

**AFRICA PROPERTY
AND CONSTRUCTION
HANDBOOK 2013**

AFRICA PROPERTY AND CONSTRUCTION HANDBOOK 2013

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Message from the Managing Director



For AECOM in Africa, 2012 was a year of significant growth and change — creating a platform for our business to go from strength to strength in 2013. We have expanded exponentially with the addition of BKS to the AECOM fold. Established in South Africa in 1965, BKS is a leading multidisciplinary consulting engineering and management company, with a proud history of providing turnkey solutions for projects in South Africa, Africa and the Middle East. BKS's vision of being a world-class leader in supplying sustainable development solutions to help eradicate poverty complements AECOM's purpose to create, enhance and sustain the world's built, natural and social environments. Our operations in Africa now boast over 1,100 people.

Our program, cost, consultancy (PCC) practice was also enhanced with the addition of Davis Langdon KPK, an AECOM company, a construction cost, contract and project management consultancy firm with operations across Asia. KPK's 39-year track record of providing construction cost, contract and project management consultancy services in Asia will add to the portfolio of our cost and project consultancy business in the region. With 3,400 PCC employees located in more than 90 offices globally, we are well positioned to offer our clients comprehensive, global construction cost management services across Asia and the world.

Globally we have streamlined our business into four key practice areas. PCC falls into the "buildings + places" practice, which is the collective name for our three practice lines whose work is focused primarily on the built environment — planning, design

+ development (PDD) (comprising design + planning, economics and architecture), program, cost, consultancy (PCC) and building engineering.

Organised around market sectors, the buildings + places structure provides a framework from which we develop and market our combined offer to clients. We operate in all market sectors, leading in our primary markets — commercial, sports, leisure, healthcare, education and government — and working closely with AECOM's other practices to deliver our services and grow our market share in end markets such as manufacturing, transportation, water, energy and industrial.

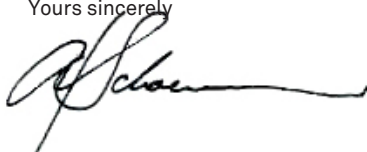
We believe this “restructuring” of the way we operate, will enable us to better extend our global capability into all our markets around the world. And we have expanded our local presence on the African continent even further by establishing a full-time presence in East Africa.

Our keen focus on development of the African continent is also illustrated in our drive to contribute to a better South Africa. We recognise that Broad-Based Black Economic Empowerment (B-BBEE) is an integral part of our drive to contribute to a better South Africa. We fully endorse and support B-BBEE and its role in addressing the imbalances of the past and B-BBEE is a major cornerstone for the continued success of our company and also encourages sound business practices aligned to our Core Values. We have been independently evaluated and certified in terms of the Construction Sector Charter issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act and we are very proud to have achieved a level 2 contributor rating at the beginning of our Fiscal Year 2013.

We are also very excited about our Global Unite tool launching in 2013, which will provide clients with international cost benchmarking data — these include the critical performance indicators that go beyond cost and have the potential to influence design. We believe this tool will further differentiate us from our competitors and will truly add value to your projects.

Finally, we are delighted to share with you this 26th edition of our annual Africa Property and Construction Handbook. It contains a selection of reference information and cost data relevant to Africa, which we trust will be of interest and assistance to you. For more specific information related to your project or development, please feel free to contact us directly.

Yours sincerely

A handwritten signature in black ink, appearing to read 'A. Schoeman', with a long horizontal flourish extending to the right.

Andries Schoeman

Deutsche Bank



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Davis Langdon in Africa has Evolved

DL has evolved



Founded in 1922 by EB Farrow and DJ Laing, we started our long history in Africa as “Farrow Laing”. In 1946 Farrow and Laing grew to Farrow, Laing and McKechnie. Thirty successful years later in 1976, Farrow, Laing and McKechnie merged with Lane, Werry and Hattingh to become known as Farrow Laing and Partners.

In keeping with developments in business in South Africa in the 1990’s, we became Farrow Laing Ntene in 1998. In 2000 we became part of the Davis Langdon family, then being known as Davis Langdon Farrow Laing. From 2006 we became known as Davis Langdon and at the end of 2010, we became part of the AECOM family, rebranding to Davis Langdon, an AECOM company.

As from the end of 2012, and the beginning of our new financial year, we are now branded as AECOM, forming part of AECOM’s global program, cost, consultancy practice.

AECOM

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. We provide 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 more than 140 countries and has annual revenue in excess of \$8.0 billion.

Our Program, Cost, Consultancy (PCC) services

Our core services are cost, programme and project management, complemented by a wide range of specialist consultancy capabilities, including building surveying, capital allowances consulting, design management, engineering cost management, legal support, management consulting, specification consulting, facilities management, value and risk management and sustainability consulting.

Our projects

We're passionate about partnering with corporate clients on their most challenging projects, helping them get to market quickly and maintain their competitive edge.

Our clients span the industrial spectrum, including diversified industrial, automotive and commercial vehicles, banking and finance, chemical/pharmaceutical and life science, oil and gas, healthcare, metal and mining, consumer products, food and beverage, high—tech, aerospace and defence, and utilities.

Our dedication and enthusiasm have earned us relationships with many household-name companies. We serve our clients around the world, through all aspects of the real estate cycle, across

all real estate asset types, and through all delivery variations.

Our comprehensive services include planning and consulting; architecture; engineering; construction management; cost and project management; energy, water and environmental management; and integrated offerings. We work with clients through their preferred delivery method, including agency; at-risk; engineering, procurement and construction management (EPCM); engineering, procurement and construction (EPC); design-build; design-bid-build; and fast-track.

No matter the project scope or delivery method, AECOM's clients trust us to handle their most valuable hard assets, such as offices; research and development centres; data centres; manufacturing, packaging and distribution facilities; utility plants; water treatment facilities; assets related to land resource production or transmission and distribution; and point-of-sale facilities.

Excellence and Awards

At AECOM we continuously strive for excellence. We maintain our successful track record by retaining the industry's most talented professionals.

We are driven by a well-defined set of Core Values, including Excellence and Innovation. This fuels our intense focus on continuous improvement, which leads to repeated commendation by our industry, clients and others.

We are proud to be recognised by major awards programmes — sponsored by professional associations, government agencies, civic organisations and industry publications — for our excellence and innovation.

Our selection for these prestigious industry honours reflects our commitment to create, enhance and sustain the world's built, natural and social environments.

- AECOM listed on America's *Fortune 500* at #322.
- AECOM named one of the World's Most Ethical Companies for 2011 and 2012 by the Ethisphere Institute.
- *Engineering News-Record (ENR)* magazine ranks AECOM No. 1.
- AECOM named Best Diversity company 2008, 2009, 2010 and 2011 by readers of *Diversity/Careers in Engineering and Information Technology Magazine*.
- *Newsweek* includes AECOM on its list of Greenest Big Companies.
- AECOM recognised by the U.S. Chamber of Commerce's Business Civic Leadership Center as honouree for Best Corporate Stewardship.
- *Financial Times* names AECOM among its Best Workplaces.
- *Careerbliss.com* named AECOM as one of the top 10 companies dedicated to making its employees happy.

Purpose And Core Values

We continue to improve our global resources through local networks. We are made up of some of the world's finest engineering, design and programme management companies — with long decades of experience in their respective fields.

One thing remains constant at AECOM — our purpose: to create, enhance and sustain the world's built, natural and social environments.

Dedicated to this promise, our company is driven by a clear set of Core Values, which define who we are, what we do and how we do it.

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

AECOM 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 or 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.

