conserving, managing and developing our water resources and forests in a scientific and environmentally sustainable manner in order to meet the social and economic needs of South Africa, both now and in the future;
- ensuring that water services are provided to all South Africans in an efficient, cost-effective and sustainable way;
- managing and sustaining our forests, using the best scientific practice in a participatory and sustainable manner;
- educating the people of South Africa on ways to manage, conserve and sustain our water and forest resources;
- cooperating with all spheres of Government, in order to achieve the best and most integrated development in our country and region; and
- creating the best possible opportunities for employment, the eradication of poverty and the promotion of equity, social development and democratic governance.

##### **3.1.3 Key Objectives of the Department**

The Department's key focus areas and strategic objectives are as follows:

- Ensure reliable and equitable supply of water for sustainable economic and social development including the eradication of poverty;
- Ensure the protection of water resources;
- Develop effective water management institutions;
- Align staff, stakeholders and general public to a common vision for Integrated Water Resource Management and develop, capacitate and empower them in best practices thereof;
- Ensure provision of basic water supply & sanitation for improved quality of life and poverty alleviation;

- Ensure effective & sustainable delivery of water services to underpin economic & social development;
- Ensure effective Water Services Institutions;
- Ensure effective local-level operations and management of DWAF water services schemes;
- Promote & support sound policy & practice of water services to achieve millennium targets in Africa;
- Promote Integrated Water Resource Management in Africa in support of the New Partnership for Africa's Development;

To guide initiatives aimed at attaining DWAF's vision, mission and objectives, an operational policy regarding the use of water for recreational purposes has been developed. This policy addresses planning, safety, authorisation, equity, communication, capacity building, institutions and linkages, legislative and legal framework, and monitoring and information management, and provides strategic direction to this RMP.

### **3.2 VISION AND OBJECTIVES FOR THE DAMS**

#### **3.2.1 Vision for the Dams**

The vision for Fika Patso and Metsimatsho Dams was formulated and acknowledged by the stakeholders to be as follows:

A commitment to managing Fika Patso and Metsimatsho Dams through communication between role players and taking legislation and safety into account. The purpose of managing the dams is to meet user needs and improve/uplift recreational use at Fika Patso and Metsimatsho Dams as well as encouraging tourism in the area by sustaining the following key factors:

- Water quality and quantity;
- The right to have access to clean water;
- Monitoring;
- A safe and healthy environment;
- Access to the dam;
- Equity;
- Benefits / royalties to the community and Tribal Councils;
- Clarity on rights / clarity on Tribal Council rights; and
- Infrastructure and facilities (quality and standards).

This will result in economic upliftment in the area from which the community will ultimately benefit. Maintenance and training/education of the community is an ongoing process that is necessary for the success of managing Fika Patso and Metsimatsho Dams.

*In short the vision for Fika Patso and Metsimatsho Dams is a commitment to manage, conserve, develop and utilise the two resources in a sustainable, equitable and appropriate manner in order to maximise the potential of the dams.*

### 3.2.2 Objectives for the Dams

The set of common key objectives for each dam, as developed by the stakeholders, is summarised below:

#### Common Key Objectives - Fika Patso Dam:

- To *involve government* in the management and operation of the dam while taking government's requirements (i.e. Legislation) into consideration and to have clarity on Rights (including the Tribal Council's Rights), as well as access to Fika Patso Dam;
- To sustain the *quality of the water* in the dam as well as the environment around the dam and to maintain the *quantity* since it provides drinking water to the Qwa-Qwa population;
- To ensure *safety of the dam* as well as gender equity for jobs created by the dam;
- To ensure *high standards* and maintenance of facilities and infrastructure around the dam;
- To *emphasise user needs* and to improve recreation, commercial use as well as tourism around the dam;
- To improve/encourage *economic upliftment* in the area and to allow the communities as well as the Tribal Councils (royalties) around the dam to benefit from activities around the dam; and
- *Management, communications* as well as *maintenance* and *education and training* programs should be visible from where government is involved all the way down to where the community benefits from Fika Patso Dam.

#### Common Key Objectives - Metsimatsho Dam:

- To *involve government* in the management and operation of the dam while taking government's requirements (i.e. Legislation) into consideration and to ensure access to the dam;
- To *ensure safety* of the dam while taking user needs and clarity on rights around the dam into consideration;
- To sustain the *quality of the water* in the dam as well as the environment around the dam and to maintain the *quantity* since it provides drinking water to the broader Qwa-Qwa population;
- To ensure *high standards* and maintenance of facilities and infrastructure surrounding the dam;
- To *improve commercial and recreational use* as well as tourism in and around the dam;
- To improve/encourage *economic upliftment* in the area and to allow the communities around the dam to benefit from activities around the dam; and
- *Management, communications* as well as *monitoring* and *education and training* programs should be visible from where government is involved all the way down to where the community benefits from Metsimatsho Dam.

The above common key objectives were used to guide the continued planning exercise in order to ensure that all planning decisions strive to fulfill these objectives for both dams.

### 3.3 MANAGEMENT APPROACH

To ensure that the RMP contributes to the attainment of the objectives set by its stakeholders, a process approach based on the ISO 9000 management system forms the basis of the management approach for Fika Patso and Metsimatsho Dams. The rationale for this approach is to assist DWAF and the management authority in ensuring sustainability by protecting the integrity and value of environmental resources, providing measurable benefits to host communities, and enhancing the satisfaction of users.

Without a plan it will be impossible to co-ordinate and manage the activities required to unlock the potential of the two dams. Only by measuring the performance of specific actions and operational guidelines against objectives will it be possible to effectively manage the water resources. The structure of the plan is based on KPAs, aimed at attaining the management objectives set for Fika Patso and Metsimatsho Dams by the stakeholders. The management framework is illustrated in Figure 9 below.

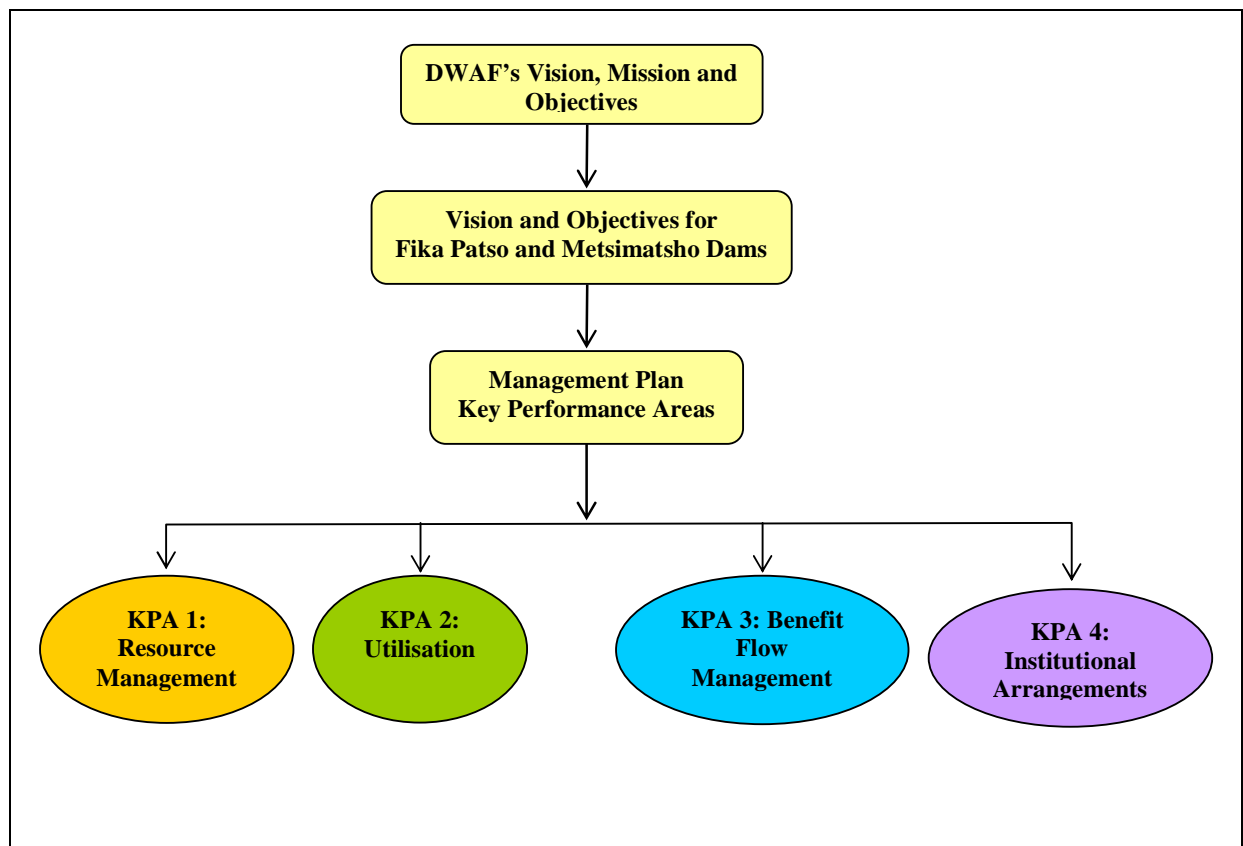


Figure 9: Management Framework



### 3.4 KEY PERFORMANCE AREAS

Each KPA is divided into management fields, which are structured in tabular format for ease of reference. The tables are to be understood as follows:

- The **Objective** represents the desired state or outcome. The question that needs to be asked is: *What do we want?*
- **Priority** indicates the level of importance within each KPA. Priority is measured in terms of, high, medium and low. The question that needs to be asked is: *How important is this objective?*
- The **Rationale** is the motivation for striving towards a specific objective. It can be based on an issue or could give insight to the current state. The question that needs to be asked is: *Why?*
- **Management Support** refers to the required resources that would be needed. These could be internal or external. The question that needs to be asked is: *What support do we need in order to implement?*
- **Policies and Guidelines** are the vehicle that provides direction on how to achieve the objective. This can imply reference to existing legislation, regulations and policies or may in many cases offer specific guidance. The question that needs to be asked is: *How do we get there?*
- **Action Projects** are deeds which are quantifiable and can be carried out. For business planning purposes it is then possible to specify each action in terms of responsibility, schedule, budget and monitoring. The question that needs to be asked is: *What do we need to do?*
- **Rank** indicates for the overall level of importance of all action projects and aims to provide guidance as to the sequence of action projects. The question that needs to be asked is: *When should it happen?*
- **Indicators** are used to measure the effectiveness of the action projects. The question that needs to be asked is: *Has it worked?*

Documented below in this section are the KPAs for the dam, developed to attain the defined common objectives

#### 3.4.1 KPA 1: Resource Management

Table 6: Biodiversity

|  |                         |
|--|-------------------------|
| <b>Objective</b>   | <b>Priority: Medium</b> |
| To maintain and enhance eco-system composition, functioning, integrity and character surrounding the dams to provide the potential for tourism opportunities in the area.  |                         |
| <b>Rationale</b>   |                         |
| The natural resource base provides the foundation for proposed tourism development in the area. It is in the interest of tourism development that emphasis is placed on the conservation value of the dams and their surrounding areas. Both dams are located within the Drakensberg Alpine Center of Plant Endemism, and have sensitive biodiversity such as wetlands surrounding the dams. This increases the conservation value of the area and the importance of maintaining the existing natural resource base should be recognised by tourism operators. |                         |
| <b>Management and Other Support</b>  |                         |
| <ul style="list-style-type: none"> <li>• Management authority;</li> <li>• FSDTEEA;</li> </ul>  |                         |

- MAP Local Municipality; and other government departments such as the DoA.

