

# Environmental management sector plan



## High level overview

The City of Joburg recognises the contribution and significant role played by the natural environment in provision of sustainable services to its constituents. Issues of climate change, water pollution, air pollution, waste management, conservation and open spaces, continues to dominate City's agenda in line with international trends and other cities. Similarly, compliance to applicable environmental regulation and overall literacy and awareness about environmental issues are just as dominant. Apart from compliance with environmental regulations, Johannesburg, as an aspirant world class African city, intends to be globally recognised as taking proactive response to environmental global concerns. This aspiration puts pressure on CoJ to respond and take the lead, particularly in the African Continent. South Africa is a signatory to some of the international treaties and conventions designed to deal with the emerging multilateral environmental issues. The Department represents the City and also participates in the international and national forums and initiatives to address these issues.

The Environment Portfolio has taken this mandate with great strides and continues to guide the City in fulfilling the abovementioned obligations. The mandate includes the following:

- Development and implementation of environmental policy and strategy;
- Environment regulation and enforcement;
- Compliance monitoring and reporting;
- Biodiversity and conservation;
- Open space management;
- Provision of burial spaces;
- Oversight of the environmental performance of the City in general;

- Waste management;
- Air quality management; and
- Reducing impact of climate change.

The portfolio is made up of the Environment Core Department, Johannesburg City Parks and the Johannesburg Zoo. The Environment Department is responsible for developing policies and strategies to the extent of environmental planning and management. Johannesburg Zoo and Johannesburg City Parks in turn act as implementing agents. Johannesburg City Parks is responsible for the management of the City's parks, cemeteries and nature conservation, whilst Johannesburg Zoo provides conservation, education, research and recreation functions to the citizens of the City. The Environment Department therefore has an oversight function on the business of the two entities. This oversight role also encompasses the service delivery monitoring function of the two entities, together with cooperative governance and financial sustainability with the support of the office of the MMC.

The 2006/11 integrated development plan outlines the key five-year sector objectives the City is working towards in realising its goals as far as environmental issues are concerned. The attainment of such objectives is dependent on the successful implementation of programmes such as water pollution, protection of resources, waste management, air pollution prevention, climate change mitigation and adaptation, and compliance monitoring, as well as integration of environment issues into City's planning processes.

### Five-year promise

The sector has done well in meeting most of the five-year objectives, as outlined in the Sector Plan. This includes tree planting, river trail clean up, wetlands and waterbodies rehabilitation, increased visitor numbers to the Zoo amongst other. However, there are some challenges mainly relating to unavailability of information to report properly on progress and some of these are listed below:

- Ten percent water improvements in integrity of water resources – the Environment Department commissioned the State of Rivers Report, which will provide quantified measure of improvements in water resources, looking at trends. The study should be completed by June 2010.
- Five percent reduction in air pollution – there has been number of programmes implemented towards improving air quality and includes Basa njengo Magogo efficient fuel burning method and enhanced enforcement of air quality legislation. However, the extent to which these have contributed in reducing air pollution can not be ascertained at this stage, due to gaps in information. The department is gathering as much information as possible so as to be able to quantify improvements.
- Fifteen percent reduction in waste disposed at landfill sites – similarly the unavailability of information has posed a challenge for the sector to report on progress to date. The Department is working with ISD and Pikitup in collation of information and ensuring that all waste minimisation activities are recorded and monitored, such from both private and public-owned buy back centres.

The sector is confident that most of these targets, although progress is not quantifiable at this stage, will be met. There are a number of programmes talking to these objectives and progress to be included before finalisation of 2009/10 IDP review and/or departmental/ME business plans.

### Environmental management sector indicators

The Environmental indicators are informed by the five-year IDP strategic objectives of ensuring sustainable development and environmental justice, and providing recreational facilities (developing parks) through Johannesburg Zoo programmes especially in previously disadvantaged areas of the south.

Indicator	Five-year target (2006/11)	Progress against the five-year target (accumulated)	2010/11 delivery agenda
Number of trees planted on sidewalks, in parks and private properties	200 000	173 671 to date	20 000 (memorial trees)

Indicator	Five-year target (2006/11)	Progress against the five-year target (accumulated)	2010/11 delivery agenda
Percentage reduction in waste disposal to landfill and sorting at source in the City	15% reduction of waste to landfill (based on the 2006 baseline)	<ul style="list-style-type: none"> <li>• 8 835</li> <li>• 6 595 tons of waste recyclables collected</li> <li>• Approximately 5% recovered annually for recycling or reuse through Pikitup sites (garden sites), waste separation at source and other initiatives</li> </ul>	<ul style="list-style-type: none"> <li>• 200 tons of waste from major events to be diverted from landfill</li> <li>• Establishment of two buyback centres in Naledi and in the Inner City</li> <li>• Further roll-out of recycling programme – CoJ buildings and Regions</li> <li>• Region specific waste management education &amp; awareness (X7)</li> <li>• Formalisation of trolley brigades in the Inner City (at least 30 trolley brigades)</li> </ul>
Percentage reduction in air pollution levels	5% reduction based on 2005 baselines	<p>Basa njengo Magogo Project rolled out in:</p> <ul style="list-style-type: none"> <li>• Alex (10 000)</li> <li>• Soweto (30 000)</li> <li>• Lenasia (10 000)</li> </ul>	<ul style="list-style-type: none"> <li>• Compliance monitoring and enforcement of priority pollutants through NEMA: AQA and APPA target of 85% compliance</li> <li>• Air pollution control by-laws enforcement – target of 50% compliance</li> <li>• MEs Compliance monitoring and reporting</li> </ul>
Percentage improvement in integrity of water courses and in river health	10km of water courses rehabilitated  10% improvement in integrity of water resources	<ul style="list-style-type: none"> <li>• 1 176 ha of water courses cleaned up and rehabilitated (more than 30 km done to date)</li> <li>• Kliprivier/Klipspruit Legacy Project: completed Ubuntu and Mofolo South Nodes; 50% of Dlamini Node to be completed by June 2010</li> <li>• Ongoing operation and maintenance of litter trap</li> </ul>	<ul style="list-style-type: none"> <li>• Additional 200 ha of water courses rehabilitated</li> <li>• Implementation of Kliprivier/Klipspruit Legacy Project (Dlamini, Braamfischerville, Protea Zone 2, Mshenguville, Bosmontspruit and Noordgesig)</li> <li>• Catchment rehabilitation interventions in upper Jukskei (litter trap – average of 8 tons removed during rainy season)</li> </ul>
Number of water bodies rehabilitated for ecological and recreational purposes	Five water bodies	Four Water bodies (Florence Bloom, Westdene Dam, Zoo Lake and Bruma Lake) – include clean up, litter control, reeds and minor earthworks	Rehabilitation of Bruma – de-sludging and installation of filtration system
Number of wetlands rehabilitated for aquatic habitats and watercourse	Five wetlands	<ul style="list-style-type: none"> <li>• Four wetland systems were rehabilitated (Mapetla, Baileyspruit, Florence Bloom and Bosmontspruit)</li> <li>• Lakeside wetland rehabilitation under way</li> </ul>	3 Wetlands for rehabilitation through SANBI: Mapetla, Dorothy Nyembe and Tsutsumi Spruit in Alexandra

