



AFRICA

PROPERTY & CONSTRUCTION
HANDBOOK 2011

DAVIS LANGDON, An AECOM Company
AFRICA REGION
PROPERTY AND CONSTRUCTION HANDBOOK 2011

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FOUNDING MEMBER : CATEGORY SILVER

DAVIS LANGDON, AN AECOM COMPANY
Established 1922
www.davislangdon.com
www.aecom.com

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01

| SECTION **ONE**
DAVIS LANGDON,
AN AECOM COMPANY



In 2010, Davis Langdon joined AECOM, a leading provider of professional technical and management support services for government and commercial clients around the world.

AECOM is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government. With approximately 45,000 employees around the world, AECOM is a leader in all of the key markets that it serves. AECOM provides a blend of global reach, local knowledge, innovation and technical excellence in delivering solutions that create, enhance and sustain the world's built, natural and social environments. A *Fortune* 500 company, AECOM serves clients in approximately 125 countries and has annual revenue in excess of \$7.0 billion.

More information on AECOM and its services can be found at www.aecom.com.

Since AECOM was launched as an independent company in 1990, the firm has grown and diversified through corporate expansion and acquisition activities that have significantly broadened the company's business lines and geographic reach.

In partnership with AECOM, Davis Langdon is positioned to deliver consultancy services as part of a complete end-to-end offer, while Davis Langdon's strong cost and project management capabilities bolster AECOM's growing portfolio of construction management services.

Global presence

Davis Langdon is a global business line within the AECOM organisation. With over 3,000 people in over 75 offices worldwide, Davis Langdon can support long-term business needs from both a local and global perspective. We have offices in the following regions:

Africa

Botswana, Mozambique, Nigeria and South Africa

Australia & New Zealand

Adelaide, Auckland, Brisbane, Cairns, Canberra, Christchurch, Darwin, Hobart, Melbourne, Perth, Sydney and Townsville

Middle East

Bahrain, Lebanon, Qatar, Saudi Arabia, United Arab Emirates and Egypt (North Africa)

UK & Europe

England, France, Germany, Holland, Ireland, Italy and Scotland

USA

Boston, Honolulu, New York, Philadelphia, Sacramento, San Francisco, Santa Monica, Seattle and Washington, D.C.

Long history in Africa

Our long history in South Africa is a commitment and legacy we are very proud of. This year we are celebrating nearly 90 years of adding value to construction projects on the African continent.

Industry awards

The consistently high standard of professional service provided by both Davis Langdon and AECOM is recognised throughout the construction industry, as evidenced by the following prestigious industry awards:

- 2011 PMR Diamond Arrow Award for Best Large Quantity Surveying practice in South Africa
- Davis Langdon Building ‘Project/Construction Manager of the Year’ 2004
- World Architecture ‘Top International Cost Consultant’ 2010 — 17 years in succession
- Building ‘Consultant/Surveyor of the Year’ 1995, 1996, 2000, 2001, 2003, 2006, 2007, 2008 and 2009
- UK Times ‘100 Best Companies to Work For’ 2005, 2006, 2007, 2008 & 2009
- AECOM *Engineering News-Record* AECOM is ranked No. 1 on the magazine’s list of the top 500 design firms
- AECOM featured in *Newsweek*’s list of the Greenest Big Companies in the U.S.

PURPOSE, VISION AND CORE VALUES

PURPOSE

To create, enhance and sustain the world's built, natural and social environments.

VISION

To become an organisation that is respected and valued for Inspiring Solutions and Enduring Legacies. To become an organisation that gets even closer to its clients, and even more trusted by them. To become the organisation to whom our clients make the first call on the first day and who then stays with them, by their side, throughout their journey.

CORE VALUES

Integrity

We are honest and ethical in our actions. We keep our commitments and treat others with mutual respect and trust.

Employees

We are a global team of some of the most talented professionals working on the world's most challenging projects. We respect and encourage our employees' ideas, diversity and cultures.

Clients

Davis Langdon, an AECOM company, sets the industry standard for client service. We are passionate about solving clients' problems and exploring new opportunities with them.

Excellence

In all areas of our business — technical, operational and administrative — we strive to achieve excellence. We pride ourselves on bringing outstanding results to everything we do.

Innovation

Creativity, exploration and imagination are key to our business approach. We continually look for creative, new and better ways to apply our expertise to all dimensions of our work.

Agility

We embrace change, flexibility and adaptation in a rapidly evolving world. We work to anticipate changes before they happen, and help clients and employees adapt to those changes.

Safety

In addition to preventing injuries, safety also means maintaining a healthy workplace and ensuring that we protect and preserve facilities, property, equipment and the environment.

Profitable growth

Through organic growth initiatives and strategic acquisitions, we continue to grow and prosper. A solid pipeline of well-funded, long-term projects, coupled with ongoing cost-containment efforts and efficiencies in marketing through shared services, positions us well for continued profitable growth.

MESSAGE FROM THE MANAGING DIRECTOR

Change is the law of life. And those who look only to the past or present are certain to miss the future. (John F. Kennedy, 1963)

Davis Langdon has change inherent in its DNA. 2010 and 2011 have not been any different. You should have received communication in November 2010 on our merger with AECOM, a global provider of professional, technical and management support services. Visit www.aecom.com to learn more about our growing business.

While change may be part of our DNA, our core values of integrity; innovation and collaboration remain the bedrock of our business.

Our vision is to become an organisation that is respected and valued for Inspiring Solutions and Enduring Legacies. We are proud to be a company that continuously challenges itself while simultaneously building our vision on three strategic pillars: Thought Leadership; Creativity and Excellence without Compromise. Together with our vision and strategic pillars, accountability remains a constant factor.

We continue to reorganise our business around sectors and have appointed sector leads for the main sectors of Retail; Public; Commercial Property; Hotels, Sports and Culture; Transportation; Industrial; Mining and Resources; and Infrastructure.

Our sector-led business approach is constructed to deliver the best outcomes for our clients, colleagues and people. Client and colleague satisfaction will be generated by our ability to harness the best talent and skills in Davis Langdon, to deliver on specific projects irrespective of geography.

Thought leadership in the areas of Knowledge, Research, Innovation and Best Practice will be the derivatives of our sector approach. Engage with us on sectors of interest to you, so we can demonstrate our capabilities, even in sectors which you may not traditionally have associated us with.

Africa remains our passion and together with AECOM's footprint in Africa, we are expanding our reach and local knowledge. We continue to develop opportunities through the continent in all sectors, with both local and multi-national clients.

We aim to entrench our role as trusted advisor in Africa and help clients navigate uncharted territory with integrity and respect. Africa remains our key focus for growth and business sustainability.

We continue with our corporate citizen responsibilities and have recently been successfully audited for certification by DEKRA for ISO 14001:2004 and BS OHSAS 18001:2007 international standards, which provide both our people and our clients with confidence in the sustainability and safety of our business.

Our Broad-Based Black Economic Empowerment (BBBEE) journey continues as we have set ourselves a target to continuously improve in all criteria in an effort to maintain and enhance our leading role amongst professionals in the built environment.

Whilst our business has evolved, we continue to offer services that make a measurable difference to the value, cost and time of our clients' projects.

A handwritten signature in black ink that reads "Indresen". The lettering is cursive and fluid, with the 'I' and 'n' being particularly prominent.

Indresen Pillay
Managing Director

PROGRAM, COST, CONSULTANCY

Forming the backbone of AECOM's Program, Cost, Consultancy business line, Davis Langdon has always been a forward-thinking organisation and has developed a wide range of technical expertise around the development of land, infrastructure and buildings.

More recently, ambition has pushed us to think harder about the context in which we give our advice. We believe there are too many consultants who view a problem as a technical issue, and therefore provide a technical solution. In many cases, this is simply giving the client the 'expected,' but such advice can have limited value.

The bigger picture

If we were to analyse situations where our advice has been most effective, it is in the creative application of our knowledge and experience. While our roots are in technical delivery, our clients value the fact that our offer always contains a strategic component.

Our ability to think big means we focus on the successful delivery of the project in hand, whilst also appreciating our clients' goals and objectives from a broader perspective. Our engagement with the bigger picture enables us to operate beyond project level and support long-term business strategies. It is this approach which makes us the leading construction consultancy we are today.

Sector specialists

We structure ourselves around our clients' sectors to maintain a detailed understanding of the dynamics influencing their different markets. Simply put, clients have access to individuals who are experts in their specific field.

Our ability to offer specialists and not generalists adds real value and sets us apart from our competitors.

Cohesive solutions

We can support the challenges and opportunities our clients face throughout the life cycle of a development, from business and investment strategy at the organisational level right through to operational efficiency of the final built product.

BBBEE STATEMENT

Davis Langdon, an AECOM company (hereafter referred to as Davis Langdon), is fully committed to embrace the principles of the Broad-Based Black Economic Empowerment Bill No 53 of 2003. We have been independently evaluated and certified in terms of the Act for the Construction Sector Charter issued in terms of section 9(1) of the BBBEE Act 53 of 2003 gazetted on 4 May 2009 and the results are as follows:

Score: 67.45

Level: Level 4 contributor

Procurement recognition level: 100%

Value-added supplier: Yes

The above scores have been achieved by quantifying all the components of BBBEE, viz:

- Ownership
- Management control
- Employment equity
- Skills development
- Preferential procurement
- Enterprise development
- Socio-economic development.

Notwithstanding the above achievements, Davis Langdon has set itself a continuing improvement target in all the above criteria in order to maintain and increase our leading role amongst professionals in the built environment.

