

EXECUTIVE SUMMARY

AMATOLE – KEI INTERNAL STRATEGIC PERSPECTIVE

1. INTRODUCTION

The National Water Act (NWA No. 36 of 1998) specifies that the Government, as the public trustee of the nation's water resources, must ensure that water is protected, used, developed, conserved, managed and controlled in an equitable and sustainable manner for the benefit of all the people of South Africa. To achieve these objectives, the Department of Water Affairs and Forestry (DWAF) as the responsible custodian Department has been engaged in the ongoing development of a National Water Resource Strategy (NWRS) as a framework for the management of the water resources of South Africa. The NWRS was published in November 2003 after extensive national public consultation and participation.

The NWA provides for the decentralisation and devolution of the responsibility and authority for water resource management from DWAF to nineteen Catchment Management Agencies (CMAs) covering all the river catchments of South Africa. The core purpose of the CMAs will be to manage and ensure the sustainable use of water resources in their areas of operation in line with the overall intent of the NWA. Once established, each CMA must develop and implement a Catchment Management Strategy (CMS) that is aligned with the NWRS for the water resources within its own Water Management Area (WMA). These CMSs will form the most important instrument for the integrated management of water resources in each WMA.

In the interim period, until such time as the CMAs are established and CMSs developed, it is important that strategic direction and further insight is gained by DWAF in order :

- for DWAF Regional Offices to manage the water resources in each WMA in accordance with the NWA and the NWRS,
- to prioritise actions for implementation of the National Water Act (NWA), and
- to structure and prioritise future planning studies.

With this objective, DWAF have embarked on an exercise to develop Internal Strategic Perspectives (ISPs) for each of the WMAs or sub-areas of the WMAs.

The region covered by this ISP is the Amatole – Kei area, which forms the western part of the Mzimvubu to Keiskamma Water Management Area (WMA No. 12) and lies wholly within the Eastern Cape Province. A separate ISP study will be undertaken for the remainder of the WMA.

2. LOCALITY AND PHYSICAL CHARACTERISTICS

The Amatole – Kei ISP area comprises the Amatole and Kei primary catchments (R and S) and is located in the Mzimvubu to Keiskamma Water Management Area (WMA 12) of

(ii)

the Eastern Cape. A separate ISP is being developed for the Mbashe to Mzimvubu catchments. The Amatole – Kei area has been divided into five sub-areas for the development of an Internal Strategic Perspective. These sub-areas are :

- The Amatole sub-area - catchments R20/30
- The Keiskamma sub-area - catchments R10/40/50
- The Upper Kei sub-area - catchments S10/20/31/32
- The Middle Kei sub-area - catchments S40/S50
- The Lower Kei sub-area - catchments S60/70

The map following this Executive Summary shows the demarcation of the Amatole – Kei ISP area.

The topography of the area is defined by the Amatola mountain range which divides the two primary catchments :

- The Amatola coastal catchments (7 936 km²) with their headwaters draining the southern slopes of the Amatola mountain range at an altitude of some 1960 masl. The main rivers of the Buffalo, Keiskamma and Nahoon Rivers drain in a south-easterly direction into the Indian Ocean along the coastline either side of East London.
- The Great Kei catchment (20 485 km²) which drains the northern slopes of the Amatola mountain range and the southern slopes of the Stormberg / Drakensberg range at an altitude of 2400 masl with the upper Kei Catchment centred around Queenstown. The middle and lower Great Kei River reaches are characterized by a deeply incised valley, which exits into the Indian Ocean at Kei Mouth north of East London.

The area consists predominantly of the Beaufort Series of sandstones, shales and mudstones interspersed with dolerite dykes and sills.

The climate and temperature variations of the ISP area are closely related to elevation and proximity to the coast. The study area experiences a temperate climate along the coast to more extreme conditions inland with snowfalls occurring on high ground during most winters. Annual rainfall along the coastline varies from approximately 500 mm in the west to approximately 1000 mm in the east, and over 1200 mm in the Amatola mountains. Annual rainfall in the Kei catchment varies from a low of approximately 400 mm in the Upper Kei catchment around Sterkstroom, to 700 mm in the Middle Kei catchment, to 1000 mm at Kei Mouth.