Indicator	Five-year target (2006/11)	Progress against the five-year target (accumulated)	2010/11 delivery agenda
Percentage increase in the total land area proclaimed as conserved area	5% of the city's total area by 2011  Overall achievement against target – 2% annual clearing of total infested land with alien plants in Jhb	<ul style="list-style-type: none"> <li>• 67 recreational parks and 41 nature areas submitted for zoning</li> <li>• Five ecological management plans developed and currently implemented</li> <li>• 2 462,6 ha cleared of alien vegetation through Working for Water and JCP</li> </ul>	<ul style="list-style-type: none"> <li>• Re-proclaim Jhb Botanic Gardens</li> <li>• 20 000 beneficiaries to be reached through environmental education programmes</li> </ul>
Percentage reduction in greenhouse gas emissions through flagship projects	2% reduction  Five flagship projects	Three flagship projects: <ul style="list-style-type: none"> <li>• Retrofitting of city-owned buildings underway – 5/104 completed</li> <li>• 222 solar water heaters installed at Cosmo City and ARP, 700 additional solar water heaters in Cosmo City by end of 2009/10</li> <li>• BRT emissions – CDM application under way</li> </ul>	<ul style="list-style-type: none"> <li>• Completion of climate proofing in Cosmo City – overall total of 700 households and seven schools identified</li> <li>• Retrofitting of remaining council-owned buildings – balance of 104 identified buildings</li> </ul>
Percentage compliance of City's (capital) projects to the EIA regulations	95% compliance	90% for City's CAPEX projects	95% compliance
Percentage compliance of strategic projects to EIA specific conditions	95% compliance	<ul style="list-style-type: none"> <li>• 90% ARP</li> <li>• 90% Cosmo City</li> <li>• 90% Gautrain</li> </ul>	95% compliance

### Challenges and opportunities

The Environment Sector is confronted by a number of challenges, which have remained over the years, which may affect its service delivery mandate. The attempts to mitigate the impact of these challenges have provided major opportunities for the Sector to efficiently and effectively deliver on its mandate.

The legislative and policy environment that gives guidance to the work of the department is ever changing, and thereby expanding the scope/mandate of the department. The department continues to participate in ongoing legislative processes of relevant departments such as the Department of Water and Environmental Affairs and Department of Minerals and Energy. The department also engages with the provincial department of Agriculture and Rural Development on any legislative and policy initiatives. Through this process the City anticipates and prepares for implementation of new policy and legislative requirements. There is also participation at SALGA environment sub-committees to ensure alignment with neighbouring municipalities.

Air pollution continues to pose challenges due to Johannesburg's reliance on private vehicles and the burning of fossil fuels, such as coal for space heating and cooking, specifically in low income areas. The Sector has successfully led the implementation of specific sectoral programmes (domestic, vehicle and industry) to respond appropriately. The strengthening of air pollution prevention regulations, including development of air pollution control by-laws (targeting non-listed activities such as vehicle emissions) and air permitting systems, promises to fast track improvements in air quality. Further, the City has successfully implemented the Bus Transit Transport System and continues to roll-out Basa njengo Magogo (BnM) education and awareness programme, to mention but a few, in contributing to a reduction in emissions and improvement of the poor air quality levels.

The surface water quality remains a challenge, mainly due to blocked sewers, ageing and inadequate infrastructure and littering carried via the stormwater drains into Johannesburg's rivers. There has been some progress in terms of

responding to the issues. Quarterly reporting with specific action plans to address pollution is in place. A hotspot action programme has also been implemented to respond to recurrent hotspot areas. Appropriate institutional mechanisms have been put in place to deal with this issue, as witnessed through the establishment of a Water Quality Multi-Task Team to deal with specific hotspot areas. There is ongoing collaboration with the government departments, forums, communities and the private sector to do river cleanup and rehabilitation. In order to reverse environmental degradation, catchment management rehabilitation remains a key priority. The rehabilitation of the southern catchment, the Klipriver/Klipspruit Greening and Rehabilitation Project, is one of the biggest projects for the Sector and is implemented by City Parks. Further to this is the completion of rehabilitation plans for Bruma Lake and Zoo Lake, including rehabilitation of the Jukskei catchment. Work has also started in determination of city-wide flood risk areas as led by Johannesburg Roads Agency.

Securing funding, particular CAPEX (both CoJ and external funding), has been one of the challenges for the sector. Therefore the improvements and rehabilitation of water resources has been limited to general clean ups, litter control and minor earthworks, instead of environmental engineering required in most areas.

The availability of landfill airspace and accessibility creates a challenge of illegal dumping in the City. The sector regulates the transportation and movement of waste in the City through its waste-licensing programme, whilst Johannesburg Metro Police undertakes enforcement. The Waste Policy and Regulations Directorate developed waste policy, which in turn is implemented by PIKITUP and other service providers through licensing. The department continues to work with the Infrastructure and Services Department, Environmental Health and PIKITUP to ensure that a proactive strategy is implemented to reduce illegal dumping. The standing quarterly Waste Management Forum, incorporating these stakeholders, has taken shape. Dealing with waste management issues has been challenging in the absence of an integrated waste management policy and plan for the City of Joburg. Finalisation of the policy and revised by-laws is eminent.