DELIVERING TO THE HIGHEST STANDARDS

Delivering well is not only about employing the best people, but also about equipping them with the best tools.

The way in which information is shared has changed dramatically, and we are able to offer our clients both traditional and more innovative solutions for team collaboration on projects.

We participate in the best schemes for independently managing the quality of our services, relevant to the markets in which we work, including ISO 9001:2008 accreditation. Our quality management systems provide for a cycle of corrective and preventative action, to create positive opportunity for continuous improvement.

SAFETY, HEALTH AND ENVIRONMENTAL MANAGEMENT

Davis Langdon has been successfully audited for certification by DEKRA for the ISO 14001:2004 and BS OHSAS 18001:2007 international standards, which assures that we have successfully implemented an environmental and safety management system in accordance with the standard.

This was done because we support the ethos of an operationally safe office environment and remain committed to ensure a healthy and safe environment for our staff and colleagues. Furthermore, to ensure a positive “green” culture we have formulated an environmental management policy to monitor, and wherever possible, control and reduce the impact of our activities on the environment. This is done by way of a policy of continuous improvement, wherein each executive and each employee feels responsible for the resources they use and the activities they undertake on behalf of the firm.

Additionally, Davis Langdon is committed to positively contribute to the efforts of our clients in developing their projects in such a way as to minimise their environmental impact, where such commitment is compatible with the scope of our commission. To this end we have already become a “silver” founding member of the Green Building Council of South Africa.

It is anticipated that the procedures arising from these additional certifications will form part of our firm’s integrated management system.

SUSTAINABILITY

In recognising our social responsibility, Davis Langdon formed an international sustainability group, which is active in research and development of sustainable solutions for developments.

The expertise of our international partners is extensive and of great value to us as sustainable practices elsewhere have advanced and progressed by large measures in recent years.

As a silver founding member, Davis Langdon was instrumental in the establishment of The Green Building Council of South Africa (GBCSA) in 2007. In our role, we also assisted the GBCSA on their technical working groups to launch the Green Star SA Office rating tool in 2008 and the Green Star SA Retail Centre rating tool in 2010.

We have hosted many seminars and published numerous scientific articles on sustainability. In SA, we produce the 'Quick Guide to Emerging Green Design Attributes'.

Staff from all geographic regions in South Africa have completed the Green Star SA accredited professional course and are available to assist clients and colleagues to also achieve their social responsibilities in addition to their financial or other objectives.

RESEARCH SUPPORT

Generally, there is a shortage of ‘in–depth’ research in the built environment. Davis Langdon consequently decided, for the benefit of our clients and colleagues and to conform to international standards, to contribute to relevant research in a dedicated and rigorous way.

Research is firstly conducted to support our knowledge database and existing activities to deliver the highest quality and relevant services. Secondly, it serves the purpose to enhance our competitive edge in order to also deliver cost–effective services. Thirdly, contract research is undertaken on assignment for clients in order to resolve industry specific problems.

Research activities nationally, regionally and internationally include, amongst others, the following:

- Cost
- Planning, design and development
- Collaboration with universities, professional bodies, government and research institutions
- Sustainability
- Continuing educational workshops
- Industry reports and brochures
- Collaboration with our international offices with specific reference to the following:
 - Retail
 - Public
 - Commercial property
 - Residential
 - Hotels, sports and culture
 - Transport
 - Industrial
 - Mining and resources
 - Infrastructure
 - Tall, large and complex buildings.

QUANTITY SURVEYING/COST MANAGEMENT

Davis Langdon provides comprehensive cost management services from project initiation to completion through all six stages of the project cycle identified by The South African Council for the Quantity Surveying Profession, Tariff of Professional Fees, Quantity Surveying Profession Act 2000 (Act 49 of 2000) as follows:

Stage 1

- Assisting in developing a clear project brief
- Attending project initiation meetings
- Advising on the procurement policy for the project
- Advising on other professional consultants and services required
- Defining the quantity surveyor's scope of work and services
- Concluding the terms of the client/quantity surveyor professional services agreement with the client
- Advising on economic factors affecting the project
- Advising on appropriate financial design criteria
- Providing necessary information within the agreed scope of the project to the other professional consultants
- Providing services for which the following deliverables are applicable:
 - Agreed scope of work
 - Agreed services
 - Signed client/quantity surveyor professional services agreement.

Stage 2

- Acquiring approval of the documentation programme from the principal consultant and other professional consultants

- Attending design and consultants' meetings
- Reviewing and evaluating design concepts and advising on viability in conjunction with the other professional consultants
- Receiving relevant data and cost estimates from the other professional consultants
- Preparing preliminary and elemental or equivalent estimates of construction cost
- Assisting the client in preparing a financial viability report
- Auditing space allocation against the initial brief
- Liaising, cooperating and providing necessary information to the client, principal consultant and other professional consultants
- Providing services for which the following deliverables are applicable:
 - Preliminary estimates of construction cost
 - Elemental or equivalent estimates of construction cost
 - Space allocation audit for the project.

Stage 3

- Reviewing the documentation programme with the principal consultant and other professional consultants
- Attending design and consultants' meetings
- Reviewing and evaluating design and outline specifications, as well as exercising cost control in conjunction with the other professional consultants
- Receiving relevant data and cost estimates from the other professional consultants
- Preparing detailed estimates of construction cost
- Assisting the client in reviewing the financial viability report
- Commenting on space and accommodation allowances and preparing an area schedule

- Liaising, cooperating and providing necessary information to the client, principal consultant and other professional consultants
- Providing services for which the following deliverables are applicable:
 - Detailed estimates of construction cost
 - Area schedule.

Stage 4

- Attending design and consultants' meetings
- Assisting the principal consultant in the formulation of the procurement strategy for contractors, subcontractors and suppliers
- Reviewing working drawings for compliance with the approved budget of construction cost and/or financial viability
- Preparing documentation for both principal and subcontract procurement
- Assisting the principal consultant with calling of tenders and/or negotiation of prices
- Assisting with financial evaluation of tenders
- Assisting with preparation of contract documentation for signature
- Providing services for which the following deliverables are applicable:
 - Budget of construction cost
 - Tender documentation
 - Financial evaluation of tenders
 - Priced contract documentation.

Stage 5

- Attending the site handover
- Preparing schedules of predicted cash flow
- Preparing proactive estimates for proposed variations for client decision-making
- Attending regular site, technical and progress

- meetings
- Adjudicating and resolving financial claims by the contractors
- Assisting in the resolution of contractual claims by the contractors
- Establishing and maintaining a financial control system
- Preparing valuations for payment certificates to be issued by the principal agent
- Preparing final accounts for the works on a progressive basis
- Providing services for which the following deliverables are applicable:
 - Schedules of predicted cash flow
 - Estimates for proposed variations
 - Financial control reports
 - Valuations for payment certificates
 - Progressive and draft final accounts.

Stage 6

- Preparing valuations for payment certificates to be issued by the principal agent
- Concluding final accounts
- Providing services for which the following deliverables are applicable:
 - Valuations for payment certificates
 - Final accounts.

ENGINEERING COST MANAGEMENT

Engineering cost management operates as a specialist service within Davis Langdon and comprises specialist skills and applications that enhance the risk and value management techniques required by the infrastructure, mining, minerals, metallurgical and petro-chemical sectors of industry.

This includes the constitution of dedicated independent teams specialising in and responsible for the estimating, procurement, cost management and contract administration activities relative to the abovementioned industries. Engineering Cost Management is responsible for many diverse projects within these industries with principle benefits to our clients being independence, accountability and evidence of corporate governance.

With offices located in Johannesburg and Klerksdorp, our Engineering Cost Management team operates throughout Africa using infrastructure support from other local Davis Langdon offices located in all major centres in South Africa and Botswana. Engineering Cost Management employs professional qualified quantity surveyors, cost managers, cost engineers, contract administrators, construction programmers and building surveyors.

Infrastructure, mining, minerals, metallurgical and petro-chemical projects are generally of a high monetary value, and it is therefore most beneficial to involve Engineering Cost Management at an early stage in the project cycle. This allows for strong financial discipline to be imposed on the project to ensure accurate and

structured estimating, timeous and cost-effective procurement, accurate and up-to-date maintenance of costs to completion, including the cost management of design changes and the timeous close-out of contracts. The implementation of these principles of financial management will deliver maximum shareholder value and it is in this area that Engineering Cost Management strives to significantly influence project outcomes to benefit all stakeholders.

Davis Langdon Engineering Cost Management provides a depth of experience, expertise and independence, which will contribute to and complement the client's team. This is critical, particularly in the early stages of a project when the opportunity to add value, as well as recognise and define cost is established. Simultaneously, the formalisation of project principles is equally critical throughout the project with cost management continuing through to the post-contract period and final closeout.

BUILDING SERVICES COST MANAGEMENT

Davis Langdon Building Services, another specialist service within Davis Langdon, draws upon its unique expertise to provide financial management and contract administration of building services, including the following:

- Electrical installation
- HVAC installations
- Fire protection systems
- Fire detection and evacuation systems
- Access control
- CCTV
- Lifts, escalators, travelators
- Communication systems
- Building management systems
- Security systems
- Data systems.

Working in close conjunction with the appointed Mechanical, Electrical and Fire Protection Consultants, our Building Services team provides a comprehensive service including cost advice and quantity surveying services encompassing the following:

- Cost planning
- Contract procurement
- Tender and contract documentation
- Cost control
- Risk management
- Value management
- Life cycle and whole life costing.

PROJECT MANAGEMENT

Davis Langdon Project Management provides that vital independent and professional service to plan, lead, organise and control the management of projects and programmes, from inception to completion.