3. VEGETATION AND LAND USE

The vegetation of the area is predominantly savanna in the Amatole catchment and grasslands in the Great Kei catchment. Indigenous and commercial forests in the Amatola mountains and valley thicket in the river valleys are the other important vegetation types.

Land use has been influenced by the previous homeland policy, where former South African areas are predominantly private small stock and cattle farms, and the former Ciskei and Transkei areas are mainly communal subsistence and grazing lands. Intensive vegetable and dry-land pineapple farms are located in the Amatole catchments with commercial forestry in the Amatola mountains. A number of large but defunct irrigation schemes are found in the former Ciskei and Transkei areas based on large dams viz. Binfield Park, Sandile, Cata, Waterdown and Oukraal Dams in the former Ciskei, and Xonxa, Lubisi and Ncora Dams in the former Transkei homeland. These schemes are currently being revitalized by the Provincial Department of Agriculture and the District Municipalities.

4. DEMOGRAPHY

The only large urban area is centered in the Buffalo City Municipal (BCM) area around East London. Other significant towns are Queenstown and Butterworth. The population of the ISP area was estimated at 1 761 000 in the year 2000, with 953 000 (54%) people residing in the Amatole catchment and 808 000 (46%) in the Great Kei catchment. The only area expected to experience significant growth in the future is the Buffalo City Municipal area where employment opportunities will attract people from the smaller urban centres and rural areas. Little change in the overall population of the ISP area is expected over the next ten years.

5. LAND TENURE

As with land use, land tenure in the area is characterised by the different systems found within South Africa and those of the former Ciskei and Transkei. Due to many factors associated with the tribal land tenure system such as overgrazing on communal lands, using land as collateral for bank loans etc, attempts have been made in the past to change the system but to date these have not met with much success.

6. ECONOMIC DEVELOPMENT

There are four main economic activities in the area viz. manufacturing, agriculture, forestry and tourism. These four sectors have been identified by the Provincial Government in their Growth and Development Strategy as being the basis upon which further economic growth will occur and be promoted.

The industrial and manufacturing activities are based mainly in the BCM area with vehicle manufacturing being the dominant industry. The main industrial opportunities for further economic growth will continue to be based on the development of industries and trade in the BCM area (East London - King William's Town corridor). This has been recognized by government and the East London Industrial Development Zone (ELIDZ) is presently being established as an incentivised trade zone on the west bank of the Buffalo River, close to the harbour.

Cultivation of dry land crops, irrigated agriculture, and stock farming are practised throughout the rural areas. Regeneration and expansion of rural economic activities will

take place once the defunct irrigation schemes in the former Ciskei and Transkei are revitalised and placed on a sound and sustainable economic footing. This is being actively driven by the Provincial Government as one of the main pillars for economic growth and poverty eradication in the rural areas.

The commercial forestry industry is centred in the Amatola mountains around Stutterheim and opportunities have been largely exploited. There is additional potential for the manufacture and processing of products from these commercial forestry activities.

East London, the surrounding pristine coastline and its estuaries, and the Amatola mountains are also increasingly becoming the focus for regional tourism. Further expansion of tourism facilities will create labour enhancing opportunities in an area where the unemployment rate exceeds 50%.

7. WATERWORKS

Several major dams have been constructed for urban/industrial supply, irrigation supply and for hydropower generation. Those dams with a live storage greater than 10 million m³ are listed below.

Major Dams in the Amatole – Kei ISP Catchments

Dam Name	River	Purpose	Live Storage Capacity (million m ³)	Firm Yield* (million m ³ /a)
Amatole Primary Catchment (R)				
Binfield Park	Tyume/Keiskamma	Domestic, irrigation	36,8	16,5
Bridle Drift	Buffalo	Domestic	101,7	30,7
Cata	Keiskamma	Irrigation	12,1	6,2
Laing	Buffalo	Domestic	21,0	14,9
Nahoon	Nahoon	Domestic, irrigation	20,7	7,8
Sandile	Keiskamma	Domestic, irrigation	30,9	18,0
Kei Primary Catchment (S)				
Doring River	Indwe	Domestic, irrigation	17,8	3,4
Lubisi	Indwe	Irrigation	135,0	28,5
Ncora	Tsomo	Irrigation, hydropower	120,0	98
Oxkraal	Oxkraal/Klipplaat	Irrigation	17,8	6,2
Tsojana	Tsojana/Tsomo	Domestic	9,3	3,2
Waterdown	Klipplaat	Domestic, irrigation	36,6	16,5
Wriggleswade	Kubusi	Domestic, irrigation	91,2	25,4
Xilinx	Gcuwa	Domestic	14,5	9,4
Xonxa	White Kei	Irrigation	126,0	27,6