As a rapidly urbanising city, there is a lot of development pressure on valuable environmental resources, hence the necessity for the Directorate Environmental Regulatory Services. The City has a number of biodiversity and conservation areas to showcase, such as our world class JHB Zoo, that has attracted more than 500 000 visitors in the past year, Botanical Gardens, Zoo Lake and Kloofendal Nature Reserve to mention a few. Over 170 000 trees already planted towards a target of 200 000 trees by June 2010. The challenge has been to maintain these areas to acceptable standards, largely attributed to inadequate funding.

The environment context is a specialised field, which requires understanding of the good or bad changes caused by anthropogenic factors. Sophisticated scientific monitoring systems and specialised skills are required to inform decision-making and enforcement. Although the department has secured resources to deal with this challenge, more funding will still be required for expansion of some of the scientific monitoring systems. The mandate of the department is ever expanding.

Environmental responsibility and accountability is not confined to one sector, i.e. the Environment Sector. As indicated in the discussions above, there are a number of stakeholders involved, both internal and external to the City. The greatest challenge has been the overall coordination, conflicting mandates and taking accountability by some stakeholders. This has resulted in a fragmented approach in addressing environmental issues facing the City, such as education and awareness. This continues to be the biggest challenge for the Sector and has necessitated overall review of environmental regulatory framework including associated roles, responsibilities and programmes. This assessment is anticipated to be completed by June 2010.

### **Strategic priorities**

The sector assessed its performance to date and will focus on the following key programmes for the remaining of the term. This will see to it that the sector achieves its five-year objectives and subsequently, the City's long term goals.

#### *Air Pollution Reduction Programme*

- Implementation of air pollution control by-laws; and
- Issues of licences and enforcement of air quality legislative requirements for industries in terms of NEMA, AQA and APPA, aiming for 50% compliance.

#### *Waste Management Programme*

- Implementation of waste by-law;
- Registration and licensing of waste service providers; and

- Compliance monitoring and enforcement, reflecting 85% compliance target.

#### *Environmental Regulatory Programme*

- Compliance monitoring and facilitation of corrective measures for City's CAPEX projects, strategic projects and private developments – 95% compliance target.

#### *Demand-side Management Programme*

- Promulgation of DSM by-laws and capacity building for implementation.

#### *Climate change*

- Strengthening institutional capacity to implement adaptation plan – pilot in Soweto;
- Develop flood response protocols and early warning systems in collaboration with Emergency Management Services;
- Finalisation of climate proofing at Cosmo City; and
- Continue with CDM applications for BRT and solar water heaters.

#### *Waste minimisation*

- Establishment of two additional buy-back centres in Naledi and the Inner City;
- Formalisation of trolley brigades in the Inner City; and
- Waste separation at source during major events.

#### *Water resources protection*

- River clean ups aligned to hotspots' action plan;
- Waterbodies/wetlands general maintenance, i.e. litter and debris control, reeds control, aquatic invasive control, etc; and
- Bruma Lake rehabilitation – not fully funded.

#### *Zoo Biodiversity and conservation programmes*

- Maintain visitor numbers to the Zoo above 500 000;
- Reach more than 150 000 learners;
- Opening of Temple of Snakes;
- Raising of revenue through special tariff for Temple of Snakes;
- Events and educational programmes – Zoo; and
- Ex situ conservation – breeding programmes, animal welfare, nutrition, husbandry and ethics.

#### *Cemeteries*

- New development of Avalon Ext cemeteries – five months left; and
- Emission improvement and efficiency at Braamfontein crematorium.

#### *Parks and open spaces*

- Development of four parks (Vlakfontein, Lehae, Zacharia and Pennyville Parks).

### **Inter-governmental relations**

The department established a good working relationship with its provincial counterparts, Gauteng Department of Agriculture and Rural Development (GDARD), in the area of environmental impact management. The department afforded many municipality departments and municipal-owned entities an opportunity to present their projects and resolve environmental authorisation-related queries through monthly meetings held with the GDARD. Joint planning between the City and the province is now taking place on key priority areas of development.

Furthermore, the department has in the past year actively participated in the GDARD Technical Working Group Forum (GDARD TWG Forum) on sustainable use of the environment. This working group is chaired by GDARD and includes all municipalities within Gauteng Province. It serves as a platform for discussion for collective planning/management, sharing ideas and collaboration on environmental issues, such as response to climate change, integrated waste management and water resource management. The department will continue to strengthen the relationship and has established a one-on-one inter-governmental relation forum with the province, which aims to identify areas of possible overlap, collaboration and sharing of resources, where possible.

The department also continues to engage with both the provincial and national departments of environment on matters pertaining to air quality management through working groups that have been established. Through this relationship the department has been successfully granted delegation powers in authorising air quality permits, which will go a long way in reducing air pollution emissions within the City of Johannesburg.

Natural resource management remains a challenge, as witnessed through the current state of water resources. The department is proactively addressing these challenges by engaging with the Department of Water Affairs and Forestry and other key stakeholders through catchment management forums. The Department also works in collaboration with DWAF (Working for Water) in alien plant removal and GDARD in upper Jukskei River clean up programmes.

A number of notable partnerships have also been established on matters pertaining to biodiversity, catchment management and water quality management issues. These include:

- Partnership with other international cities around biodiversity management through the Local Action for Biodiversity (LAB) Programme;
- Engagement with the Department of Minerals and Energy in minimising mining activities’ impact on land and water resources;
- The City cooperates with the South African National Biodiversity Institute on a number of projects, including Alien Plant Control’s Working for Water Programme, Grasslands Management Programme and Wetlands Management Programme; and
- There is also cooperation with other council departments and MoEs around the implementation of rehabilitation programmes, including the Klipriver/Klipspruit Programme.

Much progress has been made in collaborative efforts with neighbouring municipalities to address similar areas of interest. Collaborations include the implementation of emission reduction strategies with Ekurhuleni and City of Tshwane, as the emissions are trans-boundary, and the implementation of Modderfontein/Kyalami EMF with the City of Tshwane. The department has further established a working group with neighbouring municipalities for information sharing sessions.