Recognised as one of the world's leading providers of management and consultancy services, we employ highly skilled professional project managers from a broad range of professional disciplines — offering experience across a wide range of sectors.

This equips our Project Management team with the in-house skills and market expertise to recognise potential and define objectives from the outset, whilst also ensuring the delivery of value and appropriate management of risk throughout the project cycle.

Our strength lies in an ability to provide a dedicated service on a local, national and international basis that is focused on the vision for the project in question. Through our whole business approach to managing projects, we draw on the inherent commercial strength of the practice whilst also delivering a creative and people-based service.

Our services can be tailored to suit the needs of the project and client and include:

- Project management
- Client's representative
- Principal agency
- Value and risk management

- Programming, planning and control
- Project monitoring
- Project consultancy
- Development management
- Due diligence reporting.

Davis Langdon Project Management will invariably work with teams that are carefully pre-qualified and selected for their expertise, personnel, enthusiasm and drive to deliver the required results.

Our project managers work together with our clients to manage the appointments of the necessary consultants, including advising on the various methods of selection, the negotiation and agreement of their services and fees. In addition, we will provide a single point of contact for the client when dealing with other third parties, contractors and suppliers.

We are committed to building and managing teams with a common culture of delivering excellence, and strive to engender healthy and vibrant working relationships throughout the life cycle of the project.

The growth of the service in recent years has been built upon strong alliances with long-standing clients and our ability to deliver wherever and whenever required, to a prescribed quality, on time and within budget on a consistent basis.

SPECIFICATION CONSULTANCY

As the world's leading specification consultancy firm, Davis Langdon Schumann Smith is well established in South Africa. An experienced team, based in Johannesburg, facilitates local delivery of specifications, in particular 'Africa Spec™', which provides a means of accurate communication between client, designer and those carrying out the construction.

Our project-specific specifications mitigate against contractual risks and reduce areas of conflict. In developing the specifications, we are able to draw upon our global knowledge, research, experience and professionalism. Through these specifications we aim to add value, ensure quality and reduce the risks to the project participants.

Our service has been prepared for use by employers, architects and engineers.

We compile project specific specifications to reflect:

- The design
- The form of contract
- The procurement process
- Programme requirements
- National standards and regulatory standards.

We also tailor the specifications to suit the needs of:

- Design teams
- Developers
- Retailers

- Government bodies
- Universities
- Private practices
- Manufacturers
- Other parties involved in the design and/or construction process.

We underwrite our specifications by the guarantees of knowledge, research, experience and professionalism. Through them we aim to add value, ensure quality and reduce the risk on projects.

A comprehensive specification reduces the contractual risk of all parties, avoids post-contract disputes and ensures that everyone is aware of what is being bought before committing to a contract.

Specifications must reflect both the designer's responsibility as set out in his appointment, and the responsibilities of the contractor under the terms of the contract. Our specifications are tailored to suit the needs of the parties involved in the design and/or construction process.

As specification consultants, our role is to:

- Support the design team
- Prepare appropriate documentation
- Assist in the procurement process

We operate as a proactive member of the design team, attending design review meetings and producing appropriate project specifications that will:

- Maintain the architect's and/or designer's intent
- Set accurate technical criteria
- Set achievable performance criteria
- Allow specialist contractors to provide a design response

- Reflect the contractual requirements
- Form the basis for checking compliance.

Together with our joint venture partners, we have brought to South Africa a specification software package, which has been tried and tested overseas for almost thirty years. National Specification (Pty) Ltd (NBS) is a joint venture between RIBA Enterprises, Klassidex and Davis Langdon Schumann Smith.

NBS Building SA is a library of pre-written specification clauses with guidance for each clause appearing alongside for speedy referral.

The content is delivered on tried and tested software and specifications are edited on screen. The NBS Building SA technical team have written the content with the most up-to-date technical information available and this content, together with its associated guidance clauses, will be expanded and updated regularly.


NBS Construction Knowledge (a joint venture between National Specifications and the South African Bureau of Standards) is an internet-based, searchable database of South African national standards and resources for the construction industry. This electronic expert resource is available on a subscription basis and allows access to over 1,000 construction-related South African national standards including SANS10400. These standards are constantly updated and increase in number as new standards are published or revised. Other modules covering civil, structural and engineering will follow.

As another development of our service line, we have recently introduced the concept of 'design team management' to South Africa. Close collaboration with

design teams has led to the evolution of our design team management service, the purpose of which is to facilitate the design process by managing issues that impinge on it. This service is based on our contractual, technical and organisational knowledge, deployed to support the working methods of design firms and to protect their interests.

Managing design teams allows us to add value because we understand the design process. We also understand the interface between design and construction, and add knowledge of advanced construction techniques, new procurement routes and industrial technology to the design team.

| SECTION **TWO**
INCLUSIVE
RATE ESTIMATES



This section highlights the inherent difficulties and pitfalls that may be experienced when inclusive or single rates are used to establish the estimated cost of a particular building.

Construction cost estimation is complex. Comprehensive exercises based on detailed and accurate information are required to achieve reliable levels of comfort. For various reasons, however, decisions are often based on inclusive rate estimates, i.e. rate per meters squared (m^2) of construction area or rate per unit in number.

The most widely used method of quick approximate estimating to obtain an indication of the construction cost of a building is by the rate/ m^2 –on–plan method. It is often also referred to as the ‘order of magnitude’ method of cost estimation. It certainly is both quick and convenient, but it can be very misleading if used indiscriminately without care being taken in the calculation of the construction area and the selection of the rate.

Comparisons of the costs of various buildings are often made by comparing the individual rates/ m^2 without due consideration being given to a number of factors that can affect the rate/ m^2 to a substantial degree.

Very often the cost of a building is expressed in R/ m^2 and the unit cost is ignored, if calculated at all. This rate/ m^2 is then used as the sole yardstick of what the building costs. For example, a security guard’s shelter measuring 2m x 2m consisting of brick walls with windows, one door and a simple roof construction may cost R6,000/ m^2 . This rate when compared with the rate for a 200 m^2 house containing plumbing, carpets, etc. at R4,700/ m^2 would

seem to be very expensive. Yet, in fact, the unit cost of the shelter is R24,000 compared with R940,000 for the house.

The following are a few of the important criteria to be taken into account when rates/m² are considered:

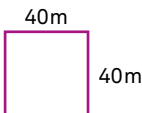
SPECIFICATION

Two buildings having identical shape and accommodation can have vastly different R/m² rates should the one building have finishes of a differing standard from the other. For example, expensive carpets in lieu of vinyl floor tiles can increase the rate by R100/m².

WALL TO FLOOR RATIO — PLAN SHAPE

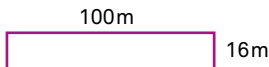
The most economical shape of a building is a square. This shape requires the minimum wall length to enclose a given floor area, e.g.

Case A



Area	1,600m ²
Wall length	160m
Wall height	3m
Wall area	480m ²
Wall floor ratio	480/1,600
Cost of external facade in terms of R/m ² of floor area to each R/m ² of facade area	30.0%

Case B



Area	1,600m ²
Wall length	232m
Wall height	3m
Wall area	696m ²
Wall floor ratio	696/1,600
Cost of external facade in terms of R/m ² of floor area to each R/m ² of facade area	43.5%

The rate/m² on plan of a facade costing R600/m² on elevation in each case is:

Case A $R600 \times 30.0\% = R180/m^2$

Case B $R600 \times 43.5\% = R261/m^2$

The reader with a good knowledge of mathematics will correctly fault the above argument by promoting a circle as being the geometric shape that requires the minimum wall length to enclose a given floor area. In very few cases, however, this is the most economical plan shape of a building, as for various reasons the cost of constructing a circular as opposed to a straight external envelope is generally greater than the saving in quantity of the envelope. As the length of the perimeter of a circle is 11.4% less than that of a square enclosing the same area, the unit cost of the circular envelope should not exceed the unit cost of the straight envelope by more than 12.8% for the circle to be the most economical plan shape.

FLOOR TO CEILING HEIGHTS

Two buildings of identical plan shape and area but of different floor to ceiling heights will have different rates/m² due to the additional cost of walling, finishes, etc. in the building with the higher floor to ceiling height.

PLUMBING, MECHANICAL & ELECTRICAL INSTALLATIONS

The concentration of plumbing installations has a marked effect on the rate/m² of the building. The cost of a toilet block per m² is much greater than that of a house containing one bathroom because the high cost of the bathroom area is spread over the less expensive areas of the remainder of the house.

Similarly, in office blocks, factories, etc., the rate/m² will depend greatly on whether air-conditioning, security systems, sprinklers, smoke detection systems, specialised electrical installations, acoustic treatment or other specialised installations are incorporated into the design.

CONSTRUCTION AREAS

The rate/m² for a building having large balconies or access corridors that have been included in the construction area cannot be compared with the rate/m² for a building not having similar areas of low cost.

INTERNAL SUBDIVISIONS

The rate/m² for open plan offices should not be compared directly with the rate/m² for offices having internal partitions without the relevant adjustments being made. The inclusion of partitions can increase the overall rate/m² by up to R230/m² of office area.

PARKING

Should the building in question contain certain areas for parking within the building area, the average rate/m² will be less than for a building having the identical accommodation but with parking outside the building structure. An example follows overleaf.