* At a 1 in 50 year assurance

The only water transfer scheme out of the ISP area is that from the Ncora Dam to the adjacent Mbashe catchment for irrigation at the Ncora Irrigation Scheme (20 million m³/a), and for hydropower generation at Ncora Dam itself and at Collywobbles hydropower station lower down in the Mbashe catchment (85 million m³/a). Within the ISP area, the two large internal transfer schemes are the Wriggleswade Scheme for transfer of raw water from the Kubusi catchment (Wriggleswade Dam) to supplement the Amatole Water Supply System supplying the BCM area (18 million m³/a), and the Klipplaat Government Water Scheme, which includes the transfer of water from

Waterdown Dam to Queenstown and Sada / Whittlesea (8,25 and 4,2million m³/a respectively).

Future large waterwork schemes that will be required within the next eight to ten years include an additional water supply for Queenstown (possibly from Xonxa Dam), which is currently suffering from ongoing water restrictions, and an additional water supply for the Buffalo City Municipality. Options for Queenstown are presently being investigated by DWAF. Optimal use of existing resources and new sources of additional water for the BCM will need to be investigated and firm proposals made within the short term.

Groundwater is widely used to supply small coastal villages, rural villages and some towns. However, the bulk of the population receives water from surface water supplies, which are generally adequate where the infrastructure is in place. A large number of rural villages still do not have adequate and safe water supplies for domestic use nor adequate sanitation facilities. There is an ongoing programme implemented by the District Municipalities and supported by DWAF for the construction of water supply infrastructure to all the inhabitants of the area, within the financial and manpower constraints of government.

8. WATER RESOURCES AVAILABILITY

Surface water resources

The natural mean annual run-off (MAR) for the ISP area is 1 586 million m³/a, with the Amatole catchments contributing 559 million m³/a (35%) and the Great Kei catchment 1 027 million m³/a (65%).

By far the largest allocated water use in the ISP area is for irrigation making up about 51% of total water use. The next largest water use is for domestic/industrial use which accounts for about 43% of total water use. There is a significant area of afforestation, which is estimated to reduce the yield available to other users by approximately 15 million m³/a.

Groundwater resources

Although it is estimated that significant quantities of groundwater exist in the ISP area, the actual use of groundwater is relatively small. This is mainly due to the generally well watered nature of the area and the wide occurrence of perennial surface streams, which reduces the need for groundwater abstraction.

Groundwater occurrence is very variable over the area with borehole sources located either in fractured rock or the primary/intergranular aquifers. The recharge to these aquifers and the run-off into the region's rivers are largely dependent on the climate/rainfall which is in turn controlled by the Amatola mountain range that transects the ISP area from west to east, the high lying Winterberg in the north west and the foothills of the Stormberg in the north east. The Amatola mountains receive the greatest amount of rainfall, which reflects in the recharge potential of the area.

Information and data on the groundwater potential of the ISP area is lacking with the result that it is not currently possible to quantify the available groundwater resources. The groundwater figures given in the table below are a reflection of the actual groundwater use rather than the available potential, which is believed to be of the same order of magnitude as the surface water resources.

The total water available for use in the Amatole and Kei primary catchments has been analysed in the ISP study and the results have been compared to the NWRS figures as shown in the following table.