*Environment sector plan*

Five-year strategic objectives	IDP programmes and key achievements (accumulated to date)	2010/11 delivery agenda
10% improvement in integrity of water courses  10% improvement in river health  10km of watercourses rehabilitated	<b>Ecological Reserve Preservation Programme and River Health Programme</b> <ul style="list-style-type: none"> <li>• Catchment Management Policy developed and approved by mayoral committee</li> <li>• Guideline and capacity building booklet completed and workshopped with affected departments/MEs</li> <li>• City-wide floodline determination study initiated in collaboration with JRA (indicative floodlines and detailed storm water interventions for high-risk areas – 40% of phase 1)</li> <li>• Promulgation of stormwater By-laws anticipated by 2009/10 financial year</li> <li>• A bio-aquatics management plan has been developed (Zoo and Bruma lakes)</li> <li>• Bruma Lake: Rehabilitation report completed (engineering interventions) and environmental authorisation process initiated (implementation dependent on availability of CAPEX funding – 2010/11). Alternative sludge removal interventions investigated</li> </ul>	<b>Ecological Reserve Preservation Programme and River Health Programme</b> <ul style="list-style-type: none"> <li>• Completion of city-wide floodline determination study and stormwater management plan and inclusion in development assessments and planning processes</li> <li>• Rehabilitation of Bruma – de-sludging and installation of filtration system</li> <li>• Additional 200 ha of water courses rehabilitated</li> <li>• Implementation of Klipriver/Klipspruit Legacy Project (Dlamini, Braamfischerville, Protea Zone 2, Mshenguville, Bosmontspruit and Noordgesig)</li> <li>• Ongoing maintenance of waterbodies (reeds control and litter control and aquatic alien vegetation removal) – at least four clean ups</li> </ul>

Five-year strategic objectives	IDP programmes and key achievements (accumulated to date)	2010/11 delivery agenda
<p>Two water bodies rehabilitated for ecological and recreational purposes</p> <p>10% improvement against water quality requirements set for the river reserve</p>	<ul style="list-style-type: none"> <li>• Zoo Lake: Rehabilitation plan completed (engineering interventions) and action plan formulated and implementation dependent on availability of CAPEX funding (2010/11). Further research-based intervention with academic institution initiated</li> <li>• Annual maintenance programme in place of wetland system that cleans stormwater passing through Zoo into Zoo Lake</li> <li>• Bio-aquatic maintenance done at Westdene Dam, Moroka Dam, Dorothy Nyembe Dam, Blue Dam and Florida Lake, resulting in improved aesthetics and bio-aquatics life (birds, fish and aquatic vegetation). Fewer complaints from eco-recreational user groups</li> <li>• Ongoing programme which includes reeds control, aquatic alien vegetation (hyacinth, water lilies and kariba weeds), litter and debris control in identified waterbodies (including Blue Dam, Florida Lake, Jukskei Park, Vorna Valley, Hamerkop, Witkoppen Dam, Dorothy Nyembe, Mofolo, and Westdene)</li> </ul>	
<p>100% completion of wetland audit for protection of wetlands</p> <p>Five wetlands rehabilitated for aquatic habitats and watercourse</p>	<p><b>Management of Wetlands Programme</b></p> <ul style="list-style-type: none"> <li>• Wetlands audit of all wetlands across the City completed and being used to inform city-wide planning processes and development assessments</li> <li>• Wetland protection and management plan developed and completed</li> <li>• Wetlands rehabilitated (Mapetla wetland, Baileyspruit SANBI intervention, Florence Bloom and Bosmontspruit wetland). The rehabilitation included but not limited to gabions installation, in-stream weirs construction, desilting debris and biological treatment of the hyacinth at Delta Dam (Florence Bloom Bird Sanctuary)</li> <li>• Lakeside/Orange Farm – commissioned specialist studies (hydrological, floodline-wetland delineation 80% complete – awaiting finalisation of summer assessment)</li> </ul>	<p><b>Management of Wetlands Programme</b></p> <ul style="list-style-type: none"> <li>• Incorporation of wetlands protection and management plan into RSDFs</li> <li>• Three wetlands planned for rehabilitation through SANBI: Mapetla, Dorothy Nyembe and Tsutsumani Spruit in Alexandra</li> <li>• Ongoing maintenance of identified wetlands (reeds control and litter control and aquatic alien vegetation removal) – at least five wetlands</li> </ul>
<p>To increase the total land area proclaimed as conserved area from 1,3% to 5% of the City's total area</p>	<p><b>Biodiversity Protection Programme</b></p> <ul style="list-style-type: none"> <li>• In partnership with SANBI Urban Grasslands Programme, high-priority grassland sites within CoJ identified for protection under the Protected Areas Act</li> <li>• Active participation in phase one of Local Action for Biodiversity Programme (LAB) together with other international cities</li> </ul>	<p><b>Biodiversity Protection Programme</b></p> <ul style="list-style-type: none"> <li>• Re-proclaim Jhb Botanic Garden, other smaller reserves and bird sanctuaries as conservation areas on the national list. 18 000 beneficiaries to be reached through environmental education programmes</li> </ul>