### **Policy and Guidelines**

#### Conservation

- Environmental best practice management guidelines must be applied within an integrated EMS for the dams, especially when there is a risk of development related activities impacting on the environment. Although certain components or developments might operate according to a sovereign EMP, such should nevertheless be integrated into an overall EMS. An EMS (or EMP) should be desirable, irrespective if an EIA was undertaken.
- Strategically important habitats (inlets, wetlands and shorelines) need to be protected and managed to ensure their ecological functioning. As such the conservation focus should be on these areas. Wetlands should be delineated and all developments and activities surrounding the dams should stay outside the buffer of the temporary zone of the wetlands.

#### Soils

- The soil resource needs to be conserved by prevention of erosion caused by developments and activities surrounding the dams. In most cases this can be achieved by maintaining a healthy and diverse cover of indigenous vegetation and management of cattle grazing.
- The condition of the soil and the rate of erosion and/or rehabilitation should be monitored closely and actions should be taken to prevent damage caused by erosion.

#### Vegetation

- The endemic vegetation of the area should be conserved and promoted. The unsolicited collection, harvesting, destruction and removal of plant material need to be prevented. Removal of plant material should only take place if this is in terms of a rehabilitation programme, for an authorised construction activity or for general veld management purposes (fire breaks, bush encroachment, etc).
- All developments should be properly planned, based on a proper and detailed ecological and wetland (if required) survey, in order to avoid the unnecessary removal of plant material.
- Where vegetation has deteriorated or been lost, it needs to be rehabilitated. Seed with a species cocktail adapted to reflect the local indigenous flora. Any new tree planting needs take cognisance of dam safety requirements.
- Rare and endemic plant species or those found to be increasingly rare must be adequately protected.

#### Fauna

- Consumptive utilisation should be limited to angling. Hunting or any other destruction or capturing of animals would not be considered a permitted activity.
- Rare animal species or those found to be increasingly rare and their associated breeding sites need to be adequately protected.

#### General

- The management authority must ensure compliance with the NEMA and EIA Regulations where applicable.

### **Action Projects**

- i. Develop an integrated EMS for the dams.
- ii. Devise a programme to determine the status of rare, threatened and endangered plant and animal species and adapt management interventions accordingly. Undertake a biodiversity and wetland assessment and prepare a biodiversity management plan.
- iii. Monitor the area and document erosion, use this as baseline to ensure that all new developments prevent erosion during the construction and operational phases.
- iv. Develop an Erosion Control Programme and ensure the implementation thereof.

|  |
|--|
| v. Identify areas where vegetation has deteriorated and rehabilitate accordingly.  |
| <b>Indicators</b>  |
| <ul style="list-style-type: none"> <li>i. EMS in place within the first year of operationalisation of this RMP.</li> <li>ii. Records of non-compliance – a continuous process.</li> <li>iii. Biodiversity Management Plan in place within first year of operationalisation of this RMP.</li> <li>iv. Base line study to determine extent of erosion around the dams – within the first year of operationalisation of this RMP.</li> <li>v. Erosion control programme and monitoring and pretension of future erosion surrounding the dams– within the three years of operationalisation of this RMP.</li> <li>vi. Presence/absence of environmental degradation - a continuous process.</li> </ul> |

Table 7: Alien Invasive Vegetation

|  |                         |
|--|-------------------------|
| <b>Objective</b>   | <b>Priority: Medium</b> |
| To remove existing alien and invasive species surrounding the dams and prevent future invasion.  |                         |
| <b>Rationale</b>   |                         |
| Alien and invasive plants have a detrimental effect on the natural ecology of the dams and their surroundings. These species result in a decrease of indigenous biodiversity and will further result in the overall degradation of the ecological integrity of the catchment of the dams.  |                         |
| <b>Management and Other Support</b>  |                         |
| <ul style="list-style-type: none"> <li>• Planning and execution of eradication programs must be done in cooperation with Working for Water.</li> <li>• Synchronise eradication projects in the catchment by engaging adjacent landowners and local environmental initiatives.</li> <li>• Management authority in association with Working for Water should ensure that the programme is implemented.</li> <li>• Any developments surrounding the dams must implement the proposed alien eradication and monitoring programme.</li> </ul> |                         |
| <b>Policy and Guidelines</b>   |                         |
| <ul style="list-style-type: none"> <li>• Eradication methods must be approved by Working for Water.</li> <li>• Only the planting of indigenous vegetation must be allowed for new developments surrounding the dams.</li> <li>• Management authority in association with Working for Water must ensure that all new developments adhere to this programme and that monitoring continues.</li> </ul>  |                         |
| <u>Remediation</u>   |                         |
| <ul style="list-style-type: none"> <li>• The control of invasive plant species is addressed under the Conservation of Agricultural Resources Act (CARA, Act No 43 of 1983, Regulations 15). Relevant legislation as well as municipal by-laws must be complied with.</li> <li>• Combating must be based on the latest alien plant control technology and knowledge. Preference should be given to non-chemical eradication methods wherever possible.</li> <li>• Allow only weed free vessels to enter or exit the dam.</li> </ul>       |                         |
| <u>Alien vegetation</u>  |                         |
| <ul style="list-style-type: none"> <li>• Exotic species must be removed and replaced with appropriate indigenous trees.</li> <li>• No alien vegetation may be introduced anywhere within the purchase line and only indigenous planting schemes will be permitted.</li> </ul>  |                         |
| <b>Action Projects</b>   |                         |

|   |
|---|
| <ul style="list-style-type: none"> <li>i. Compile an Alien Invasive Eradication and Monitoring Programme.</li> <li>ii. Determine the extent of alien invasive plants surrounding the dams and use this as a baseline study for future monitoring.</li> <li>iii. Remove all alien invasive plants located within the purchase line.</li> </ul>   |
| <b>Indicators</b>   |
| <ul style="list-style-type: none"> <li>i. Alien Invasive Eradication and Monitoring Programme – within three years of operationalisation of the RMP.</li> <li>ii. Baseline study – within the first year of operationalisation of the RMP.</li> <li>iii. No alien invasive plants within the purchase line – within three years of operationalisation of the RMP.</li> <li>iv. New developments must comply with programme – as necessary.</li> </ul> |

Table 8: Water Quality

|   |                       |
|---|-----------------------|
| <b>Objective</b>  | <b>Priority: High</b> |
| To maintain the current high water quality standard for both Fika Patso and Metsimatsho Dams.   |                       |
| <b>Rationale</b>  |                       |
| Fika Patso and Metsimatsho Dams provide the potable water for the Qwa-Qwa region and the WWTWs currently only use minimal treatment procedures because of the high level of water quality of the area. Any changes in the water quality will create problems because of potential non-compliance with specific requirements as set out in South African Water Quality Guidelines.   |                       |
| <b>Management and Other Support</b>   |                       |
| <ul style="list-style-type: none"> <li>• Government Departments that concern themselves with water quality and environmental health need to be involved. This would include the DWAF, MAP Water, MAP Local Municipality and the management authority.</li> <li>• Water Quality is monitored on a daily basis by MAP Water and samples are tested at an accredited laboratory twice a week. The monthly summarised report compiled by MAP Water should be made available to DWAF, the Catchment Management Agency for the Upper Vaal Catchment, Wilge River Forum as well as the management authority as part of feedback. The management authority must ensure that relevant information reaches the users.</li> </ul>  |                       |
| <b>Policy and Guidelines</b>  |                       |
| <ul style="list-style-type: none"> <li>• NWA and its regulations;</li> <li>• NEMA (Regulations 386 and 387);</li> <li>• Water Quality Objectives as stated in the Internal Strategic Perspectives for the Central Region Upper Vaal Management Area.</li> <li>• Water Services Act; and</li> <li>• South African Water Quality Guidelines.</li> <li>• All new developments must comply with the regulations as stipulated in the NWA and must apply for authorisation as required by NEMA Regulations 386 and 387.</li> <li>• EMP must be compiled for the construction and operational activities surrounding the dams. The EMP must address issues such as stormwater management and pollution prevention due to effluent and other run-off water.</li> </ul> |                       |
| <u>Use</u>  |                       |
| <ul style="list-style-type: none"> <li>• The South African Water Quality Guidelines constitute the primary reference when determining the water quality requirements of water consumption.</li> <li>• With the National Water Act, 1998 (Act No. 36 of 1998), the concept of Resource Quality</li> </ul>  |                       |

Objectives were introduced. Resource Quality means the quality of all the aspects of the water resource, which includes water quality, water quantity, as well as the aquatic ecosystem quality. Thus, water quality management now also takes responsibility for in-stream and riparian habitat, as well as the quality of aquatic biota. The purpose of Resource Quality Objectives is to establish clear goals relating to the quality of the relevant water resource and to be able to use this as a benchmark.

#### Pollution

- Pollution sources within the catchment will inevitably affect the dam. As these are outside of the dam's sphere of influence, these sources need to be dealt with via cooperative linkages with environmental initiatives as well as through the appropriate government channels. An integrated management approach is required to ensure that the resource is not adversely affected by activities within the catchment.
- The increase of developments surrounding the dams will result in the construction of standalone sewerage systems in the area as no municipal lines exist in close proximity of the dams. Care should be taken to prevent pollution through sewerage spillage and leakages and DWAF should be consulted with regards to the planned sewerage to prevent pollution possibilities.
- Increased developments around the dams may also increase the intensity of stormwater runoff. Of concern are not only the sediment volumes, but also other pollutants contained in the stormwater such as nutrients, toxic chemicals and bacteria. An effective stormwater management plan should aim to minimise the pollutants contained in the storm water from entering the dam. Although much can be done to prevent the occurrence of pollutants on surfaces, additional measures should be considered to remove pollutants present in the runoff.
- The proposed caged based aquaculture farming will result in an increase in the amount of phosphates and other nutrients in the water as a result of the feed and faeces of the fish. The carrying capacity for each dam should be determined as well as the capability of the WWTW to purify the water without upgrades. Regular testing should also be in place before such activities commences.

#### Monitoring

- Results from regular monitoring can indicate increased levels of pollution and may trigger action measures to reverse the water quality deterioration. Monitoring will indicate if these objectives are achieved and also indicate red flag scenarios where certain uses might be at risk.
- Successful water quality management relies on the integration of diverse factors into a holistic management system. Water quality monitoring needs to assimilate the other monitoring programmes in the catchment, including the monitoring of effluent discharge.
- Interventions will be required if monitoring indicates a trend of deterioration in the water quality and the risk that some water uses might be at stake.