Case A

Building having parking within the building area

OFFICES
OFFICES
OFFICES
OFFICES

Plan area 600m²/floor
Construction area 3,000m²

PARKING (600m ²)

Basement

Cost of building

Offices	2,400m ² @ R7,000 =	R 16,800,000
Parking	600m ² @ R3,000 =	R 1,800,000
Total		<u>R 18,600,000</u>
Average rate/m ²		<u>R 6,200</u>

Case B

Building having parking outside the building structure and on grade

OFFICES
OFFICES
OFFICES
OFFICES

Plan area 600m²/floor
Construction area 2,400m²

PARKING (600m ²)

Cost of building

Offices	2,400m ² @ R7,000 =	R 16,800,000
Parking	600m ² @ R 300 =	R 180,000
Total		<u>R 16,980,000</u>
Average rate/m ²		<u>R 7,075</u>


Under Case B the area of parking is not included as part of the 'construction area' for purposes of calculating the rate/m². Similarly, the rate/m² for supermarket/hypermarket shopping centres should be qualified as to whether the cost of on-site parking and ancillary site development has been included, which cost could be in the region of R500/m² of construction area.

There are numerous further points of consideration that should be taken into account in addition to those given above. Amongst these are site works (peculiar to each specific contract), number of storeys, floor loadings, column spans, concentration of joinery and other fittings, overall height of building, open atrium upper volumes, etc.

In conclusion, rates/m² must be used with circumspection and the degree of accuracy of the answers provided must be considered to be in direct proportion to the amount of research and surveys undertaken to establish the rate for the building in question.

| SECTION **THREE**
APPROXIMATE
INCLUSIVE
BUILDING COST
RATES





This section provides a list of approximate inclusive building cost rates for various building types in South Africa.

Rates are based on 1 July 2011, and therefore represent the average expected building cost rates for 2011. It is emphasized that these rates are of indicative nature only and should be used circumspectly, as they are dependent upon a number of assumptions. See 'Inclusive rate estimates' herein.

The area of the building expressed in m² is equivalent to the 'construction area,' where appropriate, as defined in the 'Method for Measuring Floor Areas in Buildings, First Edition (effective from 1 August 2005), published by the South African Property Owners Association (SAPOA).

REGIONAL VARIATIONS

Construction costs normally vary between the different provinces of South Africa. Costs in parts of the Western Cape and KwaZulu-Natal, specifically upper class residential, for example, are generally significantly higher than Gauteng due to the demand for this accommodation. Rates have therefore been based on data received from the Gauteng province, where possible. Be mindful, however, that cost differences between provinces at a given point in time are not constant and may vary over time periods due to differences in supply and demand or other factors. Specific costs for any region can be given upon request by any Davis Langdon office in that region.

BUILDING RATES

Rates include the cost of appropriate building services, e.g. air-conditioning, electrical, etc., but exclude costs of site infrastructure development, parking, any future escalation, loss of interest, professional fees and VAT.

Offices Rate per m² (excl. VAT)

Low rise office park development with standard specification	R 5,200	–	R 6,300
Low rise prestigious office park development	R 6,700	–	R 10,000
High rise tower block with standard specification	R 7,400	–	R 10,000
High rise prestigious tower block	R 10,000	–	R 12,500

Note: Office rates exclude parking and include appropriate tenant allowances incorporating carpets, wallpaper, louvre drapes, partitions, lighting, air-conditioning and electrical reticulation.

Parking

Parking on grade including integral landscaping	R 350	–	R 450
Structured parking	R 2,800	–	R 3,600
Parking in semi-basement	R 2,800	–	R 3,800
Parking in basement	R 3,000	–	R 4,500

Retail	Rate per m ² (excl. VAT)
Local convenience centres (Not exceeding 5 000m ²)	R 5,000 – R 6,500
Neighbourhood centres (5 000 – 12 000m ²)	R 5,000 – R 7,000
Community centres (12 000 – 25 000m ²)	R 5,500 – R 7,500
Minor regional centres (25 000 – 50 000m ²)	R 6,000 – R 8,000
Regional centres (50 000 – 100 000m ²)	R 7,000 – R 8,500
Super regional centres (Exceeding 100 000m ²)	R 7,000 – R 9,500

Note: Super regional centres and regional centres are generally inward trading with internal malls, whereas convenient, neighbourhood and community centres are generally outward trading with no internal malls.

Retail rates include the cost of tenant requirements and specifications of national chain stores.

Retail costs vary considerably depending on the tenant mix and sizing of the various stores.

Industrial

Industrial warehouse including office and change facilities within structure area (architect/engineer–designed):

- Steel frame, steel cladding and roof sheeting R 2,500 – R 3,800
- Steel frame, brickwork to ceiling, steel cladding above and roof sheeting R 3,000 – R 4,200

Rate per m² (excl. VAT)

- Administration offices, ablution and change room block	R 4,800 – R 6,000
- Cold storage facilities	R 8,900 – R 12,700

Residential

Rate per no (excl. VAT)

Site services to low cost housing stand (250 – 350m ²)	R 22,000 – R 34,000
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Rate per m² (excl. VAT)

RDP housing	R 1,200 – R 1,400
Low cost housing	R 2,000 – R 3,200
Simple low rise apartment block	R 4,700 – R 6,600
Duplex townhouse	
- economic	R 4,700 – R 6,700
Prestige apartment block	R 9,000 – R 14,000
Private dwelling houses:	
- economic	R 3,400
- standard	R 4,600
- middle class	R 5,500
- luxury	R 7,800
- exclusive	R 11,600
- exceptional ('super luxury')	R18,000 – R 36,000
Outbuildings	R 2,000 – R 3,400

Rate per no (excl. VAT)

Carport (shaded)	- single	R 2,900
	- double	R 5,600
Carport (covered)	- single	R 4,500
	- double	R 8,300

Rate per no (excl. VAT)

Swimming pool		
– Not exceeding 50 kl		R 60,000
– Exceeding 50 kl and not exceeding 100 kl	R60,000 –	R 100,000
Tennis court		
– Standard		R 215,000
– Floodlit		R 280,000

Clinics

Clinic – 150-bed, 5 theatre (excluding consulting rooms)	R 590,000 –	R 900,000/bed
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Hotels

3-Star Budget	R 495,000 –	R 715,000/key
5-Star Luxury	R 1,760,000 –	R 2,420,000/key
Resort style	R 1,430,000 –	R 1,650,000/key

Note: Hotel rates exclude allowances for furniture, fittings and equipment (FF&E).

Studios

Rate per m² (excl. VAT)

Studios – dancing, art exhibitions, etc	R 8,900 –	R 12,700
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Conference centres

Conference centre to international standards	R 16,000 –	R 21,000
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Retirement centres

Rate per m² (excl. VAT)

Dwelling houses

– Middle class	R 5,300
– Luxury	R 7,400

Apartment block

– Middle class	R 5,500
– Luxury	R 8,500

Community centre

– Middle class	R 7,100
– Luxury	R 10,500

Frail care

R 8,500

Schools

Primary school

R 4,500 – R 5,700

Secondary school

R 4,800 – R 6,300

Stadiums

Rate per no (excl. VAT)

Stadium to

PSL standards R 22,000 – R 34,000/seat

Stadium to

FIFA standards R 50,000 – R 67,000/seat

Stadium pitch

to FIFA standards R 14,000,000 – R 17,000 000

Prisons

1 000 Inmate prison R 380,000 – R 400,000/inmate

500 Inmate prison R 400,000 – R 450,000/inmate

High/maximum

security prison R 600,000 – R 800,000/inmate

BUILDING SERVICES

The following rates are for building services (mechanical and electrical) applicable to typical building types in the categories indicated. Rates are dependent on various factors related to the design of the building and the requirements of the system.

In particular, the design, and therefore the cost of air-conditioning, can vary appreciably depending on the orientation, shading, extent and type of glazing, external wall and roof construction, etc.

Electrical installation Rate per m² (excl. VAT)

Offices

– Standard installation	R 325	–	R 575
– Sophisticated installation	R 460	–	R 750
– UPS, substations, standby generators to office buildings	R 230	–	R 320

Residential R 350 – R 550

Shopping centres R 525 – R 675

Hotels R 680 – R 850

Hospitals R 800 – R 1,050

Electronic installation

Offices

– Standard installation	R 350	–	R 450
– Sophisticated installation	R 450	–	R 575

Residential R 190 – R 250

Shopping centres R 420 – R 575

Hotels R 375 – R 475

Hospitals R 380 – R 500

Note: Electronic installation includes access control, CCTV, public address, fire detection, data installation, WiFi, CATV, PABX and BMS.

Fire protection installation (offices) Rate per m² (excl. VAT)

Sprinkler system including hydrants and hose reels (excluding void sprinklers) R 140 – R 230

Air-conditioning installation

Ventilation to parking/service areas R 150 – R 300

Offices

– Console units R 450 – R 600

– Console/split units R 520 – R 675

– Package units R 725 – R 900

– Central plant R 950 – R 1,400

– Variable refrigerant flow (VRF) R 950 – R 1,550

Residential — split units R 675 – R 1,200

Shopping centres

– Split units R 625 – R 750

– Package units R 675 – R 1,200

– Evaporative cooling R 310 – R 775

Hotels — public areas R 950 – R 1,650

Hospitals — split units to wards R 1,350 – R 1,550

Rate per no (excl. VAT)

Hotels

– Console units R 12,500 – R 18,000/key

– Split units R 26,000 – R 36,000/key

– Central plant R 40,000 – R 67,000/key

Hospitals – operating

theatres (per theatre) R 210,000 – R 780,000

Note: For guidance with regard to the cost of buildings rated under the Green Star SA rating tool system, see the latest edition of the Davis Langdon publication entitled 'Quick Guide to Emerging Green Design Attributes' on our website www.davislangdon.com.

| SECTION **FOUR**
INTERNATIONAL
COSTS

This section makes provision for comparisons of Africa building costs, international building costs and international rental rates.