Five-year strategic objectives	IDP programmes and key achievements (accumulated to date)	2010/11 delivery agenda
	<ul style="list-style-type: none"> <li>• Biodiversity strategy and actions plans for CoJ developed</li> <li>• Compiled and submitted a consolidated list of potential areas for proclamation, which included approximately 67 recreational parks, and 41 nature areas</li> <li>• Five ecological management plans were developed for the following areas – KNR, Kloofendal, Cosmo City, Melville Koppies, Rietfontein and The Wilds, for implementation according to legislation</li> <li>• 2 462,6 ha cleared of alien vegetation through Working for Water and JCP</li> <li>• The Kloofendal Ecological Centre and outdoors lapa, JBG wedding garden and the concert stage have been completed</li> <li>• Environmental education programme reached approximately 23 772 during 2006/07, 19 684 during 2007/08 and 30 938 beneficiaries during 2008/09 fiscal years (a total of 74 394 beneficiaries to date)</li> <li>• Approximately 173 units of wild life game have been accounted for in all reserves that have capacity</li> <li>• Eco-tourism potential areas and associated opportunities identified and preliminary comparative/gap analysis done. Further integrated eco-tourism working group established (EM, Economic Development, JCP, Zoo, JDA, 2010)</li> <li>• Initiated benchmarking programmes that link Joburg Botanical Garden with other national and international botanical gardens and research tertiary institutions</li> </ul>	<ul style="list-style-type: none"> <li>• Continue with implementation management and maintenance plans in JBG, the wilds, KNR, Rietfontein, Kloofendal, Cosmo City and Melville Koppies</li> <li>• Acquire species diversity in future to dilute the genetic pool (wild life)</li> <li>• Implement 2010 eco-tourism plan; monitor and report on progress</li> <li>• JBG benchmarks and standards</li> <li>• 1 402 ha cleared from alien vegetation</li> </ul>
<p>To enhance the city's biodiversity through Zoo, Botanical Gardens and nature reserves (green belts)</p>	<p><b>Johannesburg Zoological and Botanical Gardens</b></p> <ul style="list-style-type: none"> <li>• 2 700 species available at the Zoo</li> <li>• Some of the attraction features completed at the Zoo include Discovery Centre, Bears to Lemurs/Madagascar, with Temple of Snakes to be completed soon</li> </ul> <p>Conservation projects undertaken:</p> <ul style="list-style-type: none"> <li>• Wattle Crane Recovery Programme</li> <li>• Jane Goodall Institute – chimpanzee assistance</li> <li>• Participate in Southern Ground Hornbill Project</li> <li>• Amphibian Conservation and Research Project</li> <li>• Veterinary wild vulture assistance</li> <li>• Oribi conservation</li> </ul>	<p><b>Johannesburg Zoological and Botanical Gardens</b></p> <ul style="list-style-type: none"> <li>• Ex situ conservation – breeding programmes, animal welfare, nutrition, husbandry and ethics</li> <li>• Continue with Zoo Capital Development Programme depending on capital funding availability. A critical project that requires urgent capital funding is the seal enclosure</li> </ul>

Five-year strategic objectives	IDP programmes and key achievements (accumulated to date)	2010/11 delivery agenda
	<p>Completed capital projects:</p> <ul style="list-style-type: none"> <li>• Ape House</li> <li>• Carnivore Curve</li> <li>• West African reptiles</li> <li>• Pygmy hippos</li> <li>• Bears</li> <li>• Tiger enclosure</li> <li>• Farmyard</li> <li>• Lemurs/Gibbons</li> <li>• First phase Amazon</li> <li>• Crocodiles</li> <li>• Technical offices</li> <li>• Water reticulation</li> <li>• Electricity network renewal</li> <li>• Upper park toilets</li> <li>• Buggy office</li> <li>• Wattle Crane chick rearing facility</li> <li>• The Zoo presents nine interactive programmes</li> <li>• Total of 516 424 visitors exceeding target of 500 000 in the 2008/09 financial year</li> <li>• 182 953 learners visited the Zoo in the 2008/09 financial year</li> <li>• Participated in the Rhino Campaign, Year of the Frog and Year of the Gorilla events</li> <li>• Hosted two Biodiversity and two Year of the Frog events. Completed Arbor Day event – 2 988 learners attended</li> <li>• Developed and implemented strategies to increase number of disadvantaged groups visiting the Zoo. 2 429 disadvantaged learners have already visited the Zoo this year for free</li> <li>• Participated in eight biodiversity conservation events (Wetlands Day, Water Week, Sasol Birdfair, Primate Week, Carnivore Week, World Environment Day, Arbor Day and Earth Day)</li> <li>• Zoo conservation farm established</li> </ul>	<p>Conservation projects to be continued:</p> <ul style="list-style-type: none"> <li>• Wattled Crane Recovery Programme</li> <li>• Jane Goodall Institute – Chimpanzee assistance</li> <li>• Participate in Southern Ground Hornbill Project</li> <li>• Amphibian Conservation and Research Project</li> <li>• Veterinary wild vulture assistance</li> <li>• Oribi conservation</li> <li>• Target of 540 000 visitors to the Zoo</li> <li>• Target of 190 000 learners to the Zoo</li> <li>• Participate in the International Year of Biodiversity</li> <li>• Present nine interactive programmes</li> <li>• Participate in eight biodiversity conservation events</li> </ul>
<p>To establish a network of open spaces that contributes to social and environmental opportunities</p>	<p><b>Metropolitan Open Space System Implementation Programme</b></p> <ul style="list-style-type: none"> <li>• Completed Open Space Development Framework and also completed ground-truthing of seven key open space areas worthy of inclusion into green network</li> <li>• Development of open spaces and parks completed (Diepkloof Park's extension, Chiawelo Park development, Diepkloof Memorial Park extreme park makeover, Pioneer Park, Cosmo City parks)</li> </ul>	<p><b>Metropolitan Open Space System Implementation Programme</b></p> <ul style="list-style-type: none"> <li>• <i>Development of parks through the CAPEX programmes and includes:</i> <ul style="list-style-type: none"> <li>– Lehae Park</li> <li>– Zacharia Park</li> <li>– Vlakfontein Park</li> <li>– Pennyville Park</li> </ul> </li> </ul>