#### **Action Projects**

- i. Continuation of daily monitoring by MAP Water and twice weekly testing of the water up- and down stream of Metsimatsho Dam by an accredited laboratory to detect any pollution from activities or developments in or surrounding the dam.
- ii. Implement twice weekly water quality monitoring at Fika Patso Dam and testing of water through an accredited laboratory to maintain the high water quality levels.
- iii. Management authority to ensure that all the users of the dams as well activities surrounding the dams comply with guidelines and regulations with regards to maintaining the water quality of the dams.
- iv. Establish links between the RMP and other projects aimed at the improvement of water quality within the Upper Vaal Catchment to ensure that water quality objectives are met for both dams.
- v. Implement a quarterly water quality reporting programme for both dams for the next 5 years; where after the frequency of reporting could be reduced.
- vi. Wilge River Forum should meet with the MAP Water and the management authority

|                   |   |
|-------------------|---|
| vii.              | every second month to discuss and action issues pertaining to water quality.<br>Undertake an audit to determine if the existing monitoring points at the dams are sufficient and include and map key monitoring points upstream and downstream of the dams. |
| <b>Indicators</b> |   |
| i.                | Monitoring data to indicate water quality over time for Metsimatsho Dam– continue with water quality monitoring on a daily basis.   |
| ii.               | Implement weekly monitoring of water quality at Fika Patso Dam to use as a baseline for the water quality of the dam- as soon as possible.  |
| iii.              | Compliance with regulations and guidelines by all users and activities surrounding the dams – continue with existing standards.   |
| iv.               | Compliance of Water Quality Objectives in association with the Wilge River Forum-ongoing process.   |
| v.                | Quarterly Reporting in place-within six months of operationalisation of this RMP.   |
| vi.               | Water Quality Forum in place- within six months of operationalisation of this RMP.  |
| vii.              | Monitoring points reviewed and indicated on map- within six months of operationalisation of this RMP.   |

Table 9: Cultural Heritage Resource Management

|   |                      |
|---|----------------------|
| <b>Objective</b>  | <b>Priority: Low</b> |
| To identify, acknowledge and conserve resources of palaeontological, archaeological, historical, cultural and religious significance.   |                      |
| <b>Rationale</b>  |                      |
| Within the caves in the vicinity of Fika Patso Dam, rock paintings have been found. There is a possibility that such paintings are also present in the caves surrounding Metsimatsho Dam. It is essential that these and other cultural and heritage resources are conserved and managed in accordance with relevant legislation and that the sustainable tourism potential of these resources are fully explored.  |                      |
| <b>Management and Other Support</b>   |                      |
| <ul style="list-style-type: none"> <li>• SAHRA,</li> <li>• Management authority and relevant government departments,</li> <li>• Donor organisations,</li> <li>• Research institutions, and</li> <li>• Community based organisations.</li> </ul>   |                      |
| <b>Policy and Guidelines</b>  |                      |
| <ul style="list-style-type: none"> <li>• SAHRA manages a National Heritage Resource Fund aimed at providing financial assistance for any project which contributes to the conservation and protection of South Africa's Heritage Resources.</li> <li>• All heritage and cultural resources must be conserved and managed as required by the NHRA and applicable regulations.</li> <li>• All new proposed developments and infrastructure should adhere to Regulation 38 of NHRA.</li> <li>• If any archaeological sites or graves are exposed during construction work, construction work should be stopped immediately and the findings should be reported to a museum or SAHRA for further investigations.</li> <li>• A relationship should be established between SAHRA and the management authority in order to ensure that the proposed developments adhere to Regulation 38 of NHRA and to proactively manage cultural and heritage resources.</li> </ul> |                      |
| <b>Action Projects</b>  |                      |

|   |
|---|
| <ul style="list-style-type: none"> <li>i. Written applications should be made to SAHRA and other funding partners to obtain funding for the projects highlighted below.</li> <li>ii. Investigate the extent of the rock paintings within the caves in the vicinity of Fika Patso and Metsimatsho Dams, ensure that these resources are conserved and managed and evaluate the investigation findings w.r.t potential for tourism activities.</li> </ul> |
| <b>Indicators</b>   |
| <ul style="list-style-type: none"> <li>i. A written application submitted to SAHRA within four months of the operationalisation date of this RMP.</li> <li>ii. A report containing the findings of the requested investigation and proposals if applicable for related tourism activities.</li> </ul>   |

### 3.4.2 KPA 2: Utilisation

Table 10: Public Access, Use and Development

| <b>Objective</b>   | <b>Priority: High</b> |
|--|-----------------------|
| To create an environment that facilitates controlled recreational use by ensuring safe and legal access to the water surface and sustainable development of the dams and surrounding State-owned land.   |                       |
| <b>Rationale</b>   |                       |
| To date, there are proposed initiatives that have the potential to initiate the recreational use of the dams and surrounding State-owned land and consequently promote LED. These initiatives include proposed tourism developments, poverty relief projects funded by DEAT and caged aquaculture projects. It is hence essential that an environment conducive to controlled commercial development is created.   |                       |
| <b>Management and Other Support</b>  |                       |
| <ul style="list-style-type: none"> <li>• DWAF must institute an appropriate procurement process to approve the necessary authorisations for use and development within the purchase line.</li> <li>• Linkages must be established with relevant government departments where appropriate.</li> </ul>   |                       |
| <b>Policy and Guidelines</b>   |                       |
| <u>Access and Use</u> <ul style="list-style-type: none"> <li>• The dams must remain available for broad public recreational access and use.</li> <li>• Public access and use should be equitable, compatible and safe.</li> <li>• Entry fees can be levied for public access and use. However, fees need to be reasonable to ensure the dam remains an affordable destination.</li> <li>• Access and use must be in accordance with the conceptual zoning plans contained herein.</li> <li>• For Fika Patso Dam, the only available gravel road access leads to the safety and security zone, which is not accessible to the public. Hence, for public access, an alternative road and associated infrastructure should be created. Use and development of this dam is dependent on provision of this access route. This aspect is further dealt with in Table 13.</li> <li>• For Metsimatsho Dam, there are two public access points. At this stage, these accesses constitute gravel roads. This aspect is further dealt with in Table 13.</li> <li>• To ensure that safety of the public and livestock, the safety and security zone will be protected and secured by erecting fences or any other appropriate method. Appropriate warning signs should also be erected at relevant locations.</li> </ul> |                       |
| <u>Existing Use</u>  |                       |
| <ul style="list-style-type: none"> <li>• There is currently, within the dam boundary line, an unauthorised building that has been</li> </ul>   |                       |

erected by a private individual. DWAF, as the responsible government department must regularise this use in accordance with its development policy.

#### Commercialisation

- Unlocking the full potential of commercial recreation on the dam will simultaneously promote socio economic development within the surrounding areas.
- National, provincial and local government identify the tourism sector as a vehicle for job creation, skills development, SMME development and BBEE. Furthermore, there is opportunity for private sector involvement through the PPP mechanism. The market identifies a need for commercial tourism and this objective will ensure that the dam potential is fully realised.
- The opportunity exists to combine aquaculture with water- and land based tourism into a single PPP. This opportunity should be further explored upon the finalisation of the zoning plans, in terms of the PPP Toolkit for Tourism.

#### Development

- Any development within the dam basin is subject to relevant legislation and policies.
- Where applicable, all development must conform to the zoning plan contained herein.

#### Operation

- All uses and operations must be in accordance with DWAF and other government norms and standards.
- Subsequent to the finalisation of the zoning plans, a detailed operational plan should be developed and implemented.

#### **Action Projects**

- The existing unlawful structure located within the boundary line must be regularised in accordance with DWAF policy.
- Develop a detailed development and operational plan for both dams subsequent to the provision of an access route to Fika Patso Dam and finalised zoning plans for Metsimatsho Dam.

#### **Indicators**

- Unlawful structure within the dam boundary line regularised.
- Finalised development and operational plan on record.

Table 11: Physical Carrying Capacity

| <b>Objective</b>  | <b>Priority: High</b> |
|---|-----------------------|
| To promote, accommodate and manage a variety of activities and facilities at the dam in a manner that enhances the user experience and minimises the impact on the resource.  |                       |
| <b>Rationale</b>  |                       |
| <p>Metsimatsho and Fika Patso Dams have the potential for various tourism related activities. Excessive use of the resources will not only impact on the environment, but will also affect user safety and satisfaction. Carrying capacity is an effective management tool to control access, utilisation and development at the dams. Excessive use of the resource may not only impact on the water resource (pollution) and environment (soil compaction, littering, destruction of vegetation, etc), but will also affect safety and visitor experience. Increasing numbers of visitors result in social impacts measured by overcrowding, accidents, conflicts, noise, etc.</p> <p>At the time of compilation of this report, the data required to determine the physical carrying capacity for both dams was not available.</p> |                       |



|   |
|---|
| <b>Management and Other Support</b>   |
| <ul style="list-style-type: none"> <li>The management authority must establish the necessary linkages with the relevant industry to finalise the physical carrying capacity</li> <li>Relevant government departments must be consulted where applicable.</li> </ul>   |
| <b>Policy and Guidelines</b>  |
| <ul style="list-style-type: none"> <li>DWAF's guideline 'Methodology for Carrying Capacity Assessment for the Use of Water for Recreational Purposes (April 2003)' must be utilised to determine the physical carrying capacity.</li> <li>Policies and guidelines for various industries must be adhered to.</li> </ul> |
| <b>Action Projects</b>  |
| <ol style="list-style-type: none"> <li>The physical carrying capacity of both dams must be determined subsequent to the finalisation of the data required, as documented in Table 17.</li> </ol>  |
| <b>Indicators</b>   |
| <ol style="list-style-type: none"> <li>Physical carrying capacity determined, signed off by relevant DWAF personnel and on record.</li> </ol>   |

Table 12: Aquaculture

|   |                         |
|---|-------------------------|
| <b>Objective</b>  | <b>Priority: Medium</b> |
| To ensure that the water quality of the dams is maintained by complying with the aquaculture production capacity of the dams and to establish the necessary linkages are established with proposed aquaculture initiatives.   |                         |
| <b>Rationale</b>  |                         |
| <p>There is currently interest in Metsimatsho Dam for aquaculture cage farming and interest has also been raised for Fika Patso Dam. The DWAF, DoA and DST are in the process of developing and implementing various aquaculture projects within South Africa. The Sterkfontein Dam has been identified as a site for a pilot study for such a project. It is envisaged that Fika Patso or Metsimatsho Dam could be utilised as a satellite study to the afore-mentioned site. The details of the proposed sites and activities have however not been finalised.</p> <p>Important to establish prior to the commencement of aquaculture activities is the aquaculture production capacity of the dams to ensure that the water quality of the dams is not compromised. The University of Stellenbosch (the implementing agent appointed by the DWAF, DoA and DST to implement the aquaculture initiatives) is currently reviewing the aquaculture production capacity models for the two dams and are in the process of finalising the production capacities. As soon as these results are available, they should be documented in the RMP.</p> |                         |
| <b>Management and Other Support</b>   |                         |
| <ul style="list-style-type: none"> <li>DWAF;</li> <li>DEAT;</li> <li>Management authority;</li> <li>MAP Water;</li> <li>DST;</li> <li>DoA; and</li> <li>FDTEEA.</li> </ul>  |                         |
| <b>Policy and Guidelines</b>  |                         |
| <ul style="list-style-type: none"> <li>Aquaculture Policies and Guidelines as stipulated under Section 1.3.2.</li> </ul>  |                         |

|  |
|--|
| <ul style="list-style-type: none"> <li>• South African Water Quality Guidelines.</li> </ul>  |
| <b>Action Projects</b>   |
| <ol style="list-style-type: none"> <li>The aquaculture production capacities, currently being finalised by the University of Stellenbosch, must be documented in the RMP as soon as they become available.</li> <li>The management authority must establish relationships with the DST, DoA and DWAF to ensure co-operation and integration regarding aquaculture activities at the dams.</li> </ol> |
| <b>Indicators</b>  |
| <ol style="list-style-type: none"> <li>Preservation of water quality in accordance with water quality objectives and adherence to aquaculture production capacities.</li> <li>Attendance of meetings where applicable and records of discussions and approvals.</li> </ol>   |