Comparison of Water Availability between the ISP and the NWRS (Year 2000)
(million m³/a)

Type of Water Resource	NWRS		ISP	
	Amatole Primary Catchment	Kei Primary Catchment	Amatole Primary Catchment	Kei Primary Catchment
Total surface water resource yield ¹	135	372	135	372
Subtract:				
- Ecological Reserve	7	35	21	35
- Invasive alien plants	6	12	6	12
Net surface water yield available for use	122	325	108	325
Available groundwater resource	1	14	1	14
Usable return flows	26	20	19	20
Total Local Yield	149	359	128	359

(1) After allowance for the impacts on yield of ecological Reserve, river losses, invasive alien plants, dry land agriculture and urban run-off.

From the above table it can be seen that the available yield figures in the Kei primary catchment are the same for both the NWRS and ISP. However, for the Amatole primary catchment the available yield is lower for the ISP than that determined for the NWRS. The difference is due to the higher ecological Reserve and lower usable return flows that were more accurately determined as part of the Amatole System Environmental Study (Ref. 26) which was completed after the NWRS estimates were done. It is recommended that the ISP figures be used.

9. WATER REQUIREMENTS AND WATER RECONCILIATION

A similar comparison has been undertaken as part of this ISP study to compare the NWRS water requirement figures with the ISP figures based on the latest available information.

Comparison of Water Requirements between the ISP and NWRS (Year 2000)
(million m³/a)

Sector	NWRS		ISP	
	Amatole Primary Catchment	Kei Primary Catchment	Amatole Primary Catchment	Kei Primary Catchment
Irrigation	33	135	29	98
Urban	57	18	70	21
Rural	5	10	6	11
Afforestation	4	11	2	13
Total Local Requirements	99	174	107	143

Within the Amatole catchment the difference can mainly be attributed to the latest estimate for water requirements within the Buffalo City Municipality (BCM) based on figures contained in the Water Services Development Plan (**Ref. 5**), which indicates a higher requirement than the NWRS estimate.

The difference between the ISP and NWRS figures for the Kei catchment is largely due to the determination of irrigation requirements in the Black Kei sub-catchment. Further investigation and analysis of information contained in the Water Resources Situation Assessment (**Ref. 24**), the WARMS database and the WSAM database revealed that the NWRS figures had overestimated the water requirements for irrigation. This was confirmed through consensus at the ISP workshops. Until such time as a more accurate figure for scheduled irrigation areas in the Kei primary catchment is determined, it is recommended that the ISP figures be used.

Based on the above comparative tables for water availability and water requirements, a comparative water balance between the NWRS and ISP figures is presented in the following two tables. The first table shows the water balance **without** transfer from the Wriggleswade Dam in the Kubusi catchment to the Buffalo/Nahoon catchments. The second table shows the water balance **with** transfer from the Wriggleswade Dam in the Kubusi catchment to the Buffalo/Nahoon catchments.

**Comparison of Water Balance between the ISP and the NWRS (Year 2000)
(million m³/a) without inter-basin transfer from Wiggleswade Dam**

Description	NWRS		ISP	
	Amatole Primary Catchment	Kei Primary Catchment	Amatole Primary Catchment	Kei Primary Catchment
Total local yield	149	359	128	359
Transfer in	0	0	0	0
Total yield	149	359	128	359
Local requirement	99	174	107	143
Transfer out	0	85	0	105
Total requirement	99	259	107	248
Water Balance	50	100	21	111

**Comparison of Water Balance between the ISP and the NWRS (Year 2000)
(million m³/a) with inter-basin transfer from Wiggleswade Dam**

Description	NWRS		ISP	
	Amatole Primary Catchment	Kei Primary Catchment	Amatole Primary Catchment	Kei Primary Catchment
Total local yield	149	359	128	359
Transfer in	0	0	18	0
Total yield	149	359	146	359
Local requirement	99	174	107	143
Transfer out	0	85	0	123
Total requirement	99	259	107	266
Water Balance	50	100	39	93

The ISP study area is one of the few in the country that has surplus water resources available. However, it must be emphasised that the catchment wide figures of the Amatole - Kei area can be misleading as local deficits are experienced in some quaternary catchments, such as in the Upper Buffalo River in the Amatole sub-area and in the Upper Kei sub-area.