B-BBEE Statement

AECOM recognises that Broad-Based Black Economic Empowerment (B-BBEE) is an integral part of our drive to contribute to a better South Africa. We fully endorse and support B-BBEE and its role in redressing the imbalances of the past. B-BBEE is a major cornerstone for the continued success of our company, and also encourages sound business practices.

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 Broad-Based Black Economic Empowerment Bill (B-BBEE) No. 53 of 2003 and the results are as follows:

Score: 85.72

Level: **Level 2 contributor**

Procurement recognition level: 125%

Value-added supplier: Yes

The above scores have been achieved by quantifying all the components of B-BBEE, namely:

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

While we are proud of our achievements to date in B-BBEE, we constantly strive to improve on and maintain the highest possible score on all scorecard elements. We have therefore developed a B-BBEE strategy which sets continuous improvement targets on all the BEE scorecard criteria in order to maintain our leading role in the built environment and our positive impact on society.

Quality Management: Delivering to the Highest Standards

A quality management system is maintained within all our offices, which is certified as being in accordance with the international standard for quality management, ISO 9001:2008. Management of the firm recognises that maintaining and improving the certified quality management system is an essential factor in guaranteeing the provision of professional services of a consistently high standard.

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.

In doing so, we are fully committed to the policies and principles incorporated within our Integrated Management System, which emphasises the need to fully understand our clients' requirements and to strive to meet or exceed their expectations. These policies and procedures fully comply with the requirements of the international standard and incorporate a cycle of corrective and preventative actions which create positive opportunities for continuous improvement.

Safety, Health and Environmental Management

Our Integrated Management System incorporates requirements of environmental management in alignment with ISO 14001:2004 and safety and health management in alignment with BS OHSAS 18001:2007. We have obtained and continue to maintain certification in accordance with both these international standards.

The rationale behind this is that we support the ethos of an operationally safe office environment and remain committed to ensuring we have a healthy and safe environment for our staff and colleagues.

Additionally, we are committed to positively contributing 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.

Sustainability

In recognising our social responsibility, AECOM has 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 locally as sustainable practices abroad have advanced and progressed by large measures in recent years.

AECOM, through Davis Langdon, was a “silver” founding member of the Green Building Council of South Africa (GBCSA) in 2007. We also assisted the GBCSA on their technical working groups to launch the Green Star South Africa Office rating tool in 2008 and the Green Star South Africa Retail Centre rating tool in 2010.

In South Africa, we publish the very popular “Quick Guide to Green Design Attributes” as a service to the property and construction industry. This publication is currently in its 5th edition, 2012/2013.

Staff from all regions in South Africa have completed the Green Star South Africa 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

Research is a key part of AECOM's aspirations to provide inspiring solutions and enduring legacies within the built environment. Through our research and knowledge creation activities, we aim to stimulate beneficial cultural and business changes, resolve industry-specific problems, support our knowledge database and enhance our competitive edge in order to deliver cost-effective, high-quality and relevant services. We also undertake contract research on assignment for clients.

AECOM globally has a tradition of supporting research collaborations, and in South Africa we are currently pursuing a wide range of research studies with local academic and research institutions, professional bodies and the government. Our current research interests nationally and internationally centre around:

- Local, regional and international influences on construction costs and prices
- Building Information Modelling (BIM), BIM cost models and organisational integration in the South African construction industry through BIM
- Sustainability and green buildings — drivers of green design, construction and operations within different building types
- Improving infrastructure project delivery in South Africa
- Tall, large and complex buildings — efficiencies in construction, life cycle costing, sustainability, BIM and simulation
- The triple bottom line in construction and property development
- The soft landings process for buildings.

We also have ongoing collaboration with our international offices with specific reference to global infrastructure sentiment surveys, sector-specific research and developing global project cost databases. Finally, we aim to work closer with industry on continuing education workshops and in developing relevant industry reports and publications.



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Our Services

Quantity Surveying/Cost Management

AECOM 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) summarised as follows:

Stage 1

- Assisting in developing a clear project brief
- Advising on the procurement policy for the project
- Advising on other professional consultants and services required
- 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

Stage 2

- Agreeing on the documentation programme with the principal consultant and other professional consultants
- Reviewing and evaluating design concepts and advising on viability in conjunction with 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
- 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
- Reviewing and evaluating design and outline specifications as well as exercising cost control in conjunction with 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
- Providing services for which the following deliverables are applicable:
 - Detailed estimates of construction cost
 - Area schedule

Stage 4

- 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

- Preparing schedules of predicted cash flow
- Preparing proactive estimates for proposed variations for client decision-making
- 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

Mining And Engineering Cost Management

Mining and engineering cost management operates as a specialist service and comprises specialist skills and applications that enhance the risk and value management techniques required by the mining, infrastructure, minerals, metallurgical and petro-chemical sectors of the 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. The mining and engineering cost management group is responsible for many diverse projects within these industries with principle benefits to our clients being independence, accountability and evidence of corporate governance.

The mining and engineering cost management team operates throughout Africa using infrastructure support from our other local offices located in all major centres in South Africa, Mozambique and Botswana. The engineering cost management group employs professional qualified quantity surveyors, cost managers, cost engineers, contract administrators, construction programmers and building surveyors.

Mining, infrastructure, minerals, metallurgical and petro-chemical projects are generally of a high monetary value and it is therefore most beneficial to involve the mining and engineering cost management team 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, timely and cost-effective procurement, accurate and up-to-date maintenance of costs to completion, including the cost management of design changes and the timely close-out of contracts. The implementation of these principles of financial management will deliver maximum shareholder value and it is in this area that the engineering cost management team strives to significantly influence project outcomes to benefit all stakeholders.

Our mining and engineering cost management group 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

Every client wants rigorous control of overall building costs and to ensure that every Rand spent is optimised. Building services such as electrical, air-conditioning, fire protection and the various electronic installations are part of every building project and usually comprise 25% to 40% of the total construction cost. It follows that the need for effective cost management of the building services is just as essential as for any other part of the construction costs.

Our building services cost management team operates within AECOM's PCC engineering cost management service, and draws upon its unique expertise to provide financial management and contract administration of building services. These services include:

- Electrical installation
- Heating, ventilating and air-conditioning (HVAC) installations
- Fire protection systems
- Fire detection and evacuation systems
- Access control
- Closed Circuit Television (CCTV)
- Lifts, escalators, travelators
- Communication systems
- Building management systems
- Security systems
- Data systems

We have for many years offered cost advice and quantity surveying services for all building services and have a track record which includes many major projects. Meticulous procurement and cost management practices are part of our standard methodology, and independent cost management ensures transparency of costs and a dedicated service not linked to the specific design consultant.

Working in close conjunction with the appointed mechanical, electrical and fire protection consultants, our building services team provide a comprehensive service encompassing the following:

- Cost planning at an early stage prior to detailed design
- Cost studies to compare alternative materials and designs in terms of capital, operating, maintenance and depreciation costs
- Monitoring and evaluating design as it evolves to ensure compatibility with the approved cost plan
- Advising on contractual arrangements and preparing tender procurement documents
- Adjudicating tenders in conjunction with the consultant team
- Cash flow predictions
- Cost management and reporting
- Valuation of work done during construction
- Determining final costs
- Settlement of final costs with the contractor and sub-contractors

Project Management

AECOM's project and programme management team 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 teams with the in-house skills and market expertise to develop centres of excellence and the ability 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 our ability to provide a dedicated service that is focused on the clients' vision for the project in question. Through our "One AECOM" approach to managing projects, we draw on the inherent global knowledge base and 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
- Programme management
- Development management
- Client's representative
- Engineering Procurement Construction Management (EPCM)
- Value and risk management
- Project programming, planning and controls
- Project consultancy
- Due diligence reporting

Our project management team will invariably work with client teams that are carefully pre-qualified and selected for their expertise, 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 this 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.