Five-year strategic objectives	IDP programmes and key achievements (accumulated to date)	2010/11 delivery agenda
	<ul style="list-style-type: none"> <li>• Five parks were upgraded in the financial year 2007/08 in the inner city complementing the Inner City Charter commitments. Parks include Pieter Roos Park, Edith Cavell, Alec Gorshel, Donald Mckay and JZ de Villiers</li> <li>• 13 parks were upgraded in the financial year 2008/09. Enhance security in parks through intervention in collaboration with JMPD and SAPS</li> <li>• 30 JMPD law enforcers deployed within public open spaces</li> <li>• Launching of policing plan with SAPS</li> </ul>	<ul style="list-style-type: none"> <li>• Continue with maintenance of schedule of threatened open spaces including by-law enforcement</li> <li>• Continue with the maintenance of sidewalks as per maintenance schedule</li> </ul>
Provision of burial space	<p><b>Provision of burial space</b></p> <ul style="list-style-type: none"> <li>• Primary developments of Diepsloot and Waterval cemeteries have been completed with additional development being rolled out over the next five years. These two cemeteries can provide a primary amount of 520 000 graves</li> <li>• Additional sites at Avalon and Olifantsvlei have been identified and are going through the EIA process ready for development within the next two years</li> <li>• Avalon Cemetery upgrade, Diepsloot Cemetery, Lenasia Cemetery and Crematoria completed</li> </ul>	<p><b>Provision of burial space</b></p> <ul style="list-style-type: none"> <li>• Further development of Avalon Ext</li> <li>• Replacement of two cremators at Braamfontein Cemetery</li> <li>• Promote burial systems that optimise space including second and third burials in the same grave</li> <li>• Cremation education to be continuously rolled out to communities</li> </ul>
To increase the number of trees on sidewalks and in parks and private properties by 200 000	<p><b>City Greening Programme</b></p> <ul style="list-style-type: none"> <li>• 173 671 trees planted to date vs. the target of 200 000; with 95% survival rate of trees</li> <li>• Total of 6 165 trees planted (excluding 3 000 street trees) at Cosmo and Alexandra Renewal projects</li> <li>• Memorial Tree Programme introduced in July 2008 and 22 000 trees planted to date</li> <li>• More than 200 000 beneficiaries reached by the tree education and awareness programmes</li> <li>• GIS programmes initiated in identifying all open spaces per region and ward. Tree demographics availability completed</li> <li>• Training of EPWP on tree maintenance commenced in 2007 and continuously being rolled out to capacitate the maintenance programmes</li> <li>• Two Soweto nurseries' development completed (Dorothy Nyembe and Mofolo South)</li> </ul>	<p><b>City Greening Programme</b></p> <ul style="list-style-type: none"> <li>• 20 000 memorial trees planted</li> <li>• Continue with environmental education programmes to support tree planting programme</li> <li>• Continue to ensure that all site development plans assessed include greening requirements as per landscaping requirements</li> <li>• Continue with the maintenance of trees</li> </ul>

Five-year strategic objectives	IDP programmes and key achievements (accumulated to date)	2010/11 delivery agenda
<p>Ensure that at least 5% of buildings in the City have green cover</p> <p>Maintenance of the integrity of the urban forest</p>	<p><b>Maintenance and management of urban forest</b></p> <ul style="list-style-type: none"> <li>• GIS tree register commenced using GPS on all new plantings. This will be rolled out over the next five years to data point all city trees within the CoJ and to include all trees of historical note</li> <li>• Marketing campaign in place to bring corporates into the green fold. Education programmes also in place</li> <li>• A tree planting or transplant guideline document has been developed based on scientific arboriculture principles. The guideline will be used to inform the Tree Planting Programme, as well as Gautrain Tree Transplanting Programme, or any other development initiative that affects existing trees</li> <li>• Revised tree by-laws during 2008/09 to protect trees, particularly in private properties, which accounts for 70% of the trees in Joburg</li> <li>• Total of 848 spatial development plans assessed with specific tree planting landscaping requirements</li> </ul>	<p><b>Maintenance and management of urban forest</b></p> <ul style="list-style-type: none"> <li>• Tree census to be done</li> <li>• Marketing campaign continued to bring corporates into the green fold</li> <li>• Continue with inclusion of specific landscaping requirements for greening in new developments</li> <li>• Promulgation of tree by-laws</li> </ul>
<p>5% reduction in air pollution levels from a baseline index from 2005, within specific pollution categories</p>	<p><b>Air Pollution Prevention Programme</b></p> <ul style="list-style-type: none"> <li>• Vehicle emissions reduction strategy completed and two voluntary testing programmes implemented as part of awareness creation</li> <li>• BRT emission baseline assessment study initiated</li> <li>• Stack emissions assessment completed for MoEs and provincial hospitals – part of identified Cleaner Production (CP) initiatives (incinerators, asphalt and crematoria)</li> <li>• Influenced decision to procure ethanol BRT bus</li> <li>• Finalisation of Air Pollution Control by-laws</li> <li>• Completed BnM Demonstration Project in Alex (10 000 households), Soweto (30 000 households) and Lenasia (10 000)</li> <li>• Two additional air quality stations acquired now operational and providing data on ambient air quality. Two stations also upgraded</li> <li>• CAPCO delegation</li> <li>• Completed licensing and permitting strategy for scheduled processes</li> <li>• Completed audit of 500 boilers in the City</li> </ul>	<p><b>Air Pollution Prevention Programme</b></p> <ul style="list-style-type: none"> <li>• Compliance monitoring and enforcement of priority pollutants through NEMA: AQA and APPA target of 85% compliance</li> <li>• Air pollution control by-laws enforcement – target of 50% compliance</li> <li>• Compliance monitoring and enforcement of priority pollutants (through CAPCO &amp; air pollution control by-laws) – 85% compliance</li> <li>• MoEs compliance monitoring and reporting</li> <li>• Continue with the maintenance of air quality monitoring stations</li> </ul>