Table 13: Infrastructure and Services

|   |                       |
|---|-----------------------|
| <b>Objective</b>  | <b>Priority: High</b> |
| To ensure that necessary services (such as water and sanitation, electricity, roads, telecommunication, and waste disposal) and associated infrastructure are provided to facilitate controlled development of the water resource and surrounding State land.   |                       |
| <b>Rationale</b>  |                       |
| <p>The utilisation and development of Fika Patso Dam is entirely dependent upon the provision of a suitable access route and this should be prioritised to ensure that development is initiated.</p> <p>For Metsimatsho Dam, there are currently two gravel access routes, unsuitable for sedan type vehicles. To ensure that the dams are used to their potential capacity and access is provided to the broader public, it is imperative that these roads are appropriately upgraded.</p> <p>Additional to the roads, it is necessary that other services such as water, sanitation, electricity, waste disposal and telecommunication are in place to facilitate development of the water resource and surrounding State land.</p> <p>To unlock the true recreational potential of the water resource, it is imperative that development progresses, taking cognizance of the zoning plan. Proposed development must progress in an environmentally sound and controlled manner.</p> |                       |
| <b>Management and Other Support</b>   |                       |
| <ul style="list-style-type: none"> <li>• Local, provincial and national government departments are responsible for providing services and associated infrastructure in accordance with their mandates.</li> <li>• The management authority is responsible for ensuring the co-ordination of relevant government departments and other stakeholders.</li> </ul>  |                       |
| <b>Policy and Guidelines</b>  |                       |
| <u>Infrastructure Development</u>   |                       |
| <ul style="list-style-type: none"> <li>• Infrastructure development must be authorised by DWAF, aligned with the RMP and evaluated and recommended by the management authority. It must further comply with all regulatory requirements (NEMA, NWA, NHRA, etc), municipal planning ordinances and any other relevant regulatory requirements.</li> <li>• Infrastructure needs to be developed according to spatial restrictions prescribed by the different zones, buffer lines, relevant flood lines as well as sensitive features such as wetlands and shore line vegetation, in accordance with the zoning plan contained herein.</li> <li>• All planning, development and maintenance of infrastructure must conform to relevant industry legislation, policies and guidelines.</li> </ul>  |                       |

|   |  |
|---|--|
| <b>Services and Associated Infrastructure</b>   |  |
| <ul style="list-style-type: none"> <li>• The management authority is responsible for ensuring the co-ordination of relevant government departments to ensure that adequate planning and development takes place to facilitate infrastructure development on the water surface and surrounding State land.</li> <li>• All planning and development must conform to relevant industry legislation, policies and guidelines.</li> <li>• MAP Local Municipality to include proposed road improvements and construction in its IDP, SDF and LED documents and ensure the implementation of articulated plans.</li> <li>• Department of Provincial and Local Government's Municipal Infrastructure Grant to further assist in upgrading existing and construction of new roads around Fika Patso and Metsimatsho Dams.</li> </ul> |  |
| <b>Action Projects</b>  |  |
| <ul style="list-style-type: none"> <li>i. Establish relationships with relevant government departments and explore the potential to obtain funding and assistance to develop infrastructure, particularly the road infrastructure.</li> </ul>   |  |
| <b>Indicators</b>   |  |
| <ul style="list-style-type: none"> <li>i. Attendance of meetings where applicable and records of discussions.</li> </ul>  |  |

### 3.4.3 KPA 3: Benefit Flow Management

Table 14: Local Economic Development

|  |                         |
|--|-------------------------|
| <b>Objective</b>   | <b>Priority: Medium</b> |
| To ensure that local communities participate and benefit in LED initiatives happening in and around Fika Patso and Metsimatsho Dams.   |                         |
| <b>Rationale</b>   |                         |
| National, provincial and local governments identify the tourism sector as a vehicle for job creation, skills development, SMME development and broad-based black economic empowerment. It is essential that local communities derive benefits from tourism projects implemented.   |                         |
| <b>Management and Other Support</b>  |                         |
| <ul style="list-style-type: none"> <li>• The management authority is responsible for overall co-ordination and ensuring benefit flows.</li> <li>• The local black community user group must provide relevant input.</li> <li>• Linkages must be established with relevant government departments.</li> </ul>   |                         |
| <b>Policy and Guidelines</b>   |                         |
| <ul style="list-style-type: none"> <li>• The management authority should work closely with the LED Unit of MAP Local Municipality and other relevant Government Departments with regard to the design, management and implementation of local economic development projects.</li> <li>• LED is also given effect by National Treasury, through Regulation 16 of the Public Finance Management Act (PFMA). A PPP Toolkit for Tourism was developed as a guide especially for tourism related projects. This Toolkit is consistent with government strategy on the Tourism Charter and Broad Based BEE Scorecard as published by DEAT in 2005.</li> <li>• Establish linkages with tourism initiatives.</li> <li>• Recognise, train, capacitate and empower individuals from the surrounding communities</li> </ul> |                         |

|  |
|--|
| with proven interest and entrepreneurial skills. Through regular communication with community institutions, it will be possible to become more sensitised to communities perceptions, as well as to expose entrepreneurs to the opportunities that are available.  |
| <b>Action Projects</b>   |
| <ul style="list-style-type: none"> <li>i. Compilation of a database of job seeking individuals and SMMEs from the local community and ensure that it is regularly updated and monitored.</li> <li>ii. Implement skills development programmes where opportunities exist.</li> <li>iii. Ensure that BEE is attained in any PPP projects.</li> </ul> |
| <b>Indicators</b>  |
| <ul style="list-style-type: none"> <li>i. Measure capacitation of individuals and SMMEs through PPP projects mentioned previously.</li> </ul>  |

#### 3.4.4 KPA 4: Institutional Arrangements for Implementation

Table 15: Institutional Arrangements

| <b>Objective</b>   | <b>Priority: High</b> |
|--|-----------------------|
| To ensure that a suitable institutional structure with the appropriate powers delegations is in place to effectively manage the recreational use of the water resource in accordance with this RMP.  |                       |
| <b>Rationale</b>   |                       |
| <p>To select an appropriate authority to manage recreational water use for this dam, consideration was given to various aspects, including legislation, DWAF policies, DWAF's planning frameworks and current institutional frameworks.</p> <p>In terms of DWAF's guideline, Considerations on the Institutional Arrangements for Managing Use of Water for Recreational Purposes (2003), potential management authorities include a management committee, private sector agent, public sector agent, component within DWAF or a Water User Association.</p> <p>Currently, operation of the dams, of which DWAF is the custodian, is being done by MAP Water, the water and sanitation service provider in the MAP area. Furthermore, the primary use of both dams is water supply to the Qwa-qwa area. Hence the most feasible option for the management authority would be a public sector agent, either MAP or MAP Water. However in the event that this is not possible, a component within DWAF (custodian of the dams) will assume the role of management authority. It should be noted that the management authority will be supported by an advisory committee These options are illustrated in Figure 10.</p> |                       |

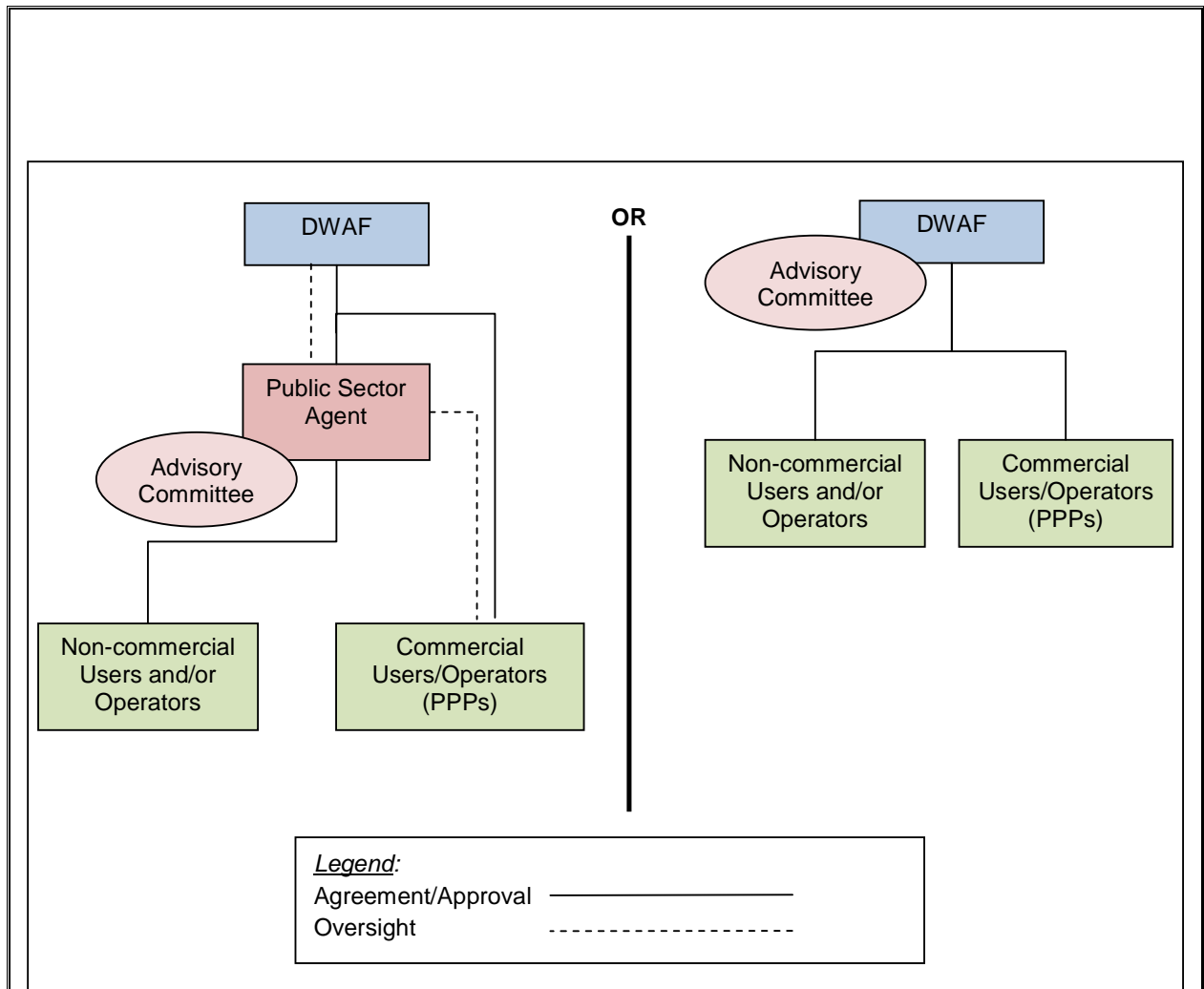


Figure 10: Institutional Proposals

### Management and Other Support

- DWAF;
- MAP;
- MAP Water;
- Stakeholders.

### Policy and Guidelines

#### Management Authority

- The decision as to which institution assumes the role of management authority should be made subsequent to a meeting between the DWAF, MAP and MAP Water. At this meeting, the roles and responsibilities of all parties w.r.t operational arrangements and recreational water use management should be established and appropriately documented. The outcome of the meeting should be the selection of the management authority and an agreement relating to operation of both dams.

#### Advisory Committee

- An advisory committee, consisting of representatives of the stakeholders, should be constituted. The purpose of this committee will be to provide the DWAF with insight into the needs and expectations of the host community and the various stakeholders while also serving as medium to convey DWAF's objectives and decisions to community members.
- Additionally, the advisory committee will use the RMP as an accountability tool to measure the performance of DWAF regarding the management of the dam and surrounding resources; the degree to which the economic potential has been unlocked; and, the benefits accruing to the

|  |   |
|--|---|
| <p>stakeholders.</p> <ul style="list-style-type: none"> <li>• The initial advisory committee should be established using the members of the RMP TTT. The needs and expectations of the community will continue to unfold and input from various stakeholders must be provided through the relevant institutional structures.</li> <li>• The RMP TTT members should be consulted with regard to its structure and operational aspects.</li> </ul> |   |
| <b>Action Projects</b>   |   |
| <ul style="list-style-type: none"> <li>i.</li> <li>ii.</li> </ul>  | <p>A meeting between the DWAF, MAP and MAP Water:</p> <ul style="list-style-type: none"> <li>• To discuss and establish which institution assumes the role of management authority; and</li> <li>• To formulate an agreement w.r.t operation of both dams.</li> </ul> <p>Formally establish the management authority.</p>                   |
| <b>Indicators</b>  |   |
| <ul style="list-style-type: none"> <li>i.</li> <li>ii.</li> <li>iii.</li> </ul>  | <p>The above-mentioned meeting should take place upon the approval of the proposed RMP.</p> <p>The above-mentioned agreement should be finalised and on record within three months of the operationalisation of this RMP.</p> <p>The management authority formally established within six months of the operationalisation of this RMP.</p> |

### 3.5 CONCEPT MANAGEMENT PLAN

### 3.6 Process

To effectively zone a resource, an assessment of all relevant information must be undertaken to ascertain habitat and landscape sensitivity. Following this sensitivity analysis, an assessment of the environmental characteristic was undertaken. This assessment entails the determination of current environmental character status, opportunity for use, access and development based on a spectrum of the environmental limitations and stakeholder objectives.

