The Role of Public Works

The Department of Public Works, is the custodian of all state-owned property and represents the largest property portfolio in the country. Public Works therefore bears the responsibility of addressing the need to bring the consumption of natural resources to within the ‘carrying capacity’ of the planet, while stimulating the development of the Green Economy.
## Portfolio Overview

### Table 1.1 Total portfolio

<table>
<thead>
<tr>
<th></th>
<th>Land parcels</th>
<th>Buildings &amp; Improvements</th>
<th>Assets Under Construction</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>31,146</td>
<td>92,593</td>
<td>-</td>
<td>N/a</td>
</tr>
<tr>
<td>Extent (millions)</td>
<td>5.5 hectares</td>
<td>36.9 m²</td>
<td>-</td>
<td>N/a</td>
</tr>
<tr>
<td>Value</td>
<td>R48.9 B</td>
<td>R54.7 B</td>
<td>R8.7 B</td>
<td>R112.3 B</td>
</tr>
</tbody>
</table>

### Table 1.2 Land Parcels by Zoning Type

<table>
<thead>
<tr>
<th>Type</th>
<th>Count</th>
<th>Extent (hectares)</th>
<th>Value R mili</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>3,387</td>
<td>1.6 million</td>
<td>9,154</td>
</tr>
<tr>
<td>Education</td>
<td>5</td>
<td>1,550</td>
<td>4</td>
</tr>
<tr>
<td>Industrial</td>
<td>68</td>
<td>2,199</td>
<td>113</td>
</tr>
<tr>
<td>Residential</td>
<td>5,107</td>
<td>168,479</td>
<td>3,911</td>
</tr>
<tr>
<td>Specialised</td>
<td>22,579</td>
<td>3.7 million</td>
<td>35,763</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>48,945</td>
</tr>
</tbody>
</table>

*Based on 2016-2017 Annual Report*
Establishment of the Green Building Unit

The Green Building Unit was established in 2015 to make a significant impact on the sustainability of the State's property portfolio in support of South Africa's NDC's and in terms of the Paris Agreement, the National Development Plan and global Sustainable Development Goals.
Rationale

Through the development of the Green Building Policy and its implementation, the Green Building Unit will:

- Implement resource efficiency across the existing property portfolio
- Support the sustainable development of new buildings and refurbishments in the built environment through Green Building Lifecycle Management.
Principles of the Green Building Policy

- Leadership;
- Energy, water and waste management;
- Indoor environmental quality and comfort;
- Product and materials management;
- Promotion of Indigenous Knowledge Systems (IKS);
- Acceptable horticulture and landscaping construction practices;
- Green Procurement; and
- Monitoring and reporting.
Inter-Governmental Co-operation

• The Green Building Unit works closely with the Departments of Environmental Affairs (DEA), Energy (DoE), Water and Sanitation (DWS) in strategic policy alignment, planning and implementation of Greening initiatives.

• Enterprise Development with Department of Trade and industry (DTI) on an industrialisation potential and localisation program

• Technology innovation discussions with the Department of Science & Technology

• The Unit is supported by entities and international partners i.e. German International Cooperation (GIZ), Danish Cooperation, DBSA, GTAC and others
Short term outputs

- Reduced energy, water and waste usage and cost by at least 10% across DPW property portfolio
- Free Up Capex and Opex Budgets
- Embed sustainable building and refurbishment practice and green facilities management
Medium term outcomes

- Reduced resource usage for client departments, communities and the country.
- Reduced financial burden on the national fiscus
- Creation of Green Jobs & stimulation of Green Economic Growth
- Development of new skills
- Climate change awareness and social orientation towards sustainability
- Broad adoption of alternative building technologies and practices
- Establishment of a Super ESCO within the DPW
Long term impacts

- Significant contribution to the reduction in GHG emissions
- Limit the impact of climate change through effective mitigation and adaptation
- Build sustainable communities
- Improved quality of life
- Catalyst for the circular economy
- Public Buildings that have a sense of place, nested in the culture of the region and foster national pride, cultural diversity, respect and reverence.
Workstreams

Scope:
1. Existing Buildings
2. Refurbishments
3. New Builds

- Energy Efficiency
  - Shared Energy Savings Contracts
- Water Efficiency
  - Shared Water Savings Contracts
- Water and Wastewater Treatment
  - Upgrading of water works
  - Condition Assessment Project
- Renewable Energy
  - Strategy for Solar PV across portfolio
- Solid Waste
  - Integrated Waste Management Projects across each region
- *Carbon
  - Carbon Auditing & Reporting to Client Departments
  - Carbon offset Projects
- *Green Building Lifecycle Management
  - Green Architectural Planning, Retrofit & Rebuild
  - Green Construction
  - Green Maintenance
  - Green Social Cohesion and Arts
  - Green Landscaping
  - Technology Mobilization (Smart Buildings)
  - Green Lease-In
  - Green Building Rating
  - Green Precincts