The following table (Africa building cost comparison) (see page 52), presents in summarised form the approximate estimated building costs for different types of buildings in various locations in Africa. Rates are based on 1 July 2011 and therefore represent the average expected building cost rates for 2011. Exchange rates have been based on 1 November 2010.

Rates include the cost of appropriate building services, e.g. air-conditioning, electrical, etc., but exclude costs of site infrastructure development, parking, any future escalation, loss of interest, professional fees and VAT. These rates are of indicative nature and therefore, the qualifications dealt with elsewhere in this publication would apply.

These are estimated costs only and should, in particular, be considered in the context of acceptable building standards in each relevant country. These standards, both at a technical level and pertaining to quality, do vary from country to country, therefore the building costs must be seen as being for the normal standards prevailing in each particular region. This being the case, these costs must be used circumspectly.

The cost data under the heading 'International building cost rate comparison' (see page 53) was made available by Davis Langdon Australasia. Their assistance in this regard is acknowledged with thanks. It should be noted that these rates are based on the second quarter of 2010 and can therefore not be compared with other rates contained in this publication.

AFRICA BUILDING COST COMPARISON

Building type	Angola Luanda	Botswana Gaborone	Ghana Accra	Kenya Nairobi	Mozam- bique Maputo	Nigeria Abuja	Nigeria Lagos	Rwanda Kigali	Senegal Dakar	South-Africa Johannes- burg	Tanzania Dar Es Salaam	Uganda Kampala	Zambia Lusaka
Residential (rate/m²)													
Average multi-unit high rise	1,490	1,050	900	505	1,100	1,450	1,400	960	790	940	870	820	1,200
Luxury unit high rise	2,430	1,610	1,450	650	1,500	2,250	2,200	1,550	1,240	1,640	1,390	1,290	2,000
Individual prestige houses (Detached houses & bungalows)	4,160	1,610	2,550	780	2,130	4,010	3,900	2,410	1,900	1,650	2,210	2,050	2,300
Commercial/Retail (rate/m²)													
Average standard offices high rise	1,630	1,370	900	460	1,250	1,530	1,490	990	810	1,250	930	850	1,250
Prestige offices high rise	2,810	1,730	1,480	910	1,440	4,790	4,700	1,650	1,320	1,600	1,500	1,390	2,000
Major shopping centre (CBD)	2,360	1,130	1,170	520	1,150	2,850	2,800	1,590	1,060	1,180	1,200	1,120	1,600
Industrial (rate/m²)													
Light duty factory	1,000	490	950	400	770	1,740	1,700	840	730	430	820	780	1,000
Heavy duty factory	1,330	1,640	1,560	540	1,150	2,320	2,280	1,040	1,170	600	1,350	1,260	1,300
Hotel (rate/Key)													
3-Star budget	145,590	93,500	80,000	110,000	78,900	135,430	133,300	90,620	72,560	93,500	83,320	77,620	139,260
5-Star luxury (including spa)	580,000	334,100	330,000	170,000	260,000	554,100	552,500	343,400	296,290	385,000	337,400	314,470	573,430
Resort style (including spa)	702,190	376,520	390,000	200,000	358,800	789,930	697,000	445,900	367,040	275,000	405,910	404,920	409,590
Other (rate/m²)													
Multi-storey car park	1,390	690	700	400	500	770	750	810	680	460	740	670	640
Exchange rates (1 November 2010)	AOA	BWP	GHS	KES	MZN	NGN	NGN	RWF	XOF	ZAR	TZS	UGX	ZMK
USD = 1	92.27	7.00	1.45	77.28	35.60	149.52	149.52	595.00	479.54	7.00	14.81.00	2315.00	4930.00

Prices exclude land, site works, professional fees, tenant fitout, equipment & VAT.
Hotel rates include an allowance for FF&E.

INTERNATIONAL BUILDING COST RATE COMPARISON (USD/m²): 2nd QUARTER 2010

Building Type	Sydney	Auckland	Bahrain	Abu Dhabi	Doha, Qatar	Hong Kong	Beijing	Singapore	Kuala Lumpur	Manila	Bangkok	Joburg	Los Angeles	San Francisco	New York	London
Residential																
Average multi-unit high rise	2,130	1,380	1,325	1,360	1,370	1,670	480	1,475	440	790	770	1,070	3,450	3,550	3,700	2,450
Luxury unit high rise	2,820	1,730	1,650	1,900	1,900	2,050	655	2,450	1,020	995	1,082	1,600	4,000	4,200	4,200	3,255
Individual prestige houses	2,970	2,420	2,100	2,060	1,800	3,200	655	2,125#	915	1,090	900	1,300	3,400	3,500	3,800	3,855
Commercial/ Retail																
Average standard offices high rise	2,380	1,240	1,200	1,500	1,780	1,930	760	1,835	715	785	700	1,140	3,700	3,900	4,000	2,810
Prestige offices high rise	2,550	1,660	1,325	1,650	2,000	2,430	1,070	2,050*	1,050	1,020	915	1,400	4,200	4,400	4,500	3,495
Major shopping centre (CBD)	1,680	970	1,465	1,565	1,395	2,445	1,090	2,195	870	890	870	1,000	2,800	3,100	3,200	1,790
Industrial																
Light duty factory	530	415	660	660	880	1,066	N/A	935	420	400	560	410	1,200	1,400	1,200	768
Heavy duty factory	610	520	740	880	990	1,163	N/A	1,155	496	445	910	460	1,600	1,800	1,900	1,198
Hotel																
3-Star budget	2,060	1,865	1,920	1,910	2,055	2,440	1,005	2,270*	1,460	1,165	1,275	1,900	2,100	2,200	2,250	1,665
5-Star luxury	3,160	2,420	2,700	3,130	3,250	3,105	1,650	3,060*	2,130	1,500	1,800	2,800	4,500	4,600	4,700	3,050
Resort style	2,310	1,860	3,300	3,410	3,560	N/A	N/A	3,060*	1,270	1,210	2,110	2,150	4,500	4,600	N/A	N/A
Other																
Multi-storey car park	645	330	660	800	655	870	395	645	270	435	325	400	850	880	900	583
District hospital	2,660	2,490	2,500	3,290	3,425	2,890	990	N/A	940	1,210	N/A	1,230	6,900	6,900	6,000	2,810
Primary & secondary schools	2,040	1,310	1,630	2,330	1,100	1,330	530	930	275	735	N/A	700	3,000	3,200	3,600	2,330
Exchange rates (July 2010)	AUD	NZD	BHD	AED	QAR	HKD	CHY	SGD	MYR	PHP	THB	RAR	USD	USD	USD	GBP
USD = 1	1.19	1.46	0.38	3.67	3.67	7.78	6.78	1.40	3.23	46.50	32.42	7.60	1.00	1.00	1.00	0.67

Note: Large fluctuations in exchange rates can create short-term anomalies. Prices exclude land, site works, professional fees, tenant fitout and equipment.

Rate includes parking and minimal external works.

* Rate includes raised flooring and ceiling to tenanted areas.

* Rate includes FF&E.

INTERNATIONAL PRESTIGIOUS OFFICE RENTAL COMPARISON

Country	City	USD/m ² per annum
Australia	Adelaide	450
Australia	Brisbane	750
Australia	Melbourne	600
Australia	Perth	800
Australia	Sydney	900
Bahrain	Manama	400
Botswana	Gaborone	225
China	Beijing	580
China	Hong Kong	890
China	Shanghai	600
China	Shenzhen	365
Egypt	Cairo	330
England	Birmingham	460
England	Cambridge	410
England	Leeds	430
England	Liverpool	330
England	London (City)	835
England	London (West End)	1,275
England	Manchester	470
England	Oxford	335
France	Paris	1,130
India	Bangalore	175
India	Mumbai	900
Indonesia	Jakarta	260
Ireland	Dublin	500
Kenya	Nairobi	140
Korea	Seoul	650
Lebanon	Beirut	380
Malaysia	Kuala Lumpur	265
Mozambique	Maputo	350
New Zealand	Auckland	500
New Zealand	Christchurch	400

New Zealand	Wellington	500
Nigeria	Abuja	650
Nigeria	Lagos	800
Philippines	Manila	230
Qatar	Doha	640
Russia	Moscow	1,200
Russia	St Petersburg	850
Rwanda	Kigali	330
Scotland	Edinburgh	460
Scotland	Glasgow	470
Singapore	Singapore	845
South Africa	Cape Town	280
South Africa	Durban	270
South Africa	Johannesburg	360
South Africa	Port Elizabeth	220
South Africa	Pretoria	280
Spain	Barcelona	360
Tanzania	Dar Es Salaam	255
Thailand	Bangkok	300
Uganda	Kampala	200
United Arab Emirates	Dubai	945
USA	Los Angeles	325
USA	New York (Manhattan)	500
USA	Philadelphia	265
USA	Sacramento	325
USA	San Francisco	390
USA	Seattle	290
Zambia	Lusaka	250

Note: Rates are applicable as at 1 January 2011 and exclude VAT, but include GST where applicable. Above are gross rentals and include operating costs and municipal costs, but exclude electricity/water consumption.

05

| SECTION **FIVE**
BUILDING COST



BUILDING COST

The meaning of the words 'building cost' depends on the application thereof in context. A building contractor, for example, may refer to building cost as the cost of labour, material, plant, fuel and supervision. In contrast, a developer may refer to building cost as either the tender price from the contractor or the ultimate cost of the project, which could include professional fees, plan approval fees, escalation, loss of interest, etc.