Where relevant, aspects of the KPAs are spatially depicted in the Concept Zoning Plans. Figure 11 indicates the flow of the zoning process.

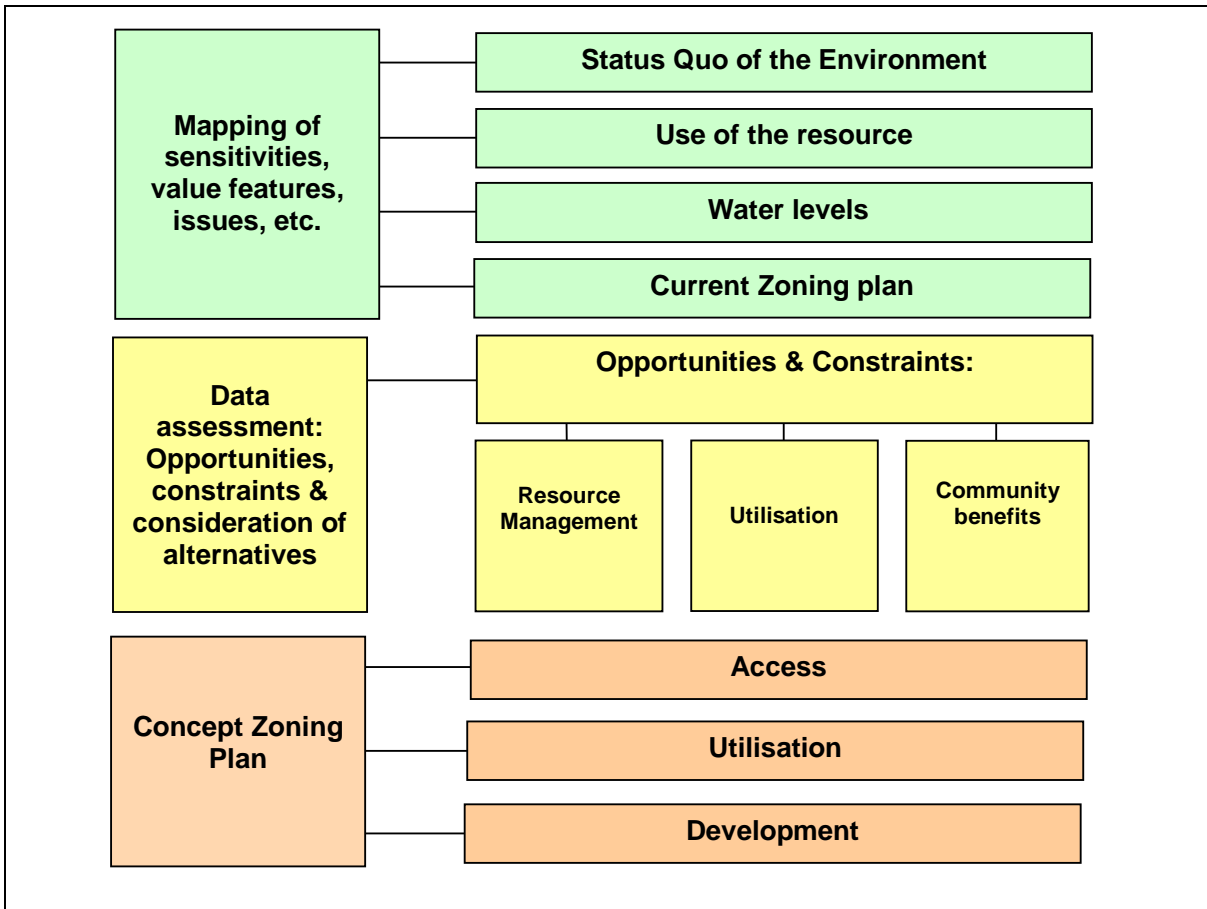


Figure 11: Zoning Process

Table 16: Conceptual Zoning Plans

| Objective  | Priority: High |
|--|----------------|
| To compile zoning plans for Fika Patso and Metsimatsho Dams in order to determine and establish zones for specific uses in and around the dam to ensure the safe and optimal utilisation and management of recreational use at both dams.                  |                |
| Rationale  |                |
| In 2005 DWAF compiled schematic 'Concept Dam Zoning Diagrams' for Fika Patso and Metsimatsho Dams. These diagrams have sufficed to date, however, with the current proposed developments, it is necessary to revise the 2005 zoning plans. Through the RMP |                |

process, stakeholders were engaged and detailed research was conducted with view to ascertain the opportunities and constraints pertaining to access, use and development of the water resource and surrounding land. The 2005 zoning plans have been revised and are illustrated in Figure 12 and Figure 13. It should however be noted that to accurately zone the water surface and water front, the mapped full supply levels, 1:100 Flood Level, Buffer Line and Dam Boundary Lines are required. At the time of compilation of the RMP, not all of the required data was available. Summarised in Table 17 is the status quo of the outstanding data:

Table 17: Level Data

|                             | <b><i>Fika Patso Dam</i></b> | <b><i>Metsimatsho Dam</i></b> |
|-----------------------------|------------------------------|-------------------------------|
| Full Supply Level           | To be mapped                 | To be mapped                  |
| High Flood Level (1:100 yr) | To be determined             | To be clarified               |
| Buffer Level                | To be determined             | To be determined              |
| Dam Boundary Level          | To be finalised              | Available and mapped          |

Based on the above, the data illustrated on the zoning plans is only schematic. Hence, the zoning plans must be mapped and updated upon the finalisation of the necessary data.

#### **Management and Other Support**

- DWAF; and
- Management Authority.

#### **Policy and Guidelines**

- DWAF Guidelines for the Compilation of Resource Management Plans.
- Guidelines for the compilation of Zoning Plans for Government Waterworks (DWAF 1999).
- The zoning system should be based on the Ecotourism Characteristics Opportunity Spectrum (ECHOS) as set out in the DWAF Guidelines for the Compilation of Resource Management Plans.

#### **Action Projects**

- The level data indicated in Table 17 must be obtained where not available, finalised and appropriately mapped.
- The zoning plans (Figure 12 and Figure 13) must be updated based on the above-mentioned updated data.

#### **Indicators**

- Zoning plans for Fika Patso and Metsimatsho Dams must be finalised and signed off by the appropriate DWAF representatives. This should be done as soon as possible to ensure that proposed developments progress sustainably and equitably.

### **3.7 The Zones**

As a result of the zoning process, the following zones have been identified:

#### Water Surface Zones

- Safety and Security Zone
- Low Impact Activity Zone
- Conservation Zone

#### Waterfront Zones

- Safety and Security Zone
- Conservation Zone



- Medium Impact Development Zone
- Low Impact Development Zone

It should be noted that the zones are defined in accordance with DWAF's Guidelines for the compilation of Zoning Plans for Government Waterworks (DWAF 1999). Each of the above-mentioned zones is described in a corresponding table in this section. The tables are to be understood as follows:

- **The Objective** represents the desired state for this zone. The question that needs to be asked is: What do we want?
- **The Character** describes the physical attributes of the zone. The question that needs to be asked is: What is there and what should it be like?
- **Spatial Guidelines** provides a framework for opportunities in terms of access, utilization and development. The question that needs to be asked is: Which activities are allowed where?

### 3.7.1 Water Surface Zones: Fika Patso and Metsimatsho Dam

Table 18: Safety and Security Zone: Fika Patso and Metsimatsho Dams

|   |
|---|
| <b>Objective</b>  |
| To protect the dam wall and outlet works, to ensure the safety of the public and to have sufficient area available for DWAF's management purposes.  |
| <b>Character</b>  |
| <ul style="list-style-type: none"> <li>• This zone is applicable to the area surrounding the dam wall and outlet works and hence applies to areas demarcated on the water surface and on adjacent land.</li> <li>• It is required that the security area boundary is a minimum distance of 100m from the dam wall and outlet works or spillway.</li> <li>• This zone is not affected by the water level.</li> </ul>   |
| <b>Spatial Guidelines</b>   |
| <u>Access</u> <ul style="list-style-type: none"> <li>• Access is limited to DWAF and for management purposes only.</li> <li>• There will be no recreational access to this zone. Signage will clearly indicate this.</li> </ul><br><u>Utilisation</u> <ul style="list-style-type: none"> <li>• No recreational use may take place in this zone.</li> </ul><br><u>Development</u> <ul style="list-style-type: none"> <li>• There will be no recreational development in this zone.</li> <li>• Fences may be erected as required for safety, security and management control purposes.</li> </ul> |

Table 19: Low Impact Activity Zone: Fika Patso Dam

|  |
|--|
| <b>Objective</b>   |
| To provide a designated, controlled and a safe environment for low intensity water-related activities. Low Impact Activity Zones allows for low intensity and or nature based leisure activities, i.e. activities associated with little or no wake, e.g. rowing, canoeing, angling etc. |
| <b>Character</b>   |
| <ul style="list-style-type: none"> <li>• Majority of the water surface has been zoned for low impact activity since many of the stakeholders were not in favour of motorised boats and associated high impact activities.</li> </ul>   |

|   |
|---|
| <ul style="list-style-type: none"> <li>• Low impact activities that could be allowed include angling, canoeing, rowing and swimming.</li> </ul>   |
| <b>Spatial Guidelines</b>   |
| <ul style="list-style-type: none"> <li>• Access, use and development of this zone should be finalised subsequent to the development of access roads and associated infrastructure.</li> </ul> |

Table 20: Low Impact Activity Zones: Metsimatsho Dam

|   |
|---|
| <b>Objective</b>  |
| To provide designated, controlled and safe environment for low intensity use water sport activities. Low Impact Activity Zones allows for low intensity and or nature based leisure activities, i.e. activities associated with little or no wake, e.g. rowing, canoeing, angling etc.  |
| <b>Character</b>  |
| The low impact activity zone includes a large area that forms the northern part of the dam. Allowable activities within this zone include sailing, rowing, canoeing, fishing from non-motorised vessels and swimming.   |
| <b>Spatial Guidelines</b>   |
| <p><u>Access</u></p> <p>This zone will contain the following access facilities:</p> <ol style="list-style-type: none"> <li>One Launching Facility for small non-motorised vessels (such as canoes and rowing boats) will be situated on the western side of the dam in close proximity of the existing structure and road infrastructure.</li> </ol> <p><u>Utilisation</u></p> <ul style="list-style-type: none"> <li>• This zone caters for low intensity uses relating to non-motorised vessels.</li> <li>• Sailing (including dinghies, windsurfing and similar activities) is restricted to this zone.</li> <li>• A 50m restriction is placed on vessels from the shoreline as a buffer. The purpose of this quasi-transition is for the safety of bathers, anglers and other vessel users as well as to protect the ecology of the shoreline. This Buffer Area is situated along the entire shoreline and may only be crossed for launching purposes.</li> <li>• A key element of the Operational Plan referred to in</li> <li>• Table 10: Public Access, Use and Development is the continuous monitoring of utilisation of the water surface. In the event that certain trends are observed zones for particular activities should be defined and demarcated using buoys or appropriate infrastructure.</li> </ul> <p><u>Development</u></p> <ul style="list-style-type: none"> <li>• Vessels which are not active on the water surface should be taken off the water. Docking and mooring facilities will not be provided.</li> <li>• Further launching facilities must consist of a demarcated 10m wide cleared shoreline area. Slipways and docking and mooring facilities will not be provided at the launching facility. Vessels which are not active on the water surface should be taken off the water.</li> <li>• This Zone must be clearly buoyed off from the Conservation Zones.</li> <li>• No facilities or infrastructure may be constructed within this Zone.</li> </ul> |