Five-year strategic objectives	IDP programmes and key achievements (accumulated to date)	2010/11 delivery agenda
	<ul style="list-style-type: none"> <li>• Review of APPA registration certificates and new RCs/Atmospheric Emissions Licences (AELs)</li> <li>• 70% completion of an emissions inventory, i.e. domestic data, part of vehicle data and industries and all air quality sources and pollutants have been mapped</li> <li>• Completion of emissions inventory, linked to GHG inventory</li> <li>• Dispersion modelling completed – quantification of emission sources and implications for planning</li> </ul>	
<p>Action plans implemented to address pollution hotspots (four areas)</p> <p>10% improvement against water quality requirements set for the river reserve</p>	<p><b>Water Pollution Programme</b></p> <ul style="list-style-type: none"> <li>• Review of Surface Water Monitoring Programme completed</li> <li>• Continued with engagement of relevant stakeholders through forums (catchment management forums, Johannesburg Water) to address water pollution challenges</li> <li>• GDACE partnership EPWP Jukskei River Cleaning Project phase 1 completed and phase 2 initiated (removed 318 tons of waste over 8 km river stretch and 30 people employed)</li> <li>• Ongoing operation of upper Jukskei (Bez Valley) litter trap (73 000 kg removed from litter trap 8 July to 9 July)</li> <li>• Maintenance and river clean-up for specific areas done through EPWP Programme</li> <li>• Water Quality Multi-Sector Task Team established</li> <li>• Hotspot action plans developed and implemented for priority areas (Bosmontspruit, Princess Dump, Mshenguville, Alex/Wynberg, Diepsloot, and Kaalspruit)</li> </ul>	<p><b>Water Pollution Programme</b></p> <ul style="list-style-type: none"> <li>• Continue with implementation of Water Quality Monitoring Programme in line with the surface water quality enhancement plan and recommendations report – quarterly monitoring and reporting</li> <li>• Assessment of waste water treatment plants towards achievement of ‘blue drop’ status – initial assessment study completed</li> <li>• Continue with clean ups and maintenance of upper Jukskei (litter trap maintenance)</li> <li>• Effective micro-organism implementation to be continued</li> <li>• Ongoing interventions in water quality hotspot areas – five functional areas identified (including profiling bad buildings)</li> </ul>
<p>15% reduction in tonnages of waste disposed to landfill based on 2006</p>	<p><b>Waste Minimisation Programme</b></p> <ul style="list-style-type: none"> <li>• Approximately 6 595 tons of waste recyclables recovered from major events and clean up campaigns</li> <li>• Established guidelines on waste separation at events and operations of buy back centres</li> <li>• Inner city waste management strategy – education and awareness; regulation of waste service providers (reclaimers’ trolley brigades, buy-back centre operators); establishment of buy back centre; development of SMME database</li> </ul>	<p><b>Waste Minimisation Programme</b></p> <ul style="list-style-type: none"> <li>• 200 tons of waste from major events to be diverted from landfill</li> <li>• Establishment of two buyback centres in Naledi and the Inner City</li> <li>• Further roll-out of recycling programme – CoJ buildings and Regions</li> <li>• Region specific waste management education and awareness (X7)</li> <li>• Formalisation of trolley brigades in the Inner City (at least 30 trolley brigades)</li> <li>• Implementation of sustainable disposal in green waste (JCP)</li> </ul>

Five-year strategic objectives	IDP programmes and key achievements (accumulated to date)	2010/11 delivery agenda
	<ul style="list-style-type: none"> <li>Waste minimisation programmes implemented at ARP and Cosmo City include piloting of crushers for construction rubble recycling and minimisation, waste clean up, education and awareness training for 3 400 people and licensing of construction vehicles</li> <li>Facilitated the establishment of a buy-back centre at Orange Farm, Alex buy-back centre, Cosmo City buy-back centres and Zondi buy-back centre improvements</li> <li>Waste information system developed and website operational for registration of waste service providers</li> <li>At least 641 service providers issued with waste licences</li> <li>Review of Integrated Waste Management Policy and Plan and waste By-laws under way</li> <li>Ongoing quarterly landfill audits</li> <li>More than 3 300 fines were issued for non-compliance with waste management by-laws</li> </ul>	<ul style="list-style-type: none"> <li>Further roll-out of recycling stations in selected parks (JCP)</li> <li>% compliance of waste service providers with waste licence conditions (target is 70% compliance)</li> <li>Implementation of Integrated Waste Minimisation Plan (IWMP) – annual assessment</li> </ul>
2% reduction in GHG emissions through flagship projects	<p><b>Climate Change Mitigation Programme</b></p> <ul style="list-style-type: none"> <li>Carbon revenue strategy completed and mitigation projects identified as part of the strategy</li> <li>Climate change mitigation strategy and action plan developed</li> <li>Development of GHG inventory for the City under way and anticipated to be completed by second quarter of 2009/10</li> <li>Project Idea Notes (PIN) for BRT CDM and Cosmo City CDM completed, currently undertaking PDD</li> <li>BRT emissions baseline for carbon finance application initiated</li> <li>Retrofitting of five council-owned buildings with energy efficient bulbs completed and further retrofitting of 104 council-owned buildings under Clinton Climate Initiative planned</li> <li>170 and 52 solar water heaters installed at Cosmo and ARP respectively and beneficiaries trained on use of technology and its benefits</li> <li>Work under way on climate proofing of urban communities (Cosmo City) – includes energy efficiency assessment, installation of solar water heaters, rain water harvesting, ceiling insulation, greening and retrofitting for 700 households and seven schools</li> </ul>	<p><b>Climate Change Mitigation Programme</b></p> <ul style="list-style-type: none"> <li>Implementation of carbon revenue strategy – completion of BRT and Cosmo City CDM applications</li> <li>Promotion of energy efficiency buildings – retrofitting of remaining council buildings (up to total of 104 buildings)</li> <li>Continue with climate proofing of urban communities programmes (solar water heaters, retrofitting) – remaining households in Cosmo City (up to total of 700 households)</li> <li>Implement fuel-efficient transportation systems that will reduce GHG emissions – Test ethanol and gas/diesel hybrid bus</li> </ul>