The Amatole sub-area is highly regulated and developed and is presently in balance with respect to existing water use and existing supplies sourced from within the sub-area. As growth in demand is experienced in the sub-area mainly from Buffalo City, it will be necessary to implement the inter-basin transfer of water from Wiggleswade Dam on the Kubusi River to the Amatole sub-area catchments. It is estimated that even with this transfer and demand side management and water re-use, the Amatole sub-area which includes Buffalo City is likely to experience a water deficit by the year 2012.

In the Upper Kei sub-area an overall surplus balance is shown. However, the Klipplaat River, a tributary of the Black Kei River, has relatively large areas allocated for irrigation. This, together with the urban requirements of Queenstown and Sada/Whittlesea and the domestic requirements of the large rural population, has resulted in an over-allocation of

the water resources from Waterdown Dam compared to the available yield. As a result there is a local deficit in the Klipplaat catchment resulting in irrigators receiving water at a relatively low level of assurance.

The Middle Kei sub-area is presently showing a slight water deficit due to the transfer of water from the Ncora Dam on the Tsomo River to the Mbashe catchment for irrigation requirements at the Ncora irrigation scheme and hydropower generation by Eskom at Ncora Dam and at Collywobbles.

10. WATER QUALITY

The quality of surface water in the ISP area varies markedly from one catchment to another. Within the Amatole catchments, the coastal rivers that fall outside the BCM urban complex generally have good quality raw water, although increasing soil erosion is reducing the quality of the rivers and estuaries. Rivers within the BCM area such as the middle and lower Buffalo River, Nahoon and smaller urban catchments have been heavily impacted by urbanization. The most impacted river is the Buffalo River due to the multiple use of the river water, the treated effluent return flows, which due to overloaded waste treatment works are often not of an acceptable standard, and the general poor state of sewerage infrastructure leading to raw sewage overflows. Within the Kei catchment, the surface water quality is average with increasing soil erosion due to poor land use practices impacting on the water quality.

Data on groundwater quality is lacking, but in general the water quality improves with distance from the coast where groundwater salinity is a problem in most boreholes. Increased “urbanization” of rural villages and soil erosion impacts on the groundwater resources in these areas. This a cause for concern as new domestic water supplies for rural villages are increasingly being sourced from groundwater resources.

11. PERSPECTIVE ON THE SUB-AREAS

As part of the situation analysis of the five identified sub-areas, a large number of concerns and issues have been identified. The most important ones are listed below. These issues have been explored further in each detailed strategy.

The Amatole Sub-area

- BCM's future water supply source needs to be addressed timeously.
- Increasing pollution of the Buffalo, Nahoon and small urban rivers within the BCM area is a cause of great concern to the inhabitants of the area.
- The fragmented ownership, operation and maintenance of the Amatole Water Supply System complicates the operation of the system and inhibits the optimal use of the available raw water resources.
- Poorly constructed and maintained water and sewerage infrastructure especially in Mdantsane within the BCM is the cause of expensive water wastage and

pollution due to excessive leaks. An urgent water conservation and demand management programme has been identified by the BCM for implementation.

- A lack of financial and skilled manpower resources within DWAF, the District Municipalities, the BCM and the smaller local municipalities is a major constraint for the optimal management and maintenance of the water supply systems in the area.

The Keiskamma Sub-area

- Whilst an accurate water balance for the Keiskamma River is not known due to a lack of data records, the upper river system could be approaching a stressed state, especially if the existing irrigation schemes are fully rehabilitated and ecological Reserve releases occur. The surplus water in the Keiskamma system dams (Sandile and Binfield Park) is also seen as a potential future raw water source to augment the Amatole Water Supply System for BCM. An accurate systems yield analysis will need to be performed in order to confirm this as a possibility.
- Rehabilitation of the three irrigation schemes at Tyume, Zanyokwe and Keiskammahoek and the establishment of WUAs is a priority in terms of economic growth and poverty eradication in the area.