Table 21: Conservation Zones: Fika Patso and Metsimatsho Dams

|  |
|--|
| <b>Objective</b>   |
| To conserve and protect sensitive aquatic habitat at the inlets of the dams as well as the wetland areas.                                  |
| <b>Character</b>   |
| <ul style="list-style-type: none"> <li>• The areas associated with the inlets at Fika Patso and Metsimatsho Dams are classified</li> </ul> |

|   |
|---|
| <p>as conservation zones.</p> <ul style="list-style-type: none"> <li>• Areas demarcated as wetland areas at both dams are considered as conservation zones.</li> </ul>  |
| <p><b>Spatial Guidelines</b></p>  |
| <p><u>Access</u></p> <ul style="list-style-type: none"> <li>• No access to the conservation zones associated with river is allowed.</li> </ul>  |
| <p><u>Utilisation</u></p> <ul style="list-style-type: none"> <li>• No use is permitted within conservation zones.</li> <li>• Fishing is generally not permitted in conservation zones.</li> </ul>   |
| <p><u>Development</u></p> <ul style="list-style-type: none"> <li>• Ecologically sensitive areas surrounding the inlets of the rivers and wetlands surrounding the dam are classified as conservation areas, allowing for limited/no access.</li> <li>• No facilities may be constructed within these Zones, unless authorised by DWAF.</li> </ul> |

### 3.7.2 Waterfront Zones: Metsimatsho Dam

Table 22: Waterfront Zones

|   |
|---|
| <p><b>Objective</b></p> <p>To ensure that the area between the dam boundary line and the full supply level is managed and developed where appropriate based on the regulations and guidelines provided by DWAF.</p>   |
| <p><b>Character</b></p> <p>DWAF is ultimately responsible for the water surface and State-owned land within the purchase line, which is required to ensure safe operation of the dam. No structures are allowed between the dam boundary line and the full supply level.</p>  |
| <p><b>Spatial Guidelines</b></p> <p>The Waterfront Zone comprises of various terrestrial zones, which is defined by the dam boundary line, a buffer line, the high flood level and the full supply level. However, at the time of compilation of the concept zoning plan, the buffer line had not been determined, the high flood level was not finalised and the full supply level was not mapped. The dam boundary line had been surveyed and accurately mapped. This line, together with a schematic representation of the fully supply level is illustrated on the conceptual zoning plan in Figure 13. Summarised below are the definitions and significance of the afore-mentioned levels and principles that should be applied when finalising the zoning with the appropriate mapped data.</p> <p>i. The Dam Boundary Line</p> <ul style="list-style-type: none"> <li>▪ The dam boundary line defines the area required by DWAF to ensure the effective management and safe operation of the dam.</li> <li>▪ In order to determine the exact position of the dam boundary line, a State Land Survey was commissioned and has been signed off by the relevant authorities.</li> </ul> <p>ii. The Buffer Line</p> <ul style="list-style-type: none"> <li>▪ The buffer line is situated below the dam boundary line.</li> <li>▪ The area between the buffer line and the high flood line is referred to as the access and/or buffer zone. The entire waterfront area surrounding the dam is affected by this zone. This zone purely serves to provide access from adjacent land, over state land, to the water surface, if permitted by DWAF.</li> <li>▪ No structures for accommodation purposes or any other roofed structure will be allowed within the buffer zone.</li> <li>▪ Approval needs to be obtained for all other structures (e.g. jetties, hides, braai facilities, hiking trails, etc.), should the need arise. Environmental Impact Assessments</li> </ul> |

are a prerequisite for prospective development and all applications for development and activity relating to the dam will be subject to evaluation and approval by DWAF and DEAT.

- Camping and ablution facilities may only be provided in the area between the buffer line and the dam boundary line.

iii. The High Flood Line

- The high flood level is defined by the 1:100 year floodline.
- No buildings and/or structures are allowed within the 1:100 year flood line, as these pose as safety risks and are a liability to DWAF.
- If the existing structure falls within the 1:100 year flood line, it must be removed and affected areas must be rehabilitated.
- Bank fishing is allowed within the high flood line outside the areas zoned as conservation.

iv. The Full Supply Line

- This line defines the maximum area occupied by the dam, at full capacity.

v. Conservation Zones

- The access/buffer zone surrounding the inlets at Metsimatsho Dam serves as a conservation area. These zones apply to ecologically sensitive areas. The shoreline area links the terrestrial and aquatic components, which need to be conserved as a single resource.
- Wetlands surrounding the dam are also included in the conservation zones, any activities inside the wetlands requires environmental authorisation from DWAF and FSDTEEA.
- Areas classified as conservation zones must remain undeveloped.
- Limited or no pedestrian access is allowed in these areas.
- Activities such as bird watching and hiking may be permitted, on defined hiking routes / tracks only set out by a qualified environmental scientist.
- Fishing will not be permitted within conservation areas surrounding inlets to the dam.
- No vessel access to the water surface will be permitted, unless it is by DWAF for management or research related purposes.

vi. Development Zones:

Three types of development zones could be considered in instances where there is land available above the buffer line and within the dam boundary line. Illustrated in Figure 13 are the development zones for Metsimatsho Dam and summarised below is the allowable development for the zones:

**i. Low Impact Zones**

Low impact zones allows for sensitive development or low intensity use. These areas are ideal for camping facilities.

**ii. Medium Impact Zones**

Medium impact zones allows for small scale development, for example low density chalet developments or day visitor sites.