For the purposes of this document, building cost shall be deemed to mean the tender price (or negotiated price) submitted by the building contractor.

ESCALATION RATE

There seem to be two popular methods of calculating and expressing percentage annual increases, namely the average rate and the year-on-year rate. The average rate is of no real use in calculating escalation and is of general interest only. The year-on-year rate should be used in escalation calculations, taking cognisance of actual project programmes.

The average rate compares the indices for each month (or quarter) of the year with those of the corresponding months (or quarters) of the preceding year and calculates the average of these, which is then quoted as the average annual increase for that particular year.

The year-on-year rate compares the January (or December) index with the index for the corresponding month of the previous year and reflects the increase over that year.

There could be a significant difference in the two rates in question. For example, in 2008 the year-on-year rate (January 2008 to January 2009) of building cost inflation in South Africa is only 6.3% but the average annual rate (comparing monthly indices) is 14.4%.

CALCULATION OF ESTIMATED ESCALATION OF CONSTRUCTION CONTRACTS

Pre-contract

Construction costs, for various reasons, change on an ongoing basis. Provision should therefore be made for the changes in tender prices during the period from the date of the estimate to the expected tender date. When the said increase is added to the estimated current building cost, the total will equal the anticipated tender amount.

It is calculated by multiplying the estimated current building cost by the average estimated monthly percentage increase and by the number of months from the date of the estimate to the tender date.

Contract price adjustment

Provision is made for the escalation in building cost during the contract period. The Joint Building Contracts Committee — Series 2000 Contract Price Adjustment Provisions (JBCC CPAP) formula provides for 85% of the contract amount to be subject to escalation adjustment — with the remaining 15% to stay fixed. Furthermore, a factor must be introduced to take account of the cash flow of payments during the construction period — usually 0.6 is acceptable if a short method of calculation is employed.

The total escalation during the contract period is therefore calculated by multiplying the anticipated tender amount by 0.85 and 0.6 and then by the estimated monthly percentage increase indicated by the relevant indices incorporated in the JBCC CPAP formula and by the contract period expressed in months.

TENDER PRICE ESCALATION

The annual year-on-year increases in building costs (i.e. tender prices) based on the indices published by the Bureau for Economic Research, University of Stellenbosch (BER) (January to January of each year) and for JBCC CPAP formula (work group 181 'Commercial/ industrial buildings') published by Statistics South Africa (P0151), are as follows:

COST INDICES APPLICABLE TO THE BUILDING INDUSTRY

YEAR	BER		JBCC CPAP		TMI
	Index (Jan 2005=100)	Year-on-year increase	Index (Jan 2005=100)	Year-on-year increase	
2005	100.0		100.0		
2006	109.6	+ 9.6%	105.5	+ 5.5%	1.04
2007	121.9	+ 11.2%	117.6	+ 11.5%	1.04
2008	144.3	+ 18.4%	126.8	+ 7.8%	1.14
2009	153.4	+ 6.3%	141.3	+ 11.4%	1.09
2010	154.0	+ 0.4%	145.1	+ 2.7%	1.06
*2011	150.3	- 2.4%	151.1	+ 4.1%	0.99
*2012	171.9	+ 14.4%	159.9	+ 5.8%	1.08
*2013	191.5	+ 11.4%	170.9	+ 6.9%	1.12
*2014	221.2	+ 15.5%	189.9	+ 11.1%	1.16

Note: The average annual increases indicated by the BER in their publications are the average of the quarterly increases for that particular year and will not correspond to the above year-on-year increases.

The difference between the tender price escalation and the escalation according to the indices incorporated in the JBCC CPAP formula for any one period may be attributed to the market factor, which incorporates the contractor's mark-up, productivity, availability of materials, etc.

- * Forecast based on information provided by Medium-Term Forecasting Associates Building Economists, Stellenbosch.

TENDER CLIMATE

The column marked 'TMI' (tender market indicator), gives an indication of the tender climate. The building cost index, as published by the BER and which is based on tender prices, has been deflated by the index for JBCC CPAP work group 181, which is based on the cost of labour and material. The result is the movement of tender prices excluding the influence of market costs of labour and material, giving an indication of competitiveness of tendering. It represents a comparison or rate of change of BER and JBCC CPAP indices.

When the TMI (see graph on page 66) shows a downward gradient, this indicates a favourable tender market, i.e. the next point is numerically less than the previous, which results from the calculation of $BER \div JBCC\ CPAP$ and indicates that the increase in BER (tender index) is less than the increase in the JBCC CPAP index; therefore, a favourable tender market from the viewpoint of the employer exists.

Conversely, if the graph has an upward gradient, the increase in BER is greater than the increase in JBCC CPAP indices, indicating an unfavourable tender market from the viewpoint of the employer and it would be prudent to recommend negotiation as opposed to tendering.

This tendency is also apparent on the cost indices graph (see page 65). When the two lines (JBCC CPAP and BER) converge, i.e. JBCC CPAP is 'dropping' and BER is 'rising,' then rather negotiate. When the two lines diverge, i.e. JBCC CPAP is 'rising' and BER is 'dropping,' then proceed to tender instead.

Base dates: To allow for comparison of indices, a factor has been introduced resulting in an equal base to both BER and JBCC CPAP indices (i.e. January 2005 = 100).

UNIQUE LARGE SCALE PROJECTS

Building cost estimation seems to become more complex when unique circumstances prevail. For example, in anticipation of the 2010 FIFA World Cup South Africa™, many new construction works and associated infrastructure projects were under construction. Projects of such magnitude can only be constructed by major contractors possessing the required expertise and resources. It was apparently experienced throughout that the unit costs of these projects were significantly higher than originally anticipated. Selected contractors at this level have little competition, and based on a favourable supply and demand market for them, priced costs accordingly, resulting in clients' cost overruns, causing severe pressure on budgets.

VALUE ADDED TAX

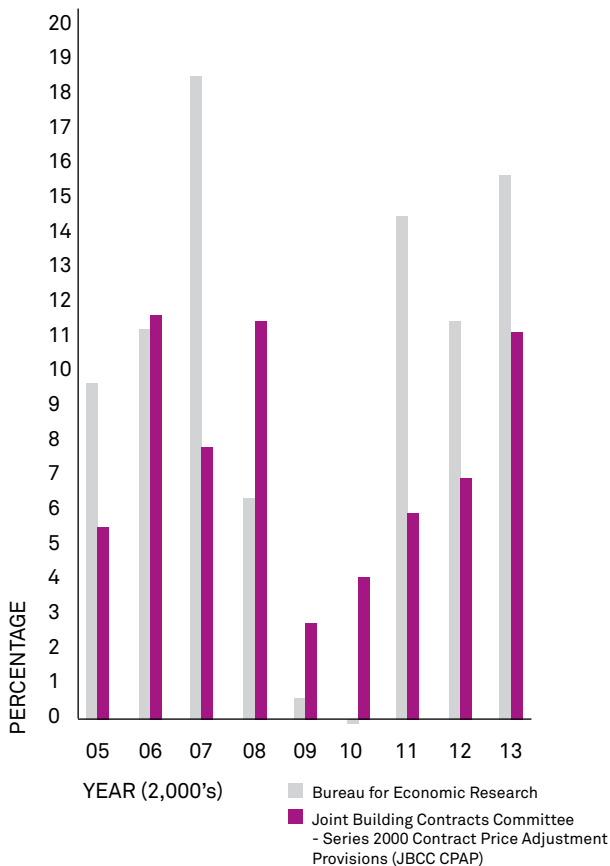
As the majority of developers are registered vendors in the property industry, any value added tax (VAT) paid by them on commercial property development is fully recoverable. Therefore to reflect the net development cost, VAT should be excluded. Should the gross cost (i.e. after VAT inclusion) be required, then VAT at the ruling rate (currently 14%) should be added.

Cognisance should be taken, however, of the effect of VAT on cash flow over a time period. This will vary according to the payment period of the individual vendor but in all cases will add to the capital cost of the project to the extent of interest on the VAT outstanding for the VAT cycle of the particular vendor.