Green Socio-Economic Development & Just Transitions

*Integrated Resource Efficiency Flagship Projects
Snapshot of Achievements

- Green Building Policy and Framework adopted
- Development of Green Building Sector plan and Technical Committee incorporating National and Provincial Public Works
- Roll out of energy, water and waste projects across all regional portfolios
- Over 300 million kWh of energy saved during the 2016-2017 financial year
- Over 4 million kl of water saved in the same period
- Development of Norms and Standards for Construction of Green Buildings
- Solar PV strategy in development with DBSA
Renewable Energy Strategy

- Currently state-owned properties are fully dependent on fossil fuel energy supplied through the traditional electricity grid. This presents a serious risk in terms of maintaining operations at key facilities.
- Traditionally this risk is mitigated through the installation of diesel generators, with a further negative impact on carbon emissions.
- Public Works has commissioned DBSA to develop a renewable energy funding and delivery mechanism as part of creating a diversified energy mix and mitigating the above risks and impacts in state-owned properties.
- The purpose of the mechanism is to attract local and international funders for renewable energy projects given the capital intensive nature of renewable energy.
Recent research by GIZ, in partnership with DoE has revealed that the water supply chain has significant impacts on energy usage.

• The study revealed a number of key energy saving opportunities and viable potential in water and wastewater treatment plants.

• Potential energy savings include:
  o Pumps and pumping (Common potential ranges: 5% to 30%): 
  o Waste water treatment (Compressed air and biological treatment up to 50%)
  o Energy and Heat Generation by CHP/Cogeneration; Wind, PV, Mini Gas Turbine (from 55 up to > 100%)
  o Lighting retrofit inside and outside (40 – 70 %)
DPW’s Wastewater Treatment Works

• The National Department of Public Works owns and manages an estimate of 178 Wastewater Treatment Works in South Africa. Many of them are situated on, or close to, our borders.

• The Wastewater Treatment technologies range from Activated Sludge Treatment System, Biological Trickling Filtration, Wastewater Stabilisation Ponds, Rotating Biological Contactor, Lilliput Sewage Treatment System and Package Plant treatment system.

• The average sizes of the Wastewater Treatment Works systems are 74% for Micro (<0.5ML/d), 20% for Small (0.5-2ML/d) and 6% for Medium(>2-10ML/d) sizes.
Based on this study significant potential in the DCS portfolio exists as tabulated below;

<table>
<thead>
<tr>
<th>Site</th>
<th>#</th>
<th>Category</th>
<th>Ave ML/day</th>
<th>Water (KL/month)</th>
<th>Estimated WW Output (KL/month)</th>
<th>Minimum kWh per annum</th>
<th>Minimum Estimated Energy Cost (R/annum)</th>
<th>Maximum kWh per annum</th>
<th>Maximum Estimated Energy Cost (R/annum)</th>
<th>Variance kWh</th>
<th>Variance Rand p.a.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro</td>
<td>132</td>
<td>&lt;5ML/day</td>
<td>0.3</td>
<td>1,201,945</td>
<td>1,081,751</td>
<td>2,596,204</td>
<td>3,115,441.44</td>
<td>23,365,811</td>
<td>28,038,972.96</td>
<td>20,769,610</td>
<td>24,923,531.52</td>
</tr>
<tr>
<td>Small</td>
<td>36</td>
<td>0.5 - 2 ML/day</td>
<td>1</td>
<td>1,082,833</td>
<td>974,550</td>
<td>2,338,920</td>
<td>2,806,704.00</td>
<td>21,050,280</td>
<td>25,260,336.00</td>
<td>18,711,360</td>
<td>22,453,632.00</td>
</tr>
<tr>
<td>Medium</td>
<td>11</td>
<td>2 - 10 ML/day</td>
<td>5</td>
<td>1,624,250</td>
<td>1,461,825</td>
<td>3,508,380</td>
<td>4,210,056.00</td>
<td>31,575,420</td>
<td>37,890,504.00</td>
<td>28,067,040</td>
<td>33,680,448.00</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>67,548,010</td>
<td>81,057,611.52</td>
</tr>
</tbody>
</table>

Notes

Minimum Wastewater kWh/ML 200
Maximum Wastewater kWh/ML 1800
Estimated R/kWh R 1.20
Wastewater output 90%
Thank you