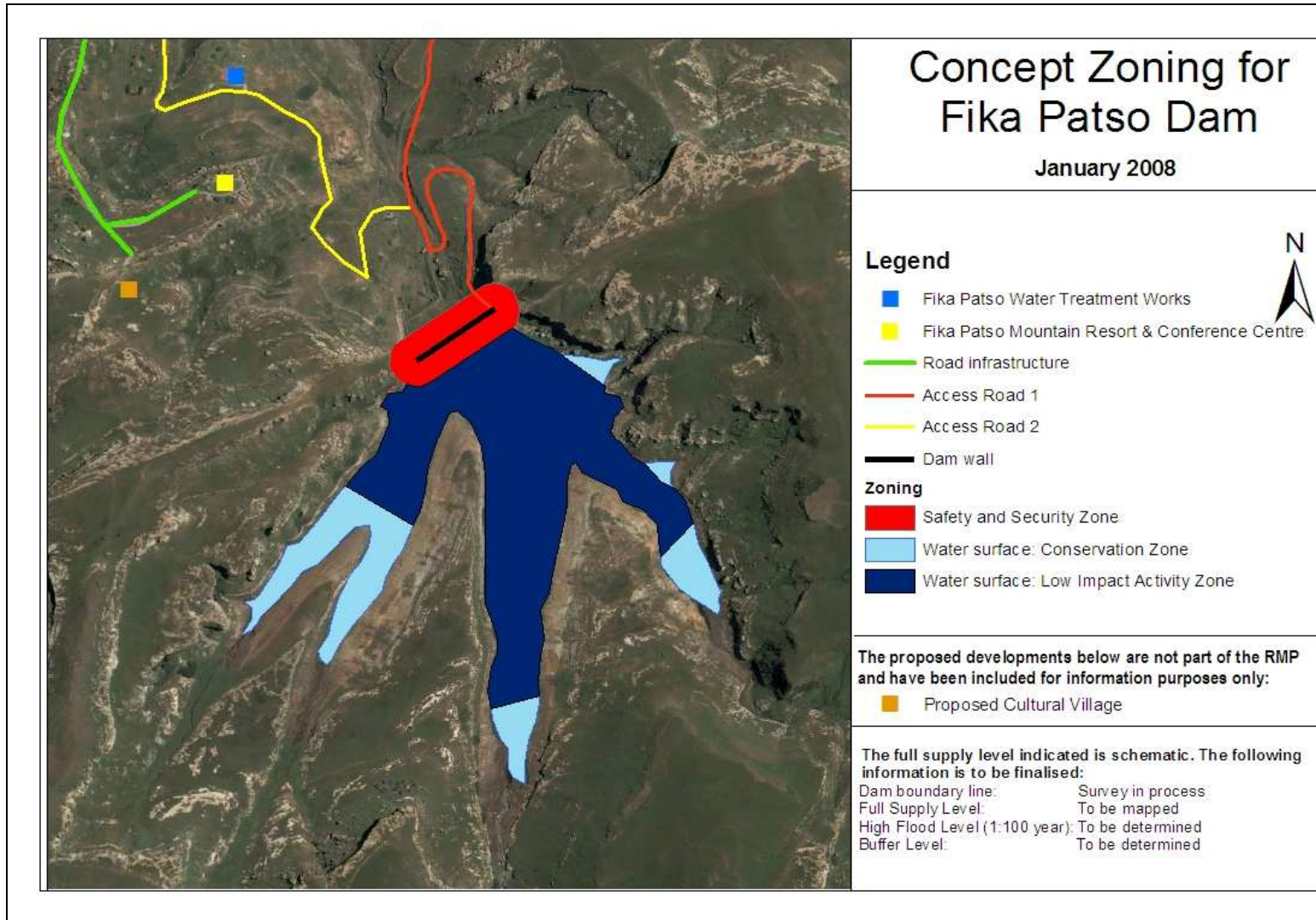


Figure 12: Conceptual Zoning Plan – Fika Patso Dam

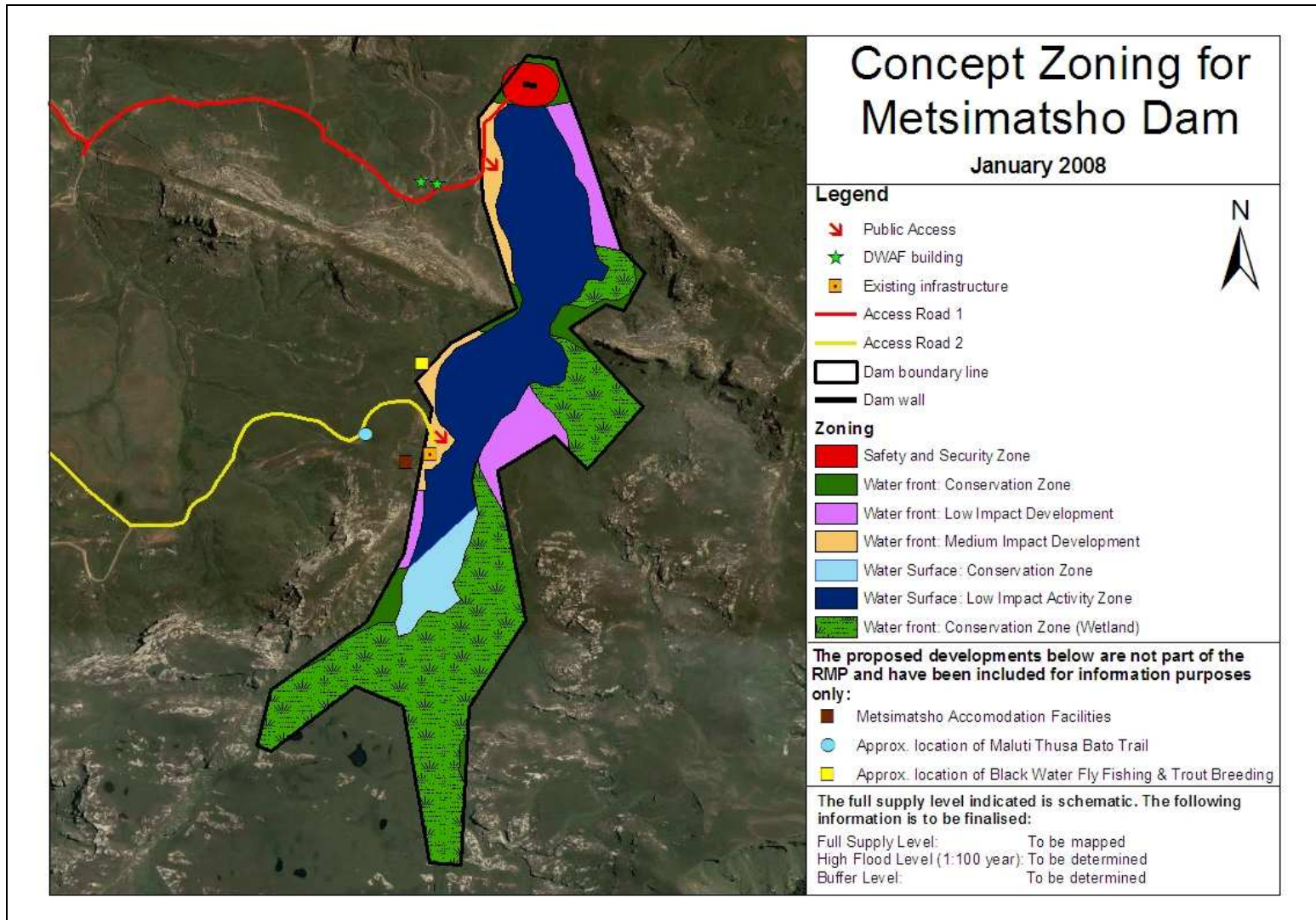


Figure 13: Conceptual Zoning Plan – Metsimatsho Dam

### 3.8 CONSOLIDATED LIST OF ACTION PROJECTS

Summarised in Table 23 below is list of the action projects proposed in the previous section. The table indicates the ranking of the action projects and also provides a reference w.r.t the relevant KPA and table number.

Table 23: Consolidated Action Project List

| Rank | Action Project Description   | KPA | Table |
|------|--|-----|-------|
| 1    | A meeting between the DWAF, MAP and MAP Water: <ul style="list-style-type: none"> <li>To discuss and establish which institution assumes the role of management authority; and</li> <li>To formulate an agreement w.r.t operation of both dams.</li> </ul> | 4   | 15    |
| 2    | Formally establish the above-mentioned management authority.   | 4   | 15    |
| 3    | The level data indicated in Table 17 must be obtained where not available, finalised and appropriately mapped.   | 2   | 16    |
| 4    | The zoning plans (Figure 12 and Figure 13) must be updated based on the above-mentioned updated data.  | 2   | 16    |
| 5    | The aquaculture production capacities, currently being finalised by the University of Stellenbosch, must be documented in the RMP as soon as they become available.  | 2   | 12    |
| 6    | Implement twice weekly water quality monitoring at Fika Patso Dam and testing of water through an accredited laboratory to maintain the high water quality levels.   | 1   | 8     |
| 7    | Implement a quarterly water quality reporting programme for both dams for the next 5 years; where after the frequency of reporting could be reduced.   | 1   | 8     |
| 8    | Establish relationships with relevant government departments and explore the potential to obtain funding and assistance to develop infrastructure, particularly the road infrastructure.   | 2   | 13    |
| 9    | The management authority must establish relationships with the DST, DoA and DWAF to ensure co-operation and integration regarding aquaculture activities at the dams.  | 2   | 12    |
| 10   | The physical carrying capacity of both dams must be determined subsequent to the finalization of the data required, as documented in Table 17.   | 2   | 11    |
| 11   | Develop an integrated EMS for the dams.  | 1   | 6     |

| <b>Rank</b> | <b>Action Project Description</b>  | <b>KPA</b> | <b>Table</b> |
|-------------|--|------------|--------------|
| 12          | Undertake a biodiversity and wetland assessment and prepare a biodiversity management plan.  | 1          | 6            |
| 13          | Develop an Erosion Control Programme and ensure the implementation thereof.  | 1          | 6            |
| 14          | Compile an Alien Invasive Eradication and Monitoring Programme.  | 1          | 7            |
| 15          | Develop a detailed development and operational plan for both dams subsequent to the provision of an access route to Fika Patso Dam and finalised zoning plans for Metsimatsho Dam.   | 2          | 10           |
| 16          | The existing unlawful structure located within the boundary line must be regularised in accordance with DWAF policy.   | 2          | 10           |
| 17          | Wilge River Forum should meet with the MAP Water and the management authority every second month to discuss and action issues pertaining to water quality.   | 1          | 8            |
| 18          | Devise a programme to determine the status of rare, threatened and endangered plant and animal species and adapt management interventions accordingly.   | 1          | 6            |
| 19          | Continuation of daily monitoring by MAP Water and twice weekly testing of the water up- and downstream of Metsimatsho Dam by an accredited laboratory to detect any pollution from activities or developments in or surrounding the dam. | 1          | 8            |
| 20          | Establish links between the RMP and other projects aimed at the improvement of water quality within the Upper Vaal Catchment to ensure that water quality objectives are met for both dams.  | 1          | 8            |
| 21          | Compilation of a database of job seeking individuals and SMMEs from the local community and ensure that it is regularly updated and monitored.   | 3          | 14           |
| 22          | Implement skills development programmes where opportunities exist.   | 3          | 14           |
| 23          | Ensure that BEE is attained in any PPP projects.   | 3          | 14           |
| 24          | Identify areas where vegetation has deteriorated and rehabilitate accordingly.   | 1          | 6            |
| 25          | Monitor the area and document erosion, use this as baseline to ensure that all new developments prevent erosion during the construction and operational phases.  | 1          | 6            |
| 26          | Undertake an audit to determine if the existing water quality monitoring points at the dams are sufficient and include and map key monitoring points upstream and downstream of the dams.  | 1          | 8            |



| <b>Rank</b> | <b>Action Project Description</b>   | <b>KPA</b> | <b>Table</b> |
|-------------|---|------------|--------------|
| 27          | Determine the extent of alien invasive plants surrounding the dams and use this as a baseline study for future monitoring.  | 1          | 7            |
| 28          | Remove all alien invasive plants located within the purchase line.  | 1          | 7            |
| 29          | Management authority to ensure that all the users of the dams as well activities surrounding the dams comply with guidelines and regulations with regards to maintaining the water quality of the dams.   | 1          | 8            |
| 30          | Written applications should be made to SAHRA and other funding partners to obtain funding for the projects highlighted below.   | 1          | 9            |
| 31          | Investigate the extent of the rock paintings within the caves in the vicinity of Fika Patso and Metsimatsho Dams, ensure that these resources are conserved and managed and evaluate the investigation findings w.r.t potential for tourism activities. | 1          | 9            |

## REFERENCES

1. Baran, E. 2003. An Explanation of the 1:500 000 General Hydrogeological Map. Kroonstad 2725. Department of Water Affairs and Forestry, Pretoria.
2. Barnes, K.N. 2000. The Eskom Red Data Book of Birds of South Africa, Lesotho and Swaziland. Birdlife South Africa, Johannesburg.
3. DWAF. 1996a. South African Water Quality Guidelines (second edition). Volume 2: Recreational use.
4. DWAF 1996b. South African Water Quality Guidelines (second edition). Volume 7: Aquatic ecosystems.
5. DWAF 1996c. South African Water Quality Guidelines (second edition). Volume 1: Domestic use.
6. DWAF. 2006a. Terms of Reference: Compilation of a Resource Management Plan for Fika Patso and Metsimatsho Dams. Department of Water Affairs and Forestry.
7. DWAF. 2006b. Resource Management Plans: Capacity Building Seminar. Department of Water Affairs and Forestry.
8. DWAF 2006c. Guideline 1: Integrated Resource Management Plans
9. Friedmann, Y., and Daly, B. 2004. (Eds). Red Data Book of Mammals of South Africa: A Conservation Assessment: Conservation Breeding Specialist Group (SSC/IUCN), Endangered Wildlife Trust. South Africa.
10. Germishuizen, G. and Meyer, N.L. (eds). 2003. Plants of Southern Africa: An Annotated Checklist. Strelitzia 14. National Botanical Institute, Pretoria.
11. Hilliard, O.M. and Burtt, B.L. 1987. The Botany of the Southern Natal Drakensberg. National Botanical Gardens, Pietermaritzburg.
12. Hilton-Taylor, C. 1996. Red Data list of southern African Plants. Strelitzia 4. National Botanical Institute. Pretoria.
13. Impson, N.D. and de Villiers, P. 2006. Poverty Relief Project No 15228: Proposed Development of Trout Farming Operation and Associated Flyfishery at Blackwater (Swartwater) Dam, near Phuthaditjhaba, Free State Province. Basic Assessment (Scoping) Report for a listed activity in terms of Chapter 5 of the National Environmental Management Act 1998.
14. IUCN 2002. IUCN Red List categories. Prepared by the IUCN Species Survival Commission, Gland, Switzerland.
15. Klein, H. (compiler) 2002. Weeds, alien plants and invasive plants. PPRI Leaflet Series: Weeds Biocontrol, No 1.1. ARC-Plant Protection Research Institute, Pretoria. pp. 1-4.
16. Landcare South Africa. Brochure. CARA Legislation Made Easy. The Conservation of Agricultural Resources Act, 1983 (Act No 43 of 1983) (CARA).
17. Letter dated 5 February 2007 between Maluti-a-Phofung Water (Pty) Ltd and Exigent Engineering Consultants. Heading Water Quality: Metsimatsho and Fika Patso Dams.
18. Letter dated 24 April 2006 between Department of Water Affairs and Forestry and Maluti-a-Phofung Water (Pty) Ltd. Heading RE: Proposal for aquaculture development at Fika Patso and Metsimatsho Dams
19. Maluti-a-Phofung Local Municipality IDP 2007/2008. Maluti-a-Phofung IDP 2007/2008 IDP Review Cycle.
20. Maluti-a-Phofung Local Economic Development Strategy (no date).

21. Maluti-a-Phofung Local Municipality & Miletus Consulting Engineers. 2006. Sterkfontein-Qwa-Qwa Water Supply Scheme: Feasibility Study for DWAF, Free State Province, Thabo Mofutsanyana District and Maluti-a-Phofung Local Municipality.
22. MDTP. 2007. Maloti-Drakenberg Transfrontier Conservation and Development Programme. <http://www.maloti.com>. Accessed: 4/01/2007.
23. Mucina, L & Rutherford, M.C. (eds) 2006. The vegetation of South Africa, Lesotho and Swaziland. *Strelitzia 19*. South African National Biodiversity Institute, Pretoria.
24. Services Development Plan 2002. Thabo Mofutsanyana District Municipality Water Services Development Plan.
25. Survival Fish Breeding (Aqua-culture). No Date.
26. Thabo Mofutsanyana IDP 2003. Thabo Mofutsanyana District Municipality Reviewed Integrated Development Plan: 2003-2004.
27. Van Wyk, A.E. & G.F. Smith. 2001. Regions of Floristic Endemism in Southern Africa. A Review with Emphasis on Succulents. Umdaus Press, Hatfield.