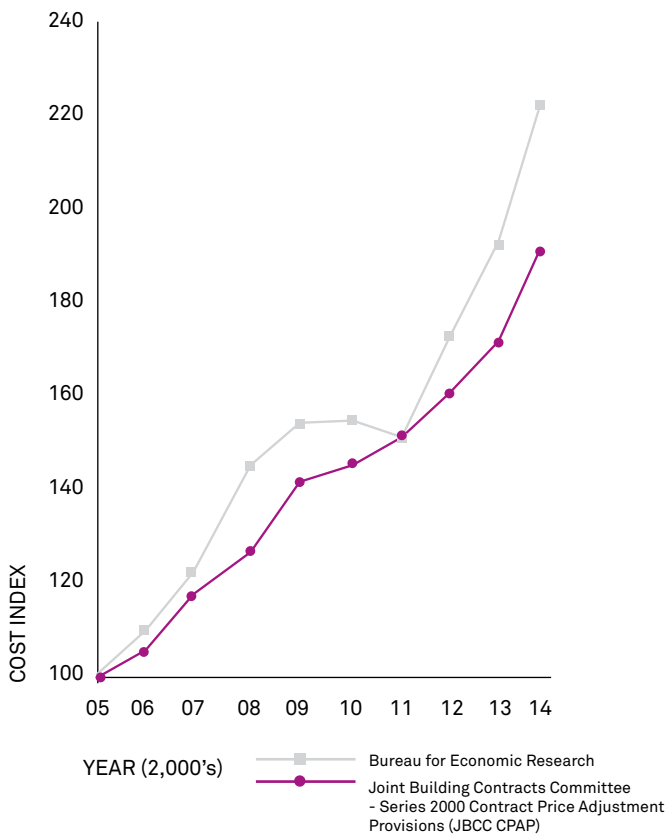
| SECTION **SIX**
GRAPHS:
BER AND JBCC CPAP



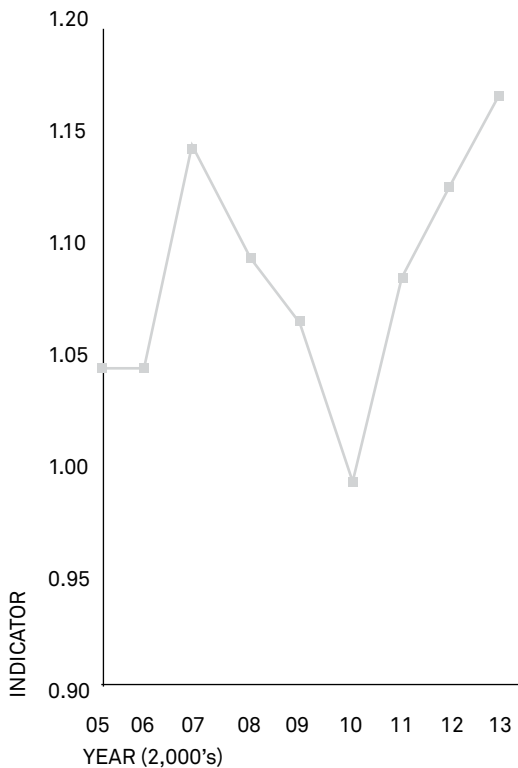
JANUARY TO JANUARY % Change



JANUARY INDICES



TENDER MARKET INDICATOR BER deflated by JBCC CPAP



Note: This graph gives an indication of the tender climate. It is the result of the relationship between BER and JBCC CPAP. Refer to section 5, page 61.

| SECTION **SEVEN**
METHOD FOR
MEASURING
RENTABLE AREAS

In the past, many landlords and developers have derived methods for calculating the rentable areas in buildings.

The current, most commonly used is the method recommended by SAPOA entitled ‘Method for Measuring Floor Areas in Buildings, First Edition’ (effective from 1st August 2005). It replaces the document ‘The SAPOA Method for Measuring Floor Areas in Commercial and Industrial Buildings’ (updated August 1991). It should be noted, however, that the latest edition is approved for use from the 1st of August 2005 and that it should not be applied retrospectively.

Notwithstanding or detracting from the above publication, and by kind permission of SAPOA, we have abbreviated and simplified for easier understanding the definitions contained in that document, together with our comments on the use of rentable areas as follows:

The document separately provides methods for measuring floor areas of:

- Offices of all types
- Retail developments, including malls, stand-alone, strip and value centres/warehouses
- Industrial developments, including factories, warehouses, mini-units and trading warehouses, multi-storey and the like
- Residential buildings, including houses, flats/ apartments, townhouses, cluster houses, etc.

For 'offices of all types' referred to before, the following definitions and explanations are applicable:

THE BASIS

The basis used in calculating the rentable area, is the measurement of useable area together with common area and supplementary area, which is determined at each level of offices. Unless otherwise indicated, the unit of measurement is given in square metres (m²).

AREA DEFINITIONS

Construction area

The entire covered built area; this is the sum of the areas measured at each floor level over any external walls to the external finished surface.

Only the lowest levels of the atria are to be included, and all openings on other levels to form the atria, are to be excluded.

Rentable area

The total area of the building enclosed by the dominant face, adjusted by deducting major vertical penetrations. No deduction shall be made for columns.

Its intended use is in determining the revenue-producing area of a building, which comprises rentable area, supplementary area and parking. It is also used by those analysing the economic potential of a building.

Rentable area shall have a minimum floor-to-ceiling height of 1.5 meters.

Rentable area comprises useable area plus common area.

Rentable area excludes supplementary area, which may produce additional revenue.

Useable area

Area capable of exclusive occupation by the tenant. The total area of the building enclosed by the dominant face, adjusted by deducting all common area and major vertical penetrations. No deduction shall be made for columns.

Its intended use is to be the essential part of rentable area and the basis for the apportionment of common area.

Common area

Common area is an area to which the tenant has access and/or use, and is part of rentable area. Primary common area of the building is apportioned to tenancies pro-rata to the useable area of that tenancy. Secondary common area is apportioned only to tenancies that it services.

Common area has two components:

- Primary common area comprises all rentable area on a given floor, that is not useable area, together with remote common area, which comprises areas such as entrance foyers, plant and service rooms, or any other portion of rentable area not located on the given floor.
- Secondary common area comprises areas beyond primary common area giving access to multiple tenancies. Accordingly, this area may vary over the life of a multiple tenancy building.

Supplementary area

Any additional revenue-producing component that falls outside of the definition of rentable area. Supplementary

area needs not be weatherproof, and includes — for example — storerooms, balconies, terraces, patios, access/service passages and signage/advertising areas and parking areas demarcated for the use of the tenant.

Parking bays shall be given in number.

GENERAL DEFINITIONS

Atrium

A weatherproof interior space, accessible and capable of use by the tenant at the lowest level. Voids in floors above atrium space shall not be included in rentable area.

Entrance foyer

A portion of remote common area including associated adjacent rooms and lobby.

Lift lobby and entrance foyers that occur together with parking floors (not adjacent to office areas) shall be remote common area.

Major vertical penetrations

Stairs and landings, lift shafts, flues, pipe shafts, vertical ducts, and the like, and their enclosing walls, exceeding 0.5m² in area shall be deducted from rentable area.

Remote service areas and plantrooms

Remote refuse rooms, electrical sub-stations, transformer rooms, central air-conditioning plantrooms and lift motor rooms shall be included in primary common area.

Storage areas

Dedicated storage areas within useable area shall be included as useable area.

Dedicated storage areas are separately listed as supplementary areas.

RETAIL, INDUSTRIAL, RESIDENTIAL AND OTHER DEVELOPMENTS

Similar provisions have been made for measuring floor areas of retail, industrial and residential buildings referred to above. For detailed information, it is suggested that the relevant sections of the said document be carefully studied.

The above method is designed to accommodate the measurement of most building types, as far as is practical; however, certain building types such as hotels, leisure and sport centres, petrol stations, hospitals, law courts, retirement villages and others may only be able to utilise the underlying principles adopted within this method.

GENERALLY

Developers and financiers are constantly attempting to either reduce building costs or increase rental levels to achieve higher returns. When these parameters are exhausted, it becomes incumbent on the architects and designers to design more efficiently. One must therefore understand the complete 'SAPOA Method for Measuring Floor Areas in Buildings, First Edition,' and implement the various facets of the definitions to achieve higher efficiencies between the various areas.

The initial return is more sensitive to an increase in rental income (which can be affected by increasing the rental area) than the corresponding percentage reduction in construction costs.

Once again, the above has been produced as a quick guideline only, and should not be used in preference to the SAPOA publication, which is far more comprehensive and detailed. We are thankful to SAPOA for their permission to use extracts from this publication.

| SECTION **EIGHT**
RETURN ON
INVESTMENT

CRITERIA TO BE EMPLOYED

There are two distinct criteria generally used for evaluating the financial viability of a property investment, namely:

- The initial return and
- The cash flow analysis.

THE INITIAL RETURN

The initial return is based on the net income during the first year of operation of the development. The return is expressed as a percentage per annum of the anticipated capital investment. Escalation in construction cost and cost of capital are both taken into account in an effort to incorporate the 'time value of money.'

The major advantage of employing the initial return method is that expenses and income do not have to be escalated too far into the future and these are therefore relatively accurate and easily understood in today's money terms. The fact that the first year of operation may have a higher vacancy factor than subsequent years should be ignored when the initial return is calculated in order to reflect long-term potential more accurately.

The initial return should be qualified as follows:

- All expenses and income have been escalated to the construction completion date
- Interim income received prior to the construction completion date has been deducted from the capital investment after adjusting for operating expenses and cost of capital
- The returns are expressed as percentages of the

- escalated capital investment and do not take into account loans, loan repayments or interest charges on loans
- The calculated returns are for the first complete year of operation only and do not cater to the following:
 - When the project may not reach full maturity during the first year of operation
 - Vacancies
 - Recoupment of capital during the income-bearing period of the investment or realisation value of the investment at the end of the investment period
 - Income tax.

CASH FLOW ANALYSIS OVER A PREDETERMINED PERIOD

In the cash flow method, the income and expenditure cash flow over the economic lifespan of the investment is taken into account. Usually an internal rate of return (IRR) and/or a net present value (NPV) is employed to evaluate the financial viability.

The NPV (discounted cash flow) method works as follows: determine the sum of all cash flows (inflows, outflows and initial investment) and discount to present values at the project's cost of capital. With a positive NPV the project can be accepted and it should be rejected if the NPV is negative.

The IRR is the rate of interest that equates the present value of the expected future net income with the present value of the cost of the investment. The NPV would therefore be exactly zero if the IRR is used as the discount rate. The IRR of an investment is generally used by institutional investors, as it is a comparative indication of the profitability of alternative investment options.

A weakness of the IRR calculation is the fact that an implicit assumption is made that cash flows are reinvested at the project's own IRR. The modified internal rate of return (MIRR) overcomes this problem by assuming that cash flows are reinvested at the cost of capital rate (or any other given rate), and may be calculated in addition. As the cost of capital rate is normally determined at a lower rate than the IRR, it can be assumed that the MIRR–calculation will always render a lower result.