The Upper Kei Sub-area

- The over-allocation of water from the Waterdown Dam for the Klipplaat Government Water Supply Scheme and for the urban requirements of Queenstown and Sada/Whittlesea needs to be urgently addressed and reconciled. Together with this, is the urgent need to augment Queenstown's water supply as well as revitalise the defunct irrigation schemes in the former Ciskei. Two studies are presently being conducted to address these issues.
- In addition to the irrigation schemes in the former Ciskei, it is critical for growth and poverty eradication that the large defunct irrigation schemes in the former Transkei (Xonxa, Qamata, Ncora) are also revitalised and brought into production on a sustainable basis using the large water allocations from Xonxa, Lubisi and Ncora Dams.
- Soil erosion due to bad land use management practices is leading to an increase in the turbidity of the rivers and high dam sedimentation rates. This issue is currently being discussed as part of a co-operative governance initiative by DWAF and the Provincial Department of Agriculture. A soil conservation programme similar to DWAF's WfW is envisaged. A "Working for Soil (WfS)" initiative could also form part of Government's Expanded Public Works Programme.

The Middle Kei Sub-area

- The cost/benefit use of water from the Ncora Dam mainly for hydropower generation, where very few local benefits are generated, requires an in-depth study between DWAF and Eskom to ascertain whether more beneficial use of the

water could be derived for the poverty stricken local population. In the first instance, the actual yield and existing use of the dam needs to be accurately defined. A study on this aspect is currently being undertaken by DWAF as part of the Emerging Farmer Support Programme.

The Lower Kei Sub-area

- Serious pollution of the Gcuwa River and the Kei River downstream of Butterworth is caused by run-off from the large unlicensed solid waste site on the banks of the river as well as pollution from the few remaining industries in the town.

12. ISP STRATEGIES

The many issues and concerns identified in the ISP area will be addressed through the implementation of appropriate regional water management strategies, some of which are already in place. DWAF has identified the essential strategies required to manage the Amatole – Kei ISP area. Further strategies will be added as necessary.

Ten broad strategy groups that cover all necessary current and required future water management activities, have been identified from current DWAF Regional Office activities and the requirements of the NWA and the NWRS. These main strategies are:

- ⇒ Water balance and reconciliation
- ⇒ Water resources protection
- ⇒ Water use management
- ⇒ Water conservation and demand management
- ⇒ Institutional development and support
- ⇒ Social and environmental considerations
- ⇒ Integration and co-operative governance
- ⇒ Waterworks development and management
- ⇒ Monitoring and information management
- ⇒ Implementation.

Under each of these main strategy groups, specific strategies particular to the Amatole – Kei ISP area have been developed.

For each strategy, the following aspects are addressed:

- **Management objectives**, in terms of the envisaged solutions for the strategy.
- **Situation assessment**, providing a synopsis of the current situation with a focus on the issues.
- **Strategic approach**, stating the approach or plan that DWAF will follow to reach its objectives for the strategy.
- **Management actions**, stating the required actions to implement the strategy.
- **Responsibility**. The responsible offices or Directorates are named.
- **Priority**, in terms of the ISP rating system (1 – 5, where 1 indicates the highest priority).

13. CONCLUSIONS AND RECOMMENDATIONS

This ISP document provides a first attempt at compiling a perspective of how DWAF wishes to manage the water resources of the Amatole - Kei catchments. Reference has been made to the enabling legislative and environmental frameworks within which water plays an essential role. Water demands must be met in such a way that its use fully supports social and economic development, equity, sustainability and efficient and effective use of water.

Together with the many studies and reports on the area, the Eastern Cape Regional Office of DWAF has provided a wealth of regional water management information. The issues and concerns that were identified during the preliminary interviews and follow up workshops are discussed under the various strategies that have been developed for implementation.

Strategies with a strong regional emphasis on the Amatole – Kei have been developed for implementation under the ten main strategy groups. Generic and national strategies have not been included in this ISP.

Unlike many catchments within South Africa, the Amatole – Kei catchments have an overall surplus water yield. However, this general statement can be misleading as local deficits are experienced in some quaternary catchments.

Continued urban and industrial growth in the BCM area and the resultant growth in water demand, will require the implementation of effective conservation and demand management measures, including water re-use. Additional development of water resources will nevertheless be required, sometime between the years 2012 to 2015 depending on the success of the East London IDZ in attracting industries. At the same time, the quality of water of the main rivers currently supplying the BCM is rapidly deteriorating and a comprehensive water quality management plan will need to be put in place in the short term to address the situation.