# APPENDIX A

## Appendix A: STAKEHOLDER LIST

| Name   | Company | Designation/<br>Involvement                 | Contact<br>Number             | Fax                   | E-mail   | Physical<br>Address                                 | Postal Address                         |
|--|---------|---|-------------------------------|-----------------------|--|---|--|
| <b>Government Department and Initiatives</b> |         |   |                               |                       |  |   |  |
| Marinus de Wilde                             | DWAF    | Area Manager                                | 016 371 3030/<br>082 808 0421 |                       | <a href="mailto:dewildem@dwaf.gov.za">dewildem@dwaf.gov.za</a> |   | Private Bag X2<br>Deneysville,<br>9412 |
| Lorraine Fick                                | DWAF    | PSC Co-ordinator                            | 012 336 8224/<br>082 809 5698 | 012 336<br>6608       | <a href="mailto:fickl@dwaf.gov.za">fickl@dwaf.gov.za</a>       | 185 Schoeman<br>Str, Sedibeng<br>Building, Pretoria | Private Bag<br>X313 Pretoria,<br>0001  |
| Thabi Rakgotho                               | DWAF    | Water quality                               | 012 392 1362/<br>082 908 3015 | 012 392<br>1359/ 1453 | <a href="mailto:rakgot@dwaf.gov.za">rakgot@dwaf.gov.za</a>     | 285 Schoeman<br>Str, Plaza East,<br>Pretoria        | Private Bag<br>X995, Pretoria,<br>0001 |
| Nomzi Koyana                                 | DWAF    | Stakeholder Empowerment                     | 012 336 6759                  | 012 336<br>6791       | <a href="mailto:KoyanaN@dwaf.gov.za">KoyanaN@dwaf.gov.za</a>   | 185 Schoeman<br>Str, Sedibeng<br>Building, Pretoria | Private Bag<br>X313 Pretoria,<br>0001  |
| Khonnani Khorrommbi                          | DWAF    | Water Management<br>Institutions Governance | 082 806 5305                  | 012 336<br>8849       | <a href="mailto:gmc@dwaf.gov.za">gmc@dwaf.gov.za</a>           | 185 Schoeman<br>Str, Sedibeng<br>Building, Pretoria | Private Bag<br>X313 Pretoria,<br>0001  |
| Bronia Prytzula                              | DWAF    | Land Matters (survey)                       | 012 336 7833/<br>082 639 2848 | 012 323<br>7076       | <a href="mailto:rbk@dwaf.gov.za">rbk@dwaf.gov.za</a>           | 185 Schoeman<br>Str, Sedibeng<br>Building, Pretoria | Private Bag<br>X313 Pretoria,<br>0001  |
| Hannes Botha                                 | DWAF    | National Transfers                          | 012 336 7835/<br>082 807 5685 | 012 323<br>7754       | <a href="mailto:rba@dwaf.gov.za">rba@dwaf.gov.za</a>           | 185 Schoeman<br>Str, Sedibeng<br>Building, Pretoria | Private Bag<br>X313 Pretoria,<br>0001  |

|  | Name               | Company                                  | Designation/<br>Involvement                   | Contact<br>Number             | Fax             | E-mail   | Physical<br>Address | Postal Address |
|--|--------------------|--|---|-------------------------------|-----------------|--|---------------------|----------------|
|  | Disebo Leoatle     | Maluti-a-Phofung local municipality      | Director: LED & Tourism                       | 058 718 3745/<br>079 877 8650 | 058 713<br>3777 | <a href="mailto:disebo@map.fs.gov.za">disebo@map.fs.gov.za</a>             |                     |                |
|  | Kile Mahlatsi      | Maluti-a-Phofung local municipality      | Disebo Leoatle's PA                           | 058 718 3738                  |                 |  |                     |                |
|  | Tsoeu Mokomatsili  | Maluti-a-Phofung local municipality      | Director: Spatial Development Framework (SDF) | 058 718 3722/<br>082 339 3256 | 058 718<br>3777 | <a href="mailto:mokomats@map.fs.gov.za">mokomats@map.fs.gov.za</a>         |                     |                |
|  | M.J Nhlapo (Steve) | Maluti-a-Phofung local municipality      | Manager: LED & Tourism                        | 058 718 3859/<br>082 464 9777 | 058 718<br>3777 | <a href="mailto:stevovo@map.fs.gov.za">stevovo@map.fs.gov.za</a>           |                     |                |
|  | FS Radebe          | Maluti-a-Phofung local municipality      | Councillor                                    | 083 726 6348                  |                 | -  |                     |                |
|  | Elliot Thebele     | Maluti-a-Phofung local municipality      | Councillor                                    | 076 562 1797                  |                 | -  |                     |                |
|  | Victoria Moloi     | Thabo Mofutsanyane District municipality |   | 058 718 1069/<br>083 630 4083 |                 | <a href="mailto:limpho.pm@lg.fs.gov.za">limpho.pm@lg.fs.gov.za</a>         |                     |                |
|  | Sylvia Tshivhunge  | Maluti-a-Phofung Water (Pty) Ltd         | Operations Manager                            | 058 718 1100/<br>078 802 0784 | 058 713<br>5418 | <a href="mailto:STshivhunge@mapwater.co.za">STshivhunge@mapwater.co.za</a> |                     |                |
|  | Hlengiwe Gamede    | Maluti-a-Phofung Water (Pty) Ltd         | Senior Technician                             | 078 458 7421                  |                 | <a href="mailto:hlengiwe@mapwater.co.za">hlengiwe@mapwater.co.za</a>       |                     |                |

|                          | Name                   | Company   | Designation/<br>Involvement  | Contact<br>Number              | Fax             | E-mail   | Physical<br>Address | Postal Address |
|--------------------------|------------------------|---|--|--------------------------------|-----------------|--|---------------------|----------------|
|                          | Le Fras Nortje         | FSDoA   |  | 058 924 0620/<br>082 320 6035  | 028 5511<br>332 | -  |                     |                |
|                          | Paul de Villiers       | FSDoA   |  | 082 460 7227                   | 058 623<br>1905 | -  |                     |                |
|                          | Nkosazana<br>Mashinini | DoA   |  | 084 352 8184                   | -               | <a href="mailto:nkosazana@agric.fs.gov.za">nkosazana@agric.fs.gov.za</a> |                     |                |
|                          | Aubrey Moloto          | National<br>Department of<br>Environmental<br>Affairs and<br>Tourism (DEAT) | Director: Project<br>Implementation Directorate<br>Social Responsibility Policy<br>and Projects Chief<br>Directorate | 012 310 3332 /<br>082 582 8625 | 012 320<br>0607 | <a href="mailto:amoloto@deat.gov.za">amoloto@deat.gov.za</a>             |                     |                |
|                          | Maseleka<br>Kgatla     | DEAT  | Project Manager  | 051 448 7261/<br>082 901 4661  |                 | <a href="mailto:mkgatla@deat.gov.za">mkgatla@deat.gov.za</a>             |                     |                |
|                          | LJ Mofokeng            | DEAT  | 082 359 8894   | 058 718 3859                   | 058 718<br>3777 | <a href="mailto:foxiest2001@yahoo.com">foxiest2001@yahoo.com</a>         |                     |                |
|                          | Molly Ebalene          | Nombo-<br>Mabhele   | 076 646 6842   | 051 430 3694                   | 051 447<br>3694 | <a href="mailto:nomboppm@absamail.co.za">nomboppm@absamail.co.za</a>     |                     |                |
|                          | Shirley Bothma         | Se Yana   | 082 870 9587   | 051 352 9212                   | 051 352<br>9212 | <a href="mailto:sbothma@marques.co.za">sbothma@marques.co.za</a>         |                     |                |
|                          | Danie Krynauw          | FSDEEAT   |  |                                |                 | <a href="mailto:krynauwd@dteea.fs.gov.za">krynauwd@dteea.fs.gov.za</a>   |                     |                |
|                          | Kagiso<br>Mkondla      | Maluti-a-<br>Phofung local<br>municipality                                  |  |                                |                 |  |                     |                |
| <b>PSP's &amp; other</b> |                        |   |  |                                |                 |  |                     |                |

| Name                               | Company                               | Designation/<br>Involvement | Contact<br>Number             | Fax          | E-mail   | Physical<br>Address                              | Postal Address                                    |
|------------------------------------|---------------------------------------|-----------------------------|-------------------------------|--------------|--|--|---|
| Dave Gertzen                       | Vela VKE                              | Process Facilitator         | 011 369 0600                  | 011 886 4589 | <a href="mailto:gertzend@velavke.co.za">gertzend@velavke.co.za</a> | 105 Conrad Drive,<br>Blairgowrie,2194            | PO Box 1462<br>Pinegowrie 2123                    |
| Heena Bhana                        | Vela VKE                              | Process Facilitator         | 011 369 0600                  | 011 886 4589 | <a href="mailto:bhanah@velavke.co.za">bhanah@velavke.co.za</a>     | 105 Conrad Drive,<br>Blairgowrie,2194            | PO Box 1462<br>Pinegowrie 2123                    |
| Jean Jacobs                        | Exigent Engineering                   | Process Facilitator         | 012 347 0699/<br>076 105 3225 | 012 346 5890 | <a href="mailto:jean@exigent.co.za">jean@exigent.co.za</a>         |  | P.O Box 11634,<br>Erasmuskloof,<br>Pretoria, 0048 |
| Mzi Memani                         | Memani Consulting                     | Process Facilitator         | 084 557 7383                  | 011 958 2523 | <a href="mailto:mzi@ubsmart.co.za">mzi@ubsmart.co.za</a>           | 21 Manly, Van der Kloof Street,<br>Ruimsig, 1724 | P.O. Box 1208,<br>Buccleuch, 2066                 |
| Dries Lategaan                     | Miletus                               | Engineer/Stakeholder        | 058 623 1078/<br>082 441 9413 | 058 623 1070 | <a href="mailto:dries@miletus.co.za">dries@miletus.co.za</a>       |  |   |
| Togs Burger                        | Miletus                               | Engineer/Stakeholder        | 058 623 1078/<br>082 859 5443 | 058 623 1070 | <a href="mailto:togs@internet-sa.co.za">togs@internet-sa.co.za</a> |  |   |
| June Mokwena                       | Miletus                               | Engineer/Stakeholder        | 058 623 1078/<br>082 922 4940 | 058 623 1070 | <a href="mailto:design@miletus.co.za">design@miletus.co.za</a>     |  |   |
| <b>Federations &amp; Operators</b> |                                       |                             |                               |              |  |  |   |
| Brent Cochran                      | Moloti-Drakensberg Transfrontier Park | Director of the TFCA        | 033 239 1882/<br>084 500 4732 | 033 239 1895 |  |  |   |
| Thulani Mdlalose                   | SANParks                              |                             | 058 255 0936/<br>072 086 4273 |              | <a href="mailto:thulanimd@sanparks.org">thulanimd@sanparks.org</a> |  |   |

|                     | Name                 | Company                 | Designation/<br>Involvement                   | Contact<br>Number              | Fax             | E-mail   | Physical<br>Address | Postal Address                           |
|---------------------|----------------------|-------------------------|---|--------------------------------|-----------------|--|---------------------|--|
|                     | Pierre de Villiers   | CapeNature              | Co-ordinator: C.A.P.E.<br>Estuaries Programme | 021-866 8023 /<br>083 236 2924 | 021-866<br>1523 | <a href="mailto:estuaries@cncjnk.wcape.gov.za">estuaries@cncjnk.wcape.gov.za</a> |                     | Private Bag 5014<br>Stellenbosch<br>7599 |
| <b>Universities</b> |                      |                         |   |                                |                 |  |                     |  |
|                     | Gys Hoon             | Freestate<br>University | Minerology/Geology                            | 051 430 5096/<br>082 806 3451  |                 | <a href="mailto:gysh@workmail.co.za">gysh@workmail.co.za</a>                     |                     |  |
| <b>Tribal Heads</b> |                      |                         |   |                                |                 |  |                     |  |
|                     | Mathokoana<br>Mopeli |                         | Queen   | 058 718 1026/<br>058 713 4485  |                 |  |                     |  |