Five-year strategic objectives	IDP programmes and key achievements (accumulated to date)	2010/11 delivery agenda
	<ul style="list-style-type: none"> <li>• Energy efficiency building guidelines completed (in collaboration with Planning) and have since been published</li> <li>• Detailed studies completed, e.g. stormwater, flooding, risk assessment, cost-benefit analysis</li> </ul>	
To improve City's resilience to climate change impacts	<b>Climate Change Adaptation Programme</b> <ul style="list-style-type: none"> <li>• Climate Change adaptation strategy and action plan completed</li> <li>• Climate change vulnerability assessment study completed</li> </ul>	<b>Climate Change Adaptation Programme</b> <ul style="list-style-type: none"> <li>• Strengthening institutional capacity to implement adaptation plan – Community based adaptation awareness raising pilot implemented in Soweto</li> <li>• Floodline – Completion of floodline protocols and early warning system in collaboration with Emergency Management Services</li> </ul>
Completion of demand side management regulatory framework	<b>Demand-side Management Programme</b> <ul style="list-style-type: none"> <li>• Draft by-law exists</li> </ul>	<b>Demand-side Management Programme</b> Finalisation and promulgation of DSM energy by-laws – by-law, implementation guidelines & awareness raising done
Establish and strengthening institutional mechanisms to implement environmental strategies within the City	<b>Institutional Programmes</b> <ul style="list-style-type: none"> <li>• Provincial liaison meetings on environmental implementation plan for Gauteng</li> <li>• Continued with participation in the DANIDA funded programme on urban environment management and climate change</li> <li>• Established intergovernmental relations with the GDACE and DME</li> <li>• IGR forum established with Gauteng metros on matters pertaining to environmental management</li> <li>• Established city-wide awareness forum held quarterly with MoEs and core departments to streamline events for celebrating theme days</li> </ul>	<b>Institutional Programmes</b> Continue with strengthening intergovernmental partnerships (national, provincial and local) and other private institutions: <ul style="list-style-type: none"> <li>• Biannual seminars with stakeholders</li> <li>• Integration of city's environmental programmes with province, national and neighbouring municipalities</li> </ul>
To integrate environmental best practices and principles in key city plans and programmes	<b>Mainstreaming of environmental Issues City-wide Programme</b> <ul style="list-style-type: none"> <li>• Environmental policy principles included in comments on development applications</li> <li>• Generic environmental management plan completed</li> <li>• Environmental compliance strategy in place as overall framework to guide environmental compliance</li> <li>• Environmental legislative requirements incorporated into CIMS</li> <li>• Capacity building training on environmental legislative requirements</li> <li>• Ongoing input into annual RSDF and SDF review process</li> </ul>	<b>Mainstreaming of environmental Issues City-wide Programme</b> <ul style="list-style-type: none"> <li>• Incorporation of environmental information into IDP process and other key city planning tools:               <ul style="list-style-type: none"> <li>– Floodline study; stormwater management plan; wetlands protection data and State of the Environment Report outcomes; and</li> <li>– Number of development applications commented on to protect environmental resources – water resources, biodiversity protection, air, waste disposal, etc</li> </ul> </li> </ul>

Five-year strategic objectives	IDP programmes and key achievements (accumulated to date)	2010/11 delivery agenda
	<ul style="list-style-type: none"> <li>• Report on sustainability indicators provided on an ongoing basis</li> <li>• Finalisation of ecological footprint indicators and reporting mechanism anticipated by end of 2009/10</li> <li>• Completed environmental management system and launched the environmental policy statement and roll-out of Waste (paper) Recycling Programme in the City through environmental management system</li> <li>• Environmental risk register completed for each portfolio as part of EMS implementation – register based on environmental aspects and impacts</li> <li>• EMS projects implemented (and ongoing) – office paper recycling; energy efficiency awareness; water conservation; green procurement and general EMS awareness</li> <li>• Implementation of the Modderfontein/ Kyalami EMF</li> <li>• Actively participating in the Northern Areas EMF that is currently underway. EMF is funded by the GDARD and is in partnership with the GDARD, the City and City of Tshwane</li> <li>• Hosted successful climate change summit during World Environment Week (summit, June 2008)</li> <li>• A number of environmental education programmes were implemented: Greening the Workforce including; greening of schools; schools holiday programme; public exhibitions; environmental competitions; theme days' celebrations</li> <li>• The Environmental Education Programme reached approximately 23 772 during the 2006/07 and 19 684 beneficiaries during 2007/08 fiscal years (a total of 43 456 beneficiaries to date)</li> </ul>	<ul style="list-style-type: none"> <li>• Continue with implementation of integrated environmental awareness – EMS awareness raising; celebration of environmental theme days (National Water Week; Wetlands Day; Environmental Week)</li> <li>• Monitoring and evaluation of performance of entities against approved business plans – review of SDA and quarterly monitoring and reporting on MoE performance</li> </ul>
Legislative and Policy Reform Programme	<p><b>Legislative and Policy Reform Programme</b></p> <ul style="list-style-type: none"> <li>• Waste by-law under review and anticipated to be finalised by end of 2009/10</li> <li>• Air pollution control by-law and storm water by-law to be finalised by end of 2009/10</li> <li>• Inclusion of environmental requirements in town planning processes</li> <li>• Commented on the National Environmental Management Environmental Laws Amendment Bill and the NEMA EIA proposed amendments</li> <li>• Commented on the Land Use Bill</li> <li>• Draft tree by-law available</li> </ul>	<p><b>Legislative and Policy Reform Programme</b></p> <ul style="list-style-type: none"> <li>• Finalisation and promulgation of energy DSM and tree by-laws</li> <li>• NEMA amendments training guidelines</li> </ul>



Five-year strategic objectives	IDP programmes and key achievements (accumulated to date)	2010/11 delivery agenda
To ensure 90% compliance to environmental legislation to ensure continual improvement of the City's projects	<b>Compliance Monitoring Programme</b> <ul style="list-style-type: none"> <li>• Compliance of flagship projects above 90%</li> <li>• Compliance of City CAPEX above 90%</li> <li>• Screening of CAPEX projects for the following dept/MoEs has been undertaken for JRA, JW, Pikitup, City Parks, Housing Dept, etc. First bi-annual reports to be finalised and ready for submission in January 2010. Aim to maintain or improve the 90% rating on the level of environmental compliance</li> </ul>	<b>Compliance Monitoring Programme</b> <ul style="list-style-type: none"> <li>• Strengthening institutional capacity to implement adaptation plan – community based adaptation awareness raising pilot implemented in Soweto</li> <li>• Floodline – completion of floodline protocols and early warning system</li> <li>• Ongoing monitoring of compliance of flagship projects and City's capital projects with respective frameworks – 95% compliance</li> </ul>
To develop and maintain an integrated environmental management information system	<b>Scientific data management systems in respect of air, water and waste and analysis of trends to inform future planning and decision-making</b> <ul style="list-style-type: none"> <li>• Continued with streamlining existing plans/policies/strategies to inform RSDFs (GIS spatial layer)</li> </ul>	<b>Scientific data management systems in respect of air, water and waste and analysis of trends to inform future planning and decision-making</b> <ul style="list-style-type: none"> <li>• Continue with updating and maintenance of an integrated information management system – biannual monitoring and reporting on sustainability indicators as per State of the Environment Report</li> </ul>
Enhance growth in the EPWP Programme	<b>EPWP Programme</b> <ul style="list-style-type: none"> <li>• 6 107 jobs created through EPWP Programme</li> </ul>	<b>EPWP Programme</b> <ul style="list-style-type: none"> <li>• 1 500 new jobs to be created (JCP and JHB Zoo combined)</li> </ul>