Within the Upper Kei Catchment there has been an over-allocation of water from Waterdown Dam which is Queenstown's main water supply. With the revitalisation of the defunct irrigation schemes established during the period of the former Ciskei and Transkei and the taking up of water rights and allocations, the assurance of water supply to Queenstown is decreasing. A study is presently being undertaken to address the problem, and implementation of the recommendations is on the critical path as the town is currently suffering from water restrictions.

A very important support role will be required from DWAF in aligning itself with the Eastern Cape Provincial Government's Growth and Development Strategy, which has as one of its main pillars for the eradication of poverty, the revitalisation and expansion of agriculture (irrigation) especially in the former Ciskei and Transkei areas. Close co-operative governance and liaison will be required between officials of DWAF, the Provincial Department of Agriculture and the Amatole and Chris Hani District Municipalities in order to ensure the efficient, effective and timeous allocation of available water for this purpose.

While it is recognised that the groundwater resources of the region must play an important part in securing the future water supplies, the lack of knowledge, understanding and data on this valuable resource needs to be urgently addressed if this resource is to play a meaningful role.

With the role of DWAF in the future focusing on support, monitoring and regulation rather than direct service delivery, it is vital that the monitoring and information systems within DWAF both at a regional and national level are upgraded and become fully functional and populated with reliable data. This is critical for the future success of DWAF in supporting not only DWAF officials but also the wider public service and civil society.

Ensuring effective implementation of the ISP is the major challenge that lies ahead. The key to success will be to appoint staff to be responsible for the various strategies and their implementation. The responsible DWAF staff need to buy-in and take ownership of these strategies, develop them further and refine and improve them until such time as the Catchment Management Agency assumes responsibility.

The ISP provides the basis for further development of the identified strategies and possible new ones. Any proposed action must in the first instance conform to these strategies or require special evaluation against ISP priorities if it is to be supported.