Project Controls

Project controls is the effective management of systems, processes and procedures for key project delivery elements of time, cost and quality. It comprises the core competencies that underpin and ensure the successful completion of all projects. Project controls is also intended to be an information tool for the project management team, enabling them to utilise and draw information from the project and make informed decisions.

Project controls is a service line offered in all of AECOM's current sector offerings. Our approach to servicing our clients' requirements is focused on offering the following:

- Planning and scheduling
- Document control
- Contracts administration
- Change management
- Cost management
- Risk management
- Project administration and information technology (IT)

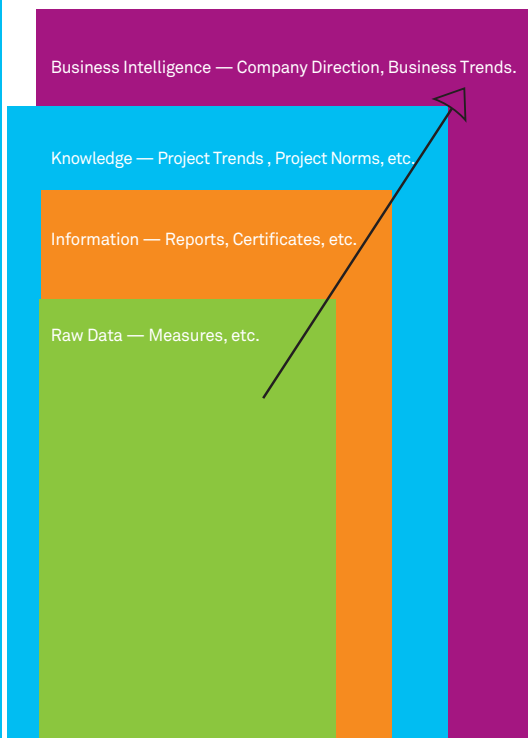
Drawing on the vast array of knowledge at our disposal from a truly global company, a suite of systems, standards and tools have been developed to better control and guide a project through to ultimate success. These are the global AECOM standards to which we adhere and when required, they are able to be adapted or modified to suit any specific client requirements. We are therefore able to provide a depth of experience and expertise to our clients from start-up right through to project completion.

Client/Project Specific		Some client specific development
Process	Technology	
Practices/Region Specific		Piloted or developed specifically for practices or regions
Process	Technology	
AECOM Common Standard		Goal is to grow an AECOM standard: Baseline of processes and tools
Process	Technology	

The most crucial part of any project is the project start-up or implementation phase. If the correct reporting streams and requirements are not identified prior to this stage, it becomes extremely difficult to align these once construction has commenced, as the focus of all parties shifts towards the construction phase.

It is therefore crucial that an experienced start up team is consulted to advise and guide the set up process and through previous experience we are able to provide as much guidance as is required. All too often, once projects have been completed, the knowledge and lessons learnt through the implementation process are lost for future projects.

AECOM collects records and analyses this information and historical information available from similar global and local projects to ensure such lessons learned benefit current and future projects. This provides us with the knowledge and business intelligence necessary to advise and guide our clients and future projects through to ultimate success.



Through AECOM's Global Unite system, project information from different regions around the world is captured and consolidated into one platform. This allows us to benchmark project cost rates and performance ratios for different building projects across the globe, which in turn enables us to provide more accurate offerings to our clients.

Project controls are also able to implement different software suites as required by the client in order to manage cost, documentation, risk and schedule while allowing transparency and ease of access to the current project status and progress.

Using information that is even a few weeks old to steer projects can be detrimental to a project, and the use of software systems such as Proliance or UniPhi allows for the information to be available at the project managers' fingertips in order to make quicker and more efficient judgment calls.

Quality, Occupational Health, Safety and Environmental Management Consultancy Services

Our Safety, Health and Environment Quality Management (SH&E-Q) team offers the necessary expertise to assist construction consultancies obtain ISO 9001, ISO 14001 and OHSAS 18001 certifications. Since obtaining ISO 9001 Quality Management certification in 2000, we have expanded our services to provide such assistance to quantity surveyors, consulting engineers and other construction consultancies.

In the case of Quality Management we provide:

- Consulting services to develop the necessary manuals, policies and procedures to enable a firm to establish a Quality Management System (QMS) in accordance with the requirements of ISO 9001: 2008 international standard
- Ongoing support to allow a firm to maintain its QMS, including carrying out internal audits of quality management procedures and consultation on maintaining and improving the system
- In-house training to management and staff
- Advisory services prior to the certification visit and subsequent external audits by a certifying authority

The scope of our services incorporates:

- Defining the organisational mission, vision and values; the organisation's internal and external environment; and the resulting quality objectives
- Fully engaging top management
- Identifying the key processes and interactions needed to meet quality objectives

Regarding Safety, Health and Environmental (SH&E) management, our services develop the systems and procedures necessary to put in place both an Environmental Management System and an Occupational Health and Safety Management System, adequate to enable firms to obtain certification in accordance with ISO 14001 and OHSAS 18001 international standards.

We guide clients through the development and implementation of tailored SH&E processes, systems and manuals to international standards, up to the certification processes.

These services incorporate:

- Putting in place the necessary SH&E policies
- Planning for SH&E hazard identification, risk assessment and control, legal and other requirements
- Implementation and operation, including defining the resources, roles, structure, responsibilities, competencies and training required

In all cases we work with and recommend an internationally recognised certification authority, which is well suited to work with construction consultancies in improving their SH&E-Q systems and consequentially their effectiveness.



South African Market Conditions

Construction Industry Outlook

International economic conditions remain negative with continued weakness in global economic conditions. While there are signs of possible revival in the U.S economy, economic conditions in much of Europe are expected to deteriorate during 2013. Emerging markets continue to perform strongly, but growth in China and India is expected to slow in 2013 on the back of slowdown in the European Union.

As a result, global construction sentiment is slightly optimistic regarding 2013 in the U.S, but outlook for the U.K, Europe and most other Organisation for Economic Co-operation and Development (OECD) countries remains depressed. Further contraction is expected following on from the last few years with return to growth in 2014.

In South Africa, despite slight improvement in building confidence amongst contractors, materials manufacturers and professionals, the outlook for the construction industry remains subdued.

The economic growth forecasts for 2013 have been revised downwards steadily and current projections range from 2.5% to 2.8%. Industrial unrest in the mining and manufacturing sectors, challenges in education and unemployment, and the effect of the global slowdown have dampened consumer sentiment with spill-over effects on the construction industry.

The low level of construction demand in all sectors has resulted in a very competitive tender climate with minimal profit margins and an oversupply of workers.

Plans by the South African government to significantly increase infrastructure spending are still in initial stages, but civil construction is still the most active sector of the construction industry. The First National Bank/Bureau for Economic Research (FNB/BER) Construction Confidence Index rose to its highest level in three years on the back of improved workloads in the civil construction sector.

The uncertainty in local and global economic conditions is a key factor impeding construction activity in the private sector, as companies review investment decisions and re-assess priorities.

Demand for residential, retail and commercial buildings remains low and the building pipeline weak. In other sectors, demand is dependent on the economic performance of South Africa's key trading partners, key commodity prices, and the policy environment arising from the African National Congress elective conference held in December 2012. A more detailed look at the key construction sectors in South Africa follows in the next sections.

Commercial Sector Outlook

In the major cities of South Africa, demand is still high for prime and Grade A commercial property in premium areas. Limited availability and strong demand drives new development in these areas, especially where these are close to transport links and amenities. Demand for other grades of commercial property and those in less attractive areas is low due to the challenging economic climate and higher tenancy risk, as well as stricter funding criteria from financial institutions.

Commercial property rentals and vacancy rates have stabilised after steady decreases and increases respectively, but are expected to remain at current levels for the next year. South Africa's commercial property sector is expected to remain stagnant in 2013, with little improvement taking place in construction activity on the back of current economic conditions and declining business confidence.

However, there is still substantial committed development (776,000m² in the third quarter of 2012)¹ from investors looking ahead to a recovery from the current economic downturn.

Green buildings continue to attract interest due to their appeal to environmentally-conscious tenants and lower occupation costs. It is therefore likely that developers will increasingly build in green aspects into commercial buildings especially if the expected increases in energy costs are realised.

Some property owners are also likely to take advantage of lower construction costs arising from the competitive tendering environment and scarcity of work to renovate properties, so refurbishment work opportunities should remain steady over the next year.

Education Sector Outlook

Education is a government priority as evidenced by budget allocations at all levels, and total public sector infrastructure expenditure in education is estimated to reach R10.9 billion in 2012/13, R14.5 billion in 2013/14 and R15.3 billion in 2014/15.

The most significant source of activity in the education sector is the university build programme, which includes the construction of new universities in Mpumalanga and Northern Cape and projects to expand higher education infrastructure focusing on teaching facilities and student accommodation.

There are also large allowances in the Medium Term Expenditure Framework (MTEF) for the secondary schools recapitalisation conditional grant to build, refurbish and resource new and existing teaching spaces. The Department of Basic Education (DBE) is in the process of a national school build programme and improvement of school infrastructure, overseen by the DBE's Programme Support Unit and the Development Bank of Southern Africa (DBSA). This aims to eradicate 496 inappropriate structures, provide basic water to 1, 257 schools, basic sanitation to 868 schools and electricity to 878 schools (backlogs).

Although many projects in the education sector are likely to be small projects with low associated spends, there are overall large allocations for education infrastructure grants to supplement provincial programmes, including the construction of new schools and the schools' maintenance allowances.

While the above are likely to boost construction activity in the sector, several challenges stand in the way of significant activity. These include a shortage of financial resources and lack of technical expertise to implement infrastructure projects; the difficulty in coordinating projects between different branches of government and local communities; and maintenance cycles.

Energy Sector Outlook

The energy and utilities sector is one of the more promising ones in South Africa, as it is a cornerstone of government's infrastructure development plan and infrastructure pipeline. The sector has experienced sustained activity over the last three years with significant activity in energy generation, renewable energy and water distribution.

Electricity generation to support socio-economic development is one of the 17 Strategic Integrated Projects in the 20-year Infrastructure plan framework. Renewable energy projects worth R25 billion have been announced, such as a renewable energy independent power producer programme to generate 3,725 megawatts by 2016; a planned 100MW concentrated solar power plant; and a proposed 1000MW and 5000MW solar park. Most of these are still at a nascent stage.

Water projects revolve around dam construction and water distribution in the three spheres of government, for example, the Kamati Water Scheme augmentation Project; Lesotho Highlands Water Project; and Olifants River Water Project.

With an increasing demand expected in Southern Africa on the back of growing economies and programmes to provide populations with access to electricity and water, and an overworked electricity infrastructure, an increased demand for energy is anticipated. Investments in energy and utilities are thus foreseen over the next decade.

Healthcare Sector Outlook

Public-sector healthcare expenditure is currently being restructured to improve the quality of healthcare and prepare the health system for the National Health Insurance (NHI) scheme.

Large allocations have been set aside in the national and provincial budgets for hospital infrastructure building, renovation and maintenance under the Health Facilities Infrastructure Management grants. These focus on hospital revitalisation, health infrastructure and the building or upgrading of nursing colleges. There are also allowances for smaller projects maintaining institutions and upgrading primary care institutions and hospitals.

At the end of 2012 there were approximately 50 public sector health mega-projects at feasibility stage and 29 projects in the financing stage for the period 2012–2020. While this points to potential high levels of tender activity, delays in issuing large tenders have been blamed for current plans not translating into increased projects, and under spending is chronic. This is mainly attributed to a shortage of capacity in government.

Private-sector healthcare expenditure on infrastructure is projected to grow slowly but steadily, though opportunities are concentrated in urban areas across the country.

Industrial Sector Outlook

While the industrial property sector has been less affected by the economic slowdown than many others, the key factors influencing industrial property prices are under severe strain. The manufacturing and retail sectors are experiencing weaknesses following the ongoing European crisis and slowing prospects for China's economy, exacerbated by static local demand and increasing incidences of industrial action. Sector growth prospects remain weak and it is unlikely that companies will invest in new infrastructure at current levels of economic uncertainty.

In this sector, the choice of location is especially critical and proximity to major transport routes as well as a centrality of location for warehousing and distribution operations are key factors that influence the demand. As a result, certain nodes are still in demand with activity high, such as Epping in the Western Cape, Mount Edgecombe in Durban, Midrand and the vicinity of OR Tambo airport in Johannesburg. In most other areas, however, rentals are either experiencing sluggish growth or contracting

Long-term investment in mining-related industry and other manufacturing projects remains weak. While there is hope for sector improvement based on better-than-expected manufacturing activity in the last quarter of 2012, and government policy proposals aimed at stimulating specific industrial sectors, demand for space is likely to remain stable rather than strengthen unless household expenditure, the retail sector and the economy recover considerably.

Leisure Sector Outlook

The outlook for the hotel industry in South Africa is moderate growth as there has been a surplus in hotel space following a sustained period of hotel construction in South Africa between 2005 and 2011.

Boutique and niche hotels are still experiencing interest, but budget hotels and the average 4-5 star hotels are under pressure and little activity is expected in this segment. While domestic and international visitor numbers are expected to grow by 3.4% and 2.3% respectively annually between 2011 and 2015, existing room numbers are currently adequate to accommodate such growth.

Activity in Sub-Saharan Africa looks positive over the next five years, as business and leisure travel numbers grow. Revenue per available room is forecast to grow between 7-15%, one of the highest regional growth rates in the world. There are a number of branded hotels with a strong pipeline of rooms especially in West and North Africa, presenting opportunities for South African operators and their regular service providers.

Hotels are increasingly focusing on their operating efficiencies and margins, and “green” hotels attract more visitors at a premium to “ordinary” hotels. Conversion of existing hotels to increase their energy efficiency and resource usage is therefore a high potential growth segment of this market.

Little activity is expected in the sports and culture sub-sectors as previous investments in the 2010 World Cup and in library grants have already accounted for much of the potential growth.

Mining & Minerals Sector Outlook

The mining sector has faced difficult operating conditions in 2012, with weakening export demand, the nationalisation debate, the downgrading of the country's sovereign credit ratings and a wave of unprecedented industrial action undermining performance and output. This has had some effect on investment plans from mining companies; the value of announced projects fell from R34.2 billion in the first half of 2012 to R6.3 billion in the second half. Knock-on effects have also been felt in the parts of the manufacturing sector reliant on mining.

Associated projects such as housing for mining employees have also seen cutbacks as capital investment plans are deferred or abandoned. Despite this, there is still optimism for the latter part of 2013 with expected recovery of commodity prices accompanying the expected slow recovery in the global economy. Mining sector value is expected to recover to approximately US\$30 billion in value by 2016.

South Africa is still attracting foreign direct investment in mining and minerals. The large-scale investments in infrastructure to support mining, for example the Sishen-Saldanha rail line and proposed investment in transport in Limpopo and Mpumalanga, will further expand production and export capacity, especially for coal, platinum group metals and chrome.

Mining houses are increasingly looking to invest in the rest of Africa, attracted by low-cost opportunities and improving governance, and there are opportunities for companies offering mining infrastructure support to follow this expansion into the continent.

Residential Sector Outlook

Activity in the residential sector remains under pressure from more stringent mortgage finance conditions, the tough economic conditions facing many households in South Africa and the low level of consumer confidence. This is evidenced by planning and completion figures from Statistics South Africa. Residential plans passed by major municipalities declined compared with the same period in 2011 while the number of completed residential projects grew marginally.

Supply into the market from the existing home market at prices that compete favourably with new construction also constrains new construction in the sector. This is partly a result of building cost inflation and of lower demand for housing from the weak economy and household disposable income growth rates.

The strongest demand is experienced in the “smaller-sized houses” and “flats and townhouses” segments driven by urban densification process and efforts to draw more lower- to middle-income households into the housing market. Demand for houses larger than 80m² will likely remain subdued.

A further decline in activity in the sector is expected over 2013, except in the affordable and small housing segments. Most activity will be in the Gauteng and Western Cape regions on the back of increasing migration into urban areas to look for employment. There are also likely to be increasing opportunities to provide low-income housing close to transport nodes and employment prospects.

Retail Sector Outlook

Outlook for the retail market over the next year is slightly positive, with stable shopping centre vacancies and returns to investors averaging 10%. There are, however, notable risks arising from increasingly indebted households and weak household consumption expenditure impacting on the demand for retail property. Lower retail trade sales are driven by rising household costs, uncertainty in the economy and rising unemployment, and retailers expect sales growth to moderate in the last months of 2012 and beginning of 2013.

While location is less critical than in most other property sectors, regional centres appear to perform much better than local neighbourhood centres. Most of the potential retail market in major cities in South Africa is already well supplied, but opportunities still exist in townships, rural areas and smaller towns.

The supply pipeline over the next three years is expected to improve substantially, and in 2013 retail construction activity should benefit from a moderate recovery in household consumer spending and relatively low interest rates.

The rest of Africa also offers considerable potential and the retail sector has been identified as a key growth area on the continent, given the existing low base of supply and growth in consumer incomes. The numbers of South Africa retail investors with such expansion plans offer a potential opportunity for those with larger risk appetites.

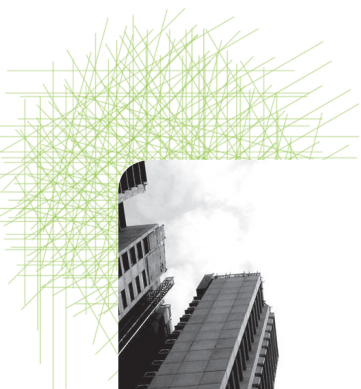
Transportation Sector Outlook

Significant activity is forecast in the transport sector in South Africa over the next three years, arising from targeted infrastructure investment in rail, road and mining-related transport. Several cross-border projects are also in the pipeline, such as a 146-kilometre railway line between Mpumalanga and Swaziland.

Transnet's capital programme forms a major part of this spend; the state entity plans to spend approximately R300 billion over the next seven years on its infrastructure. Substantial national and provincial budgets for transport and logistics infrastructure have also been allowed for in the Medium Term Expenditure Framework (MTEF) public sector infrastructure budget.

Other transport projects include Transnet's proposed spending on pipelines; South African National Roads Agency (SANRAL) funding for road construction and maintenance; projected airport upgrades for the Airports Company of South Africa (ACSA); and work associated with the Durban dig out port for Transnet. In the government's Strategic Integrated Projects, the development of rail and road infrastructure in Limpopo; a Durban to Free State to Gauteng logistics and industrial corridor; a south-eastern node linking the Eastern Cape region, Northern Cape and KwaZulu-Natal provinces; and road and rail infrastructure in the Northwest are given prominent mention.

While such plans point to significant activity in the transport sector in the foreseeable future, they are likely to be subject to public-sector resource and capability constraints, and the vagaries of the global and South African economic performance.



4

South African Cost Data

SA COST DATA

Key Factors Influencing Building Cost Rates

Inherent difficulties and pitfalls

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 square metres (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/ m^2 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	40m
Wall length	160m	
Wall height	3m	
Wall area	480m ²	
Wall floor ratio	480/1,600	

40m

Cost of external facade in terms of R/m² of floor area to each R/m² of facade area 30.0%

Case B

	100m	
		
		16m

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/m² of floor area to each R/m² 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 x 30.0% = R180/m²

Case B R600 x 43.5% = R261/m²

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.

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	Plan area 600m ² /floor Construction area 3,000m ²
OFFICES	
OFFICES	
OFFICES	
PARKING (600m ²)	Basement

Cost of building		
Offices	2,400m ² @ R7,000 =	R16,800,000
Parking	600m ² @ R3,000 =	R 1,800,000
Total		R18,600,000
Average rate/m ²		R 6,200

Case B

Building having parking outside the building structure and on grade

OFFICES	Plan area 600m ² /floor Construction area 2,400m ²	
OFFICES		
OFFICES		
OFFICES	PARKING (600m ²)	

Cost of building		
Offices	2,400m ² @ R7,000 =	R16,800,000
Parking	600m ² @ R 300 =	R 180, 000
Total		R16,980,000
Average rate/m ²		R 7,075

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 particular 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.

Approximate Inclusive Building Cost Rates

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 2013, and therefore represent the average expected building cost rates for 2013. 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 due to differences in supply and demand or other factors. Specific costs for any region can be given upon request by any AECOM 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 Value Added Tax (VAT).

Offices	Rate per m ² (excl. VAT)
Low-rise office park development with standard specification	R 5,800 - R 7,100
Low-rise prestigious office park development	R 7,500 - R 11,200
High-rise tower block with standard specification	R 8,300 - R 11,200
High-rise prestigious tower block	R 11,200 - R 14,000

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 400 - R 500
Structured parking	R 3,100 - R 4,000
Parking in semi-basement	R 3,100 - R 4,200
Parking in basement	R 3,400 - R 5,100

Retail

Local convenience centres (Not exceeding 5,000m ²)	R 5,800 - R 7,600
Neighbourhood centres (5,000 – 12,000m ²)	R 6,300 - R 8,100
Community centres (12,000 – 25,000m ²)	R 6,900 - R 8,800
Minor regional centres (25,000 – 50,000m ²)	R 7,600 - R 9,400
Regional centres (50,000 – 100,000m ²)	R 8,100 - R 9,900
Super regional centres (Exceeding 100,000m ²)	R 8,500 - R 11,000

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

Rate per m² (excl. VAT)

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

- Steel frame, steel cladding and roof sheeting R 2,800 - R 4,200
- Steel frame, brickwork to ceiling, steel cladding above and roof sheeting R 3,400 - R 4,700
- Administration offices, ablution and change room block R 5,400 - R 6,800
- Cold storage facilities R 10,000 - R 14,300

Residential

Rate per no (excl. VAT)

Site services to low-cost housing stand (250 - 350m²)

R 24,900 - R 38,100

Rate per m² (excl. VAT)

RDP housing R 1,400 - R 1,600

Low-cost housing R 2,200 - R 3,600

Simple low-rise apartment block R 5,300 - R 7,400

Duplex townhouse

- Economic R 5,300 - R 7,500

Prestige apartment block R10,100 - R 15,700

Private dwelling houses:

- Economic R 3,800

- Standard R 5,200

- Middle class R 6,100

- Luxury R 8,800

- Exclusive R13,000

- Exceptional ('super luxury') R20,100 - R 40,300

Outbuildings R 2,200 - R 3,800

Rate per no (excl. VAT)

Carport (shaded) - single R 3,300

- double R 6,300

Carport (covered) - single R 5,100

- double R 9,300

Swimming pool	Rate per no (excl. VAT)
- Not exceeding 50 kl	R 67,800
- Exceeding 50 kl and not exceeding 100 kl	R 67,800 - R 112,000
Tennis court	
- Standard	R 242,000
- Floodlit	R 315,000

Hotels

Budget	R 557,000 - R 869,000/key
Mid-scale	R 1,166,000 - R 1,537,000/key
Luxury	R 1,977,000 - R 2,719,000/key

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

Studios	Rate per m ² (excl. VAT)
Studios — dancing, art exhibitions, etc.	R 10,000 - R 14,300

Conference centres

Conference centre to international standards	R 18,000 - R 23,300
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Retirement centres

Dwelling houses	
- Middle class	R 5,900
- Luxury	R 8,300
Apartment block	
- Middle class	R 6,100
- Luxury	R 9,500
Community centre	
- Middle class	R 8,000
- Luxury	R 11,800
Frail care	R 9,500

Schools

	Rate per m ² (excl. VAT)
Primary school	R 5,100 - R 6,400
Secondary school	R 5,400 - R 7,100

Stadiums

	Rate per no (excl. VAT)
Stadium to PSL standards	R 24,400 - R 38,200/seat
Stadium to FIFA standards	R 56,200 - R 75,300/seat
Stadium pitch to FIFA standards	R15,900,000 - R 19,080,000

Prisons

1,000 Inmate prison	R424,000 - R451,000/inmate
500 Inmate prison	R451,000 - R504,000/inmate
High/maximum security prison	R673,000 -R901,000/inmate

Infrastructure

Airport development costs

Rates exclude any future escalation, loss of interest, professional fees, Value Added Tax (VAT), contractors' preliminary and general allowances, insurance, ACSA direct costs and contingency allowances.

Apron Stands (incl. associated infrastructure)	Rate per m² (excl. VAT)
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Code F Stand (85m long x 80m wide = 6,800m ²)	R 3,500
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Code E Stand (80m long x 65m wide = 5,200m ²)	R 3,700
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Code C Stand (56m long x 40m wide = 2,240m ²)	R 4,600
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Taxi Lanes (incl. associated infrastructure)	Rate per m (excl. VAT)
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Code F taxi lane (101m wide)	R 115,000
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Code E taxi lane (85m wide)	R 97,000
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Code C taxi lane (49m wide)	R 56,000
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Service Roads	Rate per m (excl. VAT)
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Service road (10m wide)	R 11,900
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Dual carriage service road (15m wide)	R 15,200
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Taxi ways (incl. associated infrastructure)	Rate per m (excl. VAT)
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Code F taxi way (70m wide)	R 82,000
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Runways (incl. associated infrastructure)	Rate per m (excl. VAT)
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Code F Runway (3,885m long x 60m wide = 233,100m ²)	R 191,000
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Parking (excluding bulk earthworks)	Rate per no (excl. VAT)
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Structured parking	R 126,000
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Basement parking	R 193,000
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Shadenet on grade parking	R 19,300
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Perimeter Fencing /Security Gates

Perimeter walls with perimeter intrusion detection (PIDS), etc.	R 5,800 p/m (excl. VAT)
Security gate	R 11,000,000 p/item (excl. VAT)
Super security gate	R 33,000,000 p/item (excl. VAT)

Terminal & other buildings (excl. bulk earthworks, external site & services works)

Rate per m²
(excl. VAT)

Terminal building (excl. terminal building baggage & X-ray)	R 19,500
Pier terminal building (excl. telescopic air bridges, seating & ads)	R 20,500
Telescopic air bridges (rate per unit. excl. VAT)	R 7,500,000
Aircraft Docking System (ADS) (rate per unit)	R 1,100,000

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 375 - R 625
- Sophisticated installation	R 500 - R 850
- UPS, substations, standby generators to office buildings	R 275 - R 375

Residential

R 400 - R 625

Shopping centres

R 600 - R 750

Hotels

R 750 - R 950

Hospitals

R 900 - R1,175

Electronic installation	Rate per no (excl. VAT)			
Offices				
- Standard installation	R	400	- R	500
- Sophisticated installation	R	500	- R	650
Residential	R	220	- R	300
Shopping centres	R	475	- R	650
Hotels	R	425	- R	550
Hospitals	R	425	- R	575

Note: Electronic installation includes access control, CCTV, public address, fire detection, data installation, WiFi (Wireless Fidelity), CATV, PABX (Private Automatic Branch Exchange) and Building Management System (BMS).

Fire protection installation (offices)	Rate per m ² (excl. VAT)			
Sprinkler system, including hydrants and hose reels (excluding void sprinklers)	R	160	- R	260

Air-conditioning installation				
Ventilation to parking/service areas	R	200	- R	350
Offices				
- Console units	R	500	- R	750
- Console/split units	R	500	- R	800
- Package units	R	800	- R	1,050
- Central plant	R	1,000	- R	1,500
- Variable refrigerant flow (VRF)	R	850	- R	1,500
Residential — split units	R	800	- R	1,300
Shopping centres				
- Split units	R	750	- R	850
- Package units	R	800	- R	950
- Evaporative cooling	R	400	- R	800
Hotels — public areas	R	1,200	- R	2,000
Hospitals — split units to wards	R	1,500	- R	1,700

Hotels	Rate per no (excl. VAT)			
- Console units	R	14,000	- R	18,500/key
- Split units	R	20,000	- R	30,000/key
- Central plant	R	40,000	- R	60,000/key
Hospitals — operating theatres (per theatre)		R250,000	-	R750,000

Note: For guidance with regard to the cost of buildings rated under the Green Star South Africa rating tool system, see the latest edition of the AECOM publication entitled “Quick Guide to Green Design Attributes.”



5

Global Sentiment and Building Costs

Africa Outlook

Africa generally continues to enjoy strong economic growth despite the stagnant performance of western economies. Africa's economic growth fell in 2010 and 2011 on the back of the North African uprisings, but should see a rebound in 2012 and 2013.

Relatively high commodity and oil prices, stable macro-economic environments, a growing middle class and rising internal consumer spending drive this growth. Africa's real gross domestic product (GDP) growth rates are forecast to be between 4.5 and 5.0% in 2013 as a result, and seven of the top ten fastest growing economies in the global economy between 2011 and 2015 are expected to be from Africa. This will be contingent on continuing strong foreign investment flows, investment in natural resources and infrastructure, increasingly sound macroeconomic policies and good governance.

The continent continues to benefit from relatively high growth in the BRIC economies (Brazil, Russia, China and India); weak growth in Europe, Japan and the U.S; and uncertainty in China's growth outlook are causes for concern. Although most commodity prices have declined due to weaker demand and increased supply, prices are still above the average levels over the last decade. World economic activity is expected to strengthen in 2013 providing positive growth for Africa's commodity exporters.

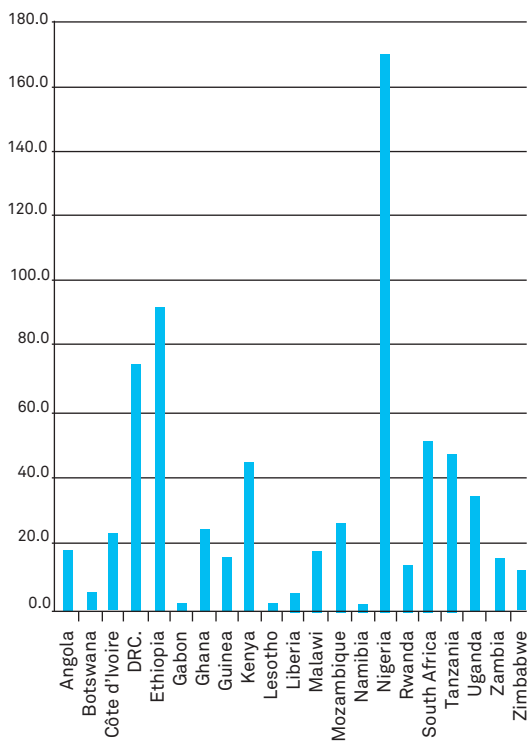
While growth is expected to remain stagnant in North African countries, Sub-Saharan Africa continued to grow by more than 5%. Growth in the oil-exporting economies is projected to remain high, growth in South Africa is projected to be lower than the continent's average, and low-income economies face varying outlooks but are mostly favourable.

Africa In Figures

Area and Population

Country	Land area (000km ²)	Population			
		Millions, 2012 (est)	Average annual % population growth rate, 2000-2010	Density, people per km ² , 2012	% of pop aged between 0 - 14
Angola	1,247	18.1	2.9	15	45
Botswana	582	2.1	1.4	3	33
Côte d'Ivoire	322	22.0	2.2	66	40
DRC.	2,345	73.6	2.9	29	46
Ethiopia	1,104	91.2	2.6	83	43
Gabon	268	1.6	2	6	36
Ghana	239	24.7	2.2	105	38
Guinea	246	10.9	2.1	41	43
Kenya	580	43.0	2.6	70	43
Lesotho	30	1.9	1	68	39
Liberia	111	3.9	3.7	41	42
Malawi	118	16.3	2.8	154	46
Mozambique	799	23.5	2.5	29	44
Namibia	824	2.2	1.9	3	36
Nigeria	924	170.1	2.4	170	42
Rwanda	26	11.7	2.6	405	42
South Africa	1,219	50.1	1.3	41	30
Tanzania	947	46.9	2.8	49	45
Uganda	241	33.6	3.2	166	49
Zambia	753	13.8	2.4	17	46
Zimbabwe	391	12.6	0.2	32	39
World	-	7,017.6	1.2	52	27

Population 2012



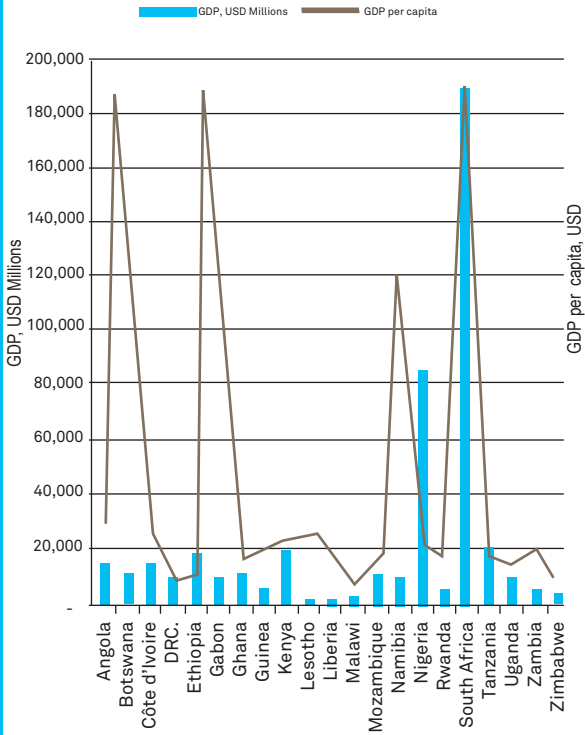
Gross Domestic Product (At constant 2,000 prices)

Year	GDP (USD Millions)		GDP growth (annual %)		GDP per capita (USD)		Gross fixed capital formation (% of GDP)	
	2000	2010	2000	2010	2000	2010	2000	2010
Angola	4,156	11,893	3.0	3.4	298	623	12.8	12.7
Botswana	5,633	8,408	5.9	7.0	3,204	4,190	25.8	27.1
Cote d'Ivoire	10,417	11,597	(3.7)	2.4	628	588	11.2	13.8
DRC	4,305	6,961	(6.9)	7.2	87	106	3.4	23.6
Ethiopia	8,111	18,138	6.1	9.9	124	219	20.3	24.7
Gabon	5,068	6,344	(1.9)	6.6	4,103	4,214	21.9	27.2
Ghana	4,983	8,789	3.7	8.0	260	360	23.1	23.0
Guinea	2,995	3,877	2.5	1.9	359	388	19.6	10.6
Kenya	12,705	19,064	0.6	5.8	407	471	16.7	20.3
Lesotho	746	1,076	5.7	5.6	380	496	42.5	28.5
Liberia	529	1,053	25.7	10.9	186	264	7.5	26.4
Malawi	1,744	2,696	1.6	6.5	155	181	12.3	24.2
Mozambique	4,249	8,972	1.1	6.8	233	384	31.0	24.7
Namibia	3,909	6,155	3.5	6.6	2,062	2,696	16.6	25.7
Nigeria	45,983	85,657	5.4	8.0	372	541		
Rwanda	1,735	3,745	8.3	7.2	214	353	13.4	21.0
South Africa	132,878	187,640	4.2	2.9	3,020	3,753	15.1	19.6
Tanzania	10,186	19,966	4.9	7.0	308	459	16.4	31.5
Uganda	6,193	12,701	3.1	5.9	256	380	19.2	23.3
Zambia	3,254	5,619	3.5	7.6	319	435	15.9	21.1
Zimbabwe	6,690	4,055	(3.1)	9.6	535	323	11.8	14.0
Sub-Saharan Africa	336,958	534,825	3.6	5.1	505	626	16.5	20.6

Source: World Development Report 2011

* Figures not available

Gross Domestic Product 2010



Africa Building Costs

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

The following table (Africa building cost comparison, page 62), presents in summarised form the approximate estimated building costs for different types of buildings in various locations in Africa. Rates are based on projected 1 July 2013 costs and provide an indicator for the expected building cost rates over 2013. Exchange rates have also been based on those prevailing as at 1 December 2012.

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 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.

AFRICA BUILDING COSTS

	USD/m²								
	Angola Luanda	Ghana Accra	Kenya Nairobi	Nigeria Abuja	Rwanda Kigali	Senegal Dakar	Tanzania Dares Salaam	Uganda Kampala	Zambia Lusaka
Residential (rate/m2)	Average multi-unit high-rise	1,519	1,100	558	864	837	669	641	1,283
	Luxury unit high rise	2,473	1,400	745	942	1,118	894	857	2,133
	Individual prestige houses	4,597	1,600	803	1,030	1,205	964	924	2,133
	(Detached houses & bungalows)								
Commercial/Retail (rate/m2)	Average standard offices high rise	1,678	1,353	686	960	1,029	823	789	1,726
	Prestige offices high rise	2,887	1,630	868	1,052	1,302	1,041	998	2,133
	Major shopping centre (CBD)	2,428	1,270	638	2,147	957	765	734	1,710
Industrial (rate/m2)	Light duty factory	1,528	850	513	894	770	616	591	635
	Heavy duty factory	2,495	1,100	917	1,110	1,375	1,100	1,055	733
Hotel (rate/key)	Budget	165,000.00	60,000.00	75,000.00	105,000	110,000.00	90,000.00	85,000.00	85,000.00
	Midmarket	310,000.00	140,000.00	175,000.00	245,000	260,000.00	210,000.00	200,000.00	201,000.00
	Upscale	450,000.00	210,000.00	235,000.00	310,000	350,000.00	280,000.00	270,000.00	270,000.00
Other (rate/m2)	Multi Storey Car Park	1,407	513	408	493	613	490	470	635

Prices exclude land, site works, professional fees, tenant fit-out, equipment & VAT.

Hotel rates exclude an allowance for FF&E

GLOBAL BUILDING COSTS

The cost data under the heading “International building cost rate comparison” (see page 64) was made available by AECOM’s Business Intelligence Unit. Their assistance in this regard is acknowledged with thanks.

It should be noted that these rates are based on the fourth quarter of 2011-2012 and the exchange rates used as those prevailing as at 1 November 2012. These rates can therefore not be compared with other rates contained in this publication.

GLOBAL BUILDING COSTS

	USD/m ²																
Building Type	Sydney	Auckland	Bahrain	Abu Dhabi	Doha	Hong Kong	Beijing	Singapore	Kuala Lumpur	Ho Chi Minh	Mumbai	Bangkok	Jo'burg	Los Angeles	San Francisco	New York	London
Residential Average multi-unit high-rise Luxury unit high rise Individual prestige houses	2850 3280 3,420	2,270 2,610 2,680	1,300 1,600 1,700	1,300 1,710 1,810	1,500 2,100 1,900	2,320 2,560 3,990	685 1,050 810#	1,800 3,100 3,000	515 1,165 1,045	695 840 640	415 550 650	875 1,225 1,010	840 1,460 1,470	3,800 4,550 3,650	3,900 4,650 3,750	4,000 4,900 4,100	3,330 4,950 6,930
	3180 3600 2540	2,520 2,860 2,020	1,170 1,280 1,230	1,450 1,700 1,370	1,800 2,050 1,250	2,340 2,840 N/A	975 1300# 1,080	2,400 2,800 3,200	825 1,210 995	820 1,240 790	495 590 550	790 1,035 985	1,110 1,420 1,100	3,850 4,500 2,900	4,150 4,700 3,250	4,250 4,800 3,350	2950** 3600** 2,200
	680 860	550 690	620 700	630 850	970 1,100	1,340 1,460	N/A N/A	1,600 1,700	480 570	395 415	435 670	630 N/A	380 530	1,250 1,700	1,500 1,930	1,250 2,000	1,490 2,540
	3280 4550 4130	2,610 3,610 3,270	1,800 2,620 3,200	2,280 3,050 3,300	2,050 3,350 3,750	2,880 4,010 N/A	1205* 1950* N/A	3100* 4500* 4500*	1,625 2,485 1,760	860 1,520 1,315	1,580 2,760 1,480	1,410 1,980 2,345	1,690 2,230 2,670	2,250 4,800 4,900	2,350 4,900 5,000	2,400 5,030 N/A	2,610 5,100 0
Other Multi Storey Car Park District Hospital Primary & Secondary Schools	890 4070 1710	710 3,240 1,350	620 2,450 1,510	540 3,200 1,450	760 3,590 1,250	1,000 3,500 1,700	N/A N/A N/A	780 N/A 1,400	310 1,080 320	345 N/A N/A	215 690 530	370 N/A N/A	410 1,110 760	940 7,300 3,200	980 7,500 3,450	1000 6,800 3,900	650 4,400 2,010
	0.95	1.19	0.37	3.67	3.64	HK\$ 7.98	RMB 6.46	S\$1.22	RM 3.14	VND 21,491.87	INR 54.58	THB 31.58	8.93	1.00	1.00	1.00	0.62

Prices exclude land, site works, professional fees, tenant fitout and equipment. Note: Hotel rates include FF&E but exclude GST/VAT # Rate includes parking and minimal external works * Rate includes raised flooring and ceiling to tenanted areas * Rate includes FF&E** Up to 12 storeys

International Prestigious Office Rental Comparison

Country	City	USD/m ² per annum
Australia	Adelaide	525
Australia	Brisbane	900
Australia	Melbourne	735
Australia	Perth	1050
Australia	Sydney	940
Bahrain	Manama	271
Botswana	Gaborone	181
Egypt	Cairo	373
England	Birmingham	508
England	Leeds	457
England	Liverpool	355
England	London (City)	930
England	London (West End)	1607
England	Manchester	524
France	Paris	1070
Ireland	Dublin	484
Kenya	Nairobi	201
Lebanon	Beirut	255
Mozambique	Maputo	420
New Zealand	Auckland	367
New Zealand	Christchurch	220
New Zealand	Wellington	276
Nigeria	Abuja	610
Nigeria	Lagos	840
Qatar	Doha	645
Rwanda	Kigali	194
Scotland	Edinburgh	467
Scotland	Glasgow	491
South Africa	Cape Town	240
South Africa	Durban	242
South Africa	Johannesburg	310
South Africa	Port Elizabeth	220
South Africa	Pretoria	230
Spain	Barcelona	246

Tanzania	Dar Es Salaam	214
Uganda	Kampala	189
United Arab Emirates	Dubai (International Financial Centre Excluded)	762
United Arab Emirates	Dubai (International Financial Centre)	689
United Arab Emirates	Abu Dhabi	517
USA	Boston	500
USA	Los Angeles	350
USA	New York (Manhattan)	800
USA	Philadelphia	300
USA	Sacramento	270
USA	San Francisco	470
USA	Seattle	400
USA	Washington DC	500
Zambia	Lusaka	254

Note: Rates are applicable as at 1 January 2013 and exclude Value Added Tax (VAT) but include General Sales Tax (GST) where applicable. Above are gross rentals and include operating costs and municipal costs, but exclude electricity and water consumption.



Building Cost Escalations

BUILDING COST ESCALATIONS

Building Cost Escalations

Building Cost

The meaning of the words “building cost” depends on the application and 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 to 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%.

Pre-contract

Construction cost, for various reasons, changes 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 — 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 2007=100)	Year-on-year increase	Index (Jan 2007=100)	Year-on-year increase	
2007	100.0		100.0		1.00
2008	118.4	+ 18.4%	107.8	+ 7.8%	1.10
2009	125.9	+ 6.3%	120.1	+ 11.4%	1.05
2010	126.4	+ 0.4%	123.3	+ 2.7%	1.03
2011	122.6	- 3.0%	128.0	+ 3.8%	0.96
2012	135.0	+ 10.1%	137.2	+7.2%	0.98
*2013	150.3	+ 11.4%	147.4	+7.4%	1.02
*2014	161.6	+ 7.5%	163.0	+ 10.6%	0.99
*2015	184.7	+14.3%	178.0	+9.2%	1.04
*2016	203.0	+9.9%	189.0	+6.2%	1.07

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 tender market indicator (TMI), 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 75) 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 divided by 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 74). When the two lines (JBCC CPAP and BER) converge, i.e. JBCC CPAP is “dropping” and BER is “rising,” then you should 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 2007 = 100).

Unique Large-Scale Projects

Building cost estimation seems to become more complex when unique circumstances prevail. For example, when a FIFA World Cup, Olympic Games or similar event takes place in a particular country, many new construction works and associated infrastructure projects are awarded for construction.

Projects of such magnitude can only be constructed by major contractors possessing the required expertise and resources. It is often experienced that the unit costs of these projects are significantly higher than originally anticipated. Selected contractors at this level have little competition, and based on a favourable supply and demand market for them, price costs accordingly, resulting in client's cost overruns, causing severe pressure on budgets.