The assumptions on which the cash flow return is based should be listed. These should inter alia include the assumed investment period (e.g. 20 years after the construction completion date), that income has been taken into account at the beginning of each month and expenditure at the end of each month, the terminal value, escalation in rental and operating expenses over the investment period, etc.

It is suggested that, where applicable, a comprehensive financial viability analysis should incorporate both the initial return and the cash flow method of evaluation. It is of significance to notice by informal observation by the experienced analyst, that there is a close relationship between the initial return and the IRR — to be applied with care, however.

EXAMPLE

Total capital expenditure (investment)	R 100,000,000
Rental in first year (net income)	R 10,500,000
Initial return in first year	10.50%
Escalation in net rental income	9.00% per annum

		Net cash flow
Year 0		-100,000,000
Year 1		10,500,000
Year 2		11,445,000
Year 3		12,475,050
Year 4		13,597,805
Year 5		14,821,607
Year 6		16,155,552
Year 7		17,609,551
Year 8		19,194,411
Year 9		20,921,908
Year 10		22,804,879
Year 11		24,857,319
Year 12		27,094,477
Year 13		29,532,980
Year 14		32,190,948
Year 15		35,088,134
Year 16		38,246,066
Year 17		41,688,212
Year 18		45,440,151
Year 19		49,529,764
Year 20	53,987,443	
(+ terminal value)	560,441,075	614,428,518

The IRR with 9.00% annual escalation in rental is 19.50%.

The terminal value is subjective and in this example has been assumed as the capitalised value of the anticipated rental in year 21 (i.e. $R53,987,443 + 9.00\% = R58,846,313$) capitalised at the initial yield, i.e. 10.50%.

Should the terminal value be assumed to be nil (this is unlikely as the land parcel will always have a value), the IRR drops to 16.92%.

A rule of thumb for the calculation of the approximate IRR for an investment is that it is equal to the sum of the initial return plus the escalation rate (assumed to be constant over the investment period), provided that the terminal value is calculated as in the given example, i.e. the capitalised value of the anticipated rental in the year after disposal, assuming a capitalisation rate equal to the initial return.

Thus, in the given example, the initial return is 10.50%, the escalation rate is 9.00% and the approximate IRR is the sum of the two, i.e. 19.50%.

Note: Where Green Star SA ratings are a requirement, cash flow analyses over longer time periods have become absolutely essential. Capital expenses are normally higher due to investment in 'green' technology and more expensive methods employed. Therefore, the long-term effect on the operation and maintenance of buildings due to better energy efficiency and the like should be demonstrated to building owners and tenants in order to determine the viability in a scientific way.

| SECTION **NINE**
RESIDUAL
LAND VALUE



The calculation of the residual land value for a predetermined rate of return, i.e. what a developer can afford to pay for a parcel of land given a specified return for a particular development.

The formula is determined as follows:

$$\text{Return} = \frac{\text{net annual income}}{\text{total capital outlay (TCO)}}$$

$$= \frac{\text{net annual income}}{y + x}$$

(where y = TCO excluding land value and its corresponding loss of interest and x = land value and its corresponding loss of interest)

$$\text{Therefore } x = \frac{\text{net annual income}}{\text{return}} - y$$

$$\text{Now } x = \text{land value} + \text{loss of interest}$$

$$= \text{future value of land}$$

Therefore to obtain present land value, i.e. land value excluding its corresponding loss of interest, merely discount x at the interest rate and period used in the previous calculations of TCO.

EXAMPLE

What price should be paid for land to obtain a return of 10.00% p.a. with a net annual income of R6,000,000 and the following capital outlay?

Estimated escalated building cost	R 38,150,000
Professional fees	5,725,000
Legal and plan approval fees	45,000
Interim rates on ground during construction period	265,000
Loss of interest and/or bond interest at 10.5% p.a. compounded monthly over a 15-month construction period	3,180,000
Total capital outlay excluding land cost (y)	<u>R 47,365,000</u>

$$\begin{aligned}x &= \frac{\text{net annual income}}{\text{return}} - y \\ &= \frac{6,000,000}{0.10} - R47,365,000 \\ &= R12,635,000\end{aligned}$$

Therefore, land value is R12,635,000 discounted at 10.5% p.a. over 15 months = R11,087,204 \approx R 11,000,000

The above residual value is very sensitive to changes of the required rate of return, otherwise known as the capitalisation rate (CAP rate), and careful consideration should be given to this rate taking into account the risk profile of the proposed development.

| SECTION **TEN**
AFRICA IN
FIGURES



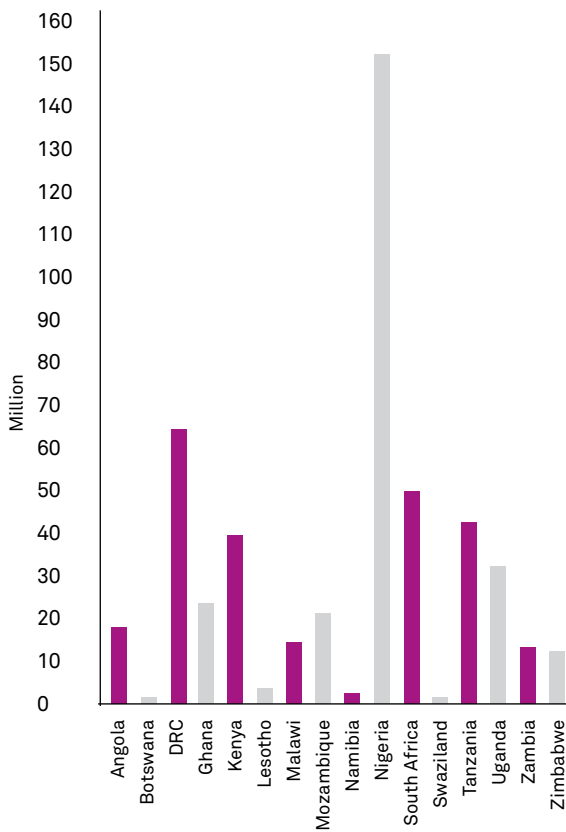
AREA AND POPULATION

	Land area (000 km ²)	Pop million 2008	Average annual % growth 2000– 2008	Pop density (per km ²) 2008	HIV prevalence % of pop ages 15–49, 2007
Angola	1,247	18.0	2.9	14	2.1
Botswana	582	1.9	1.2	3	*
DRC	2,345	64.0	3.0	28	*
Ghana	239	23.0	2.2	103	1.9
Kenya	580	39.0	2.6	68	*
Lesotho	30	2.0	0.8	66	*
Malawi	118	14.0	2.6	152	11.9
Mozambique	802	22.0	2.2	28	12.5
Namibia	824	2.1	1.5	3	*
Nigeria	924	151.0	2.4	166	3.1
South Africa	1,221	49.0	1.3	40	18.1
Swaziland	17	1.2	1.0	68	*
Tanzania	945	42.0	2.7	48	6.2
Uganda	241	32.0	3.2	161	5.4
Zambia	753	13.0	2.3	17	15.2
Zimbabwe	391	12.0	0.0	32	15.3

Source: World Development Report 2010

* Figures not available

POPULATION 2008



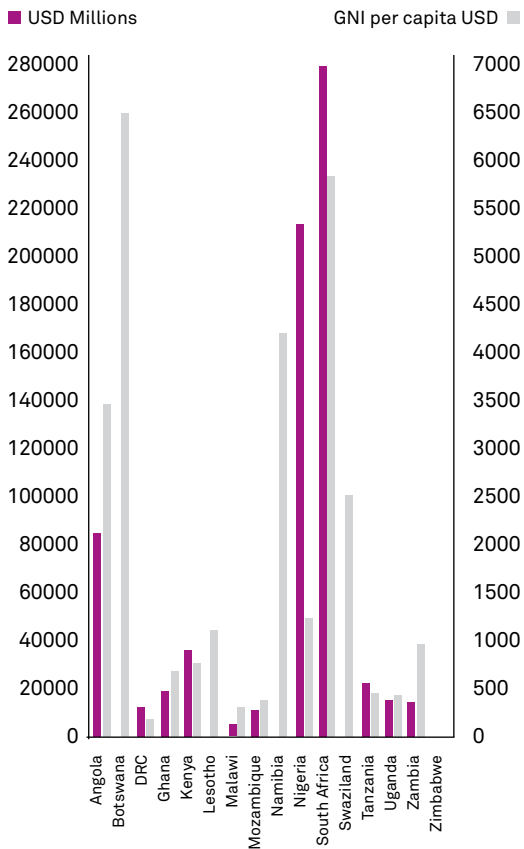
GROSS DOMESTIC PRODUCT (AT CONSTANT 2008 PRICES)

	USD (Millions) 1990	USD (Millions) 2008	Average annual growth rate 2000–2008	GNI Per capita USD 2008
Angola	10,260	83,383	13.7	3,450
Botswana	3,766	*	*	6,470
DRC	9,348	11,588	5.5	150
Ghana	5,886	16,123	5.6	670
Kenya	8,533	34,507	4.6	770
Lesotho	622	*	*	1,080
Malawi	1,803	4,269	4.2	290
Mozambique	2,512	9,735	8.0	370
Namibia	2,340	*	*	4,200
Nigeria	28,472	212,080	6.6	1,160
South Africa	111,997	276,764	4.3	5,820
Swaziland	*	*	*	2,520
Tanzania	4,220	20,490	6.8	440
Uganda	4,304	14,529	7.5	420
Zambia	3,288	14,314	5.3	950
Zimbabwe	8,784	*	-5.7	*

Source: World Development Report 2010

* Figures not available

GROSS DOMESTIC PRODUCT 2008



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