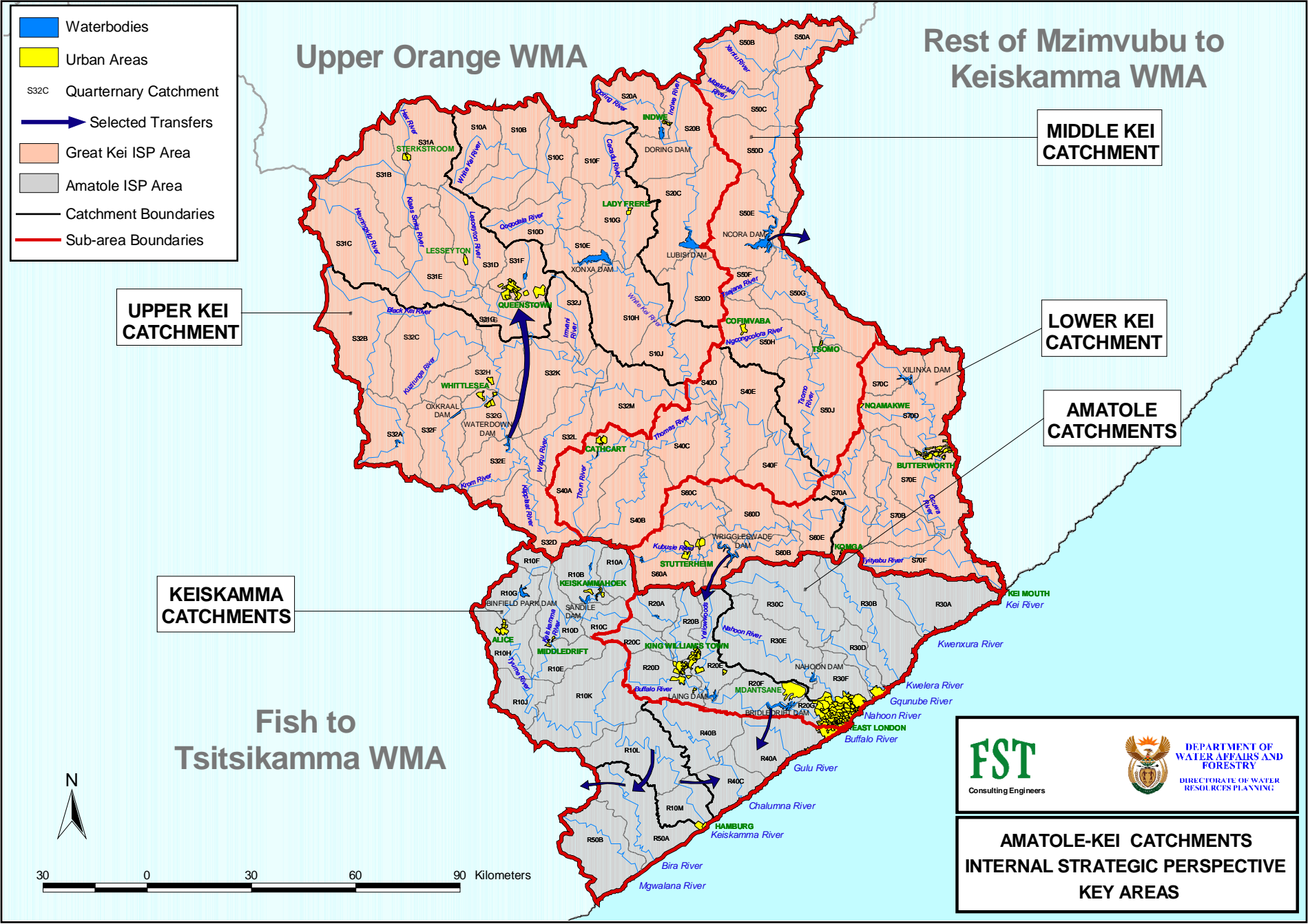
The various actions required to implement the ISP strategies have as far as possible been identified and listed under each strategy. The general lack of adequate skilled manpower and financial resources will however influence the scope of work that can actually be addressed under the various strategies. This limitation should not be underestimated if the strategies are to be successfully developed in the future. Each strategy has been prioritised. Following on from this study, a further requirement is that the actions listed under each strategy should be revisited and prioritised to be in line with the available resources and funding to implement each strategy. The possibility of repositioning or retraining DWAF staff to be able to address the identified strategy priorities must be considered. Alternatively, obtaining additional staff resources with the right training and mindset must receive the highest consideration.

It was not possible to develop all possible strategies that may be required for the Amatole-Kei ISP area. For example, a detailed strategy to deal with the East London IDZ development with respect to water re-use may still be necessary. The critical issue of soil conservation needs a detailed co-operative strategy that must be compiled together with the Provincial Department of Agriculture. Other required strategies may become apparent and should be developed as they become necessary. Some strategies combine aspects that may need to be expanded into separate strategies. The issues and problems encountered with water supply and sanitation infrastructure programmes, especially in rural areas, are not addressed in this ISP.

It is recognised that there are likely to be some omissions and unforeseen priorities, but this ISP provides the basis for further development. Where the need for certain strategies has been identified but the information for a detailed situation assessment is lacking, future management action will be required to develop such strategies. This aspect applies specifically to the following areas:

- Transfer of water from Ncora Dam to the Mbashe catchment for generation of hydropower by Eskom and for the Ncora Irrigation Scheme.
- Need for a comprehensive Soil Conservation Programme to be undertaken by the Provincial Department of Agriculture with the support of DWAF in order to protect the water resources from sediment run-off.
- The removal and/or licensing of invasive alien wattle plantations in the ISP area requires further investigation due to their importance (existing and potential) for the local rural economy. This should be connected to a strategy for further commercial forestry in the area, which at present has not been considered as a possibility.
- Due to the pristine nature and environmental sensitivity of the area's rivers and estuaries, it is vital that the ecological Reserves are analysed to a level which instills confidence in their use. Only then can a detailed strategy be developed for implementation of Reserve releases and monitoring.

This ISP will form the basis on which the water resources of the ISP area will be managed until the Catchment Management Agency has been established and starts functioning effectively. It is expected that the ISP will provide a valuable basis for the future Catchment Management Agency to use and from which it can develop its own catchment management strategy.



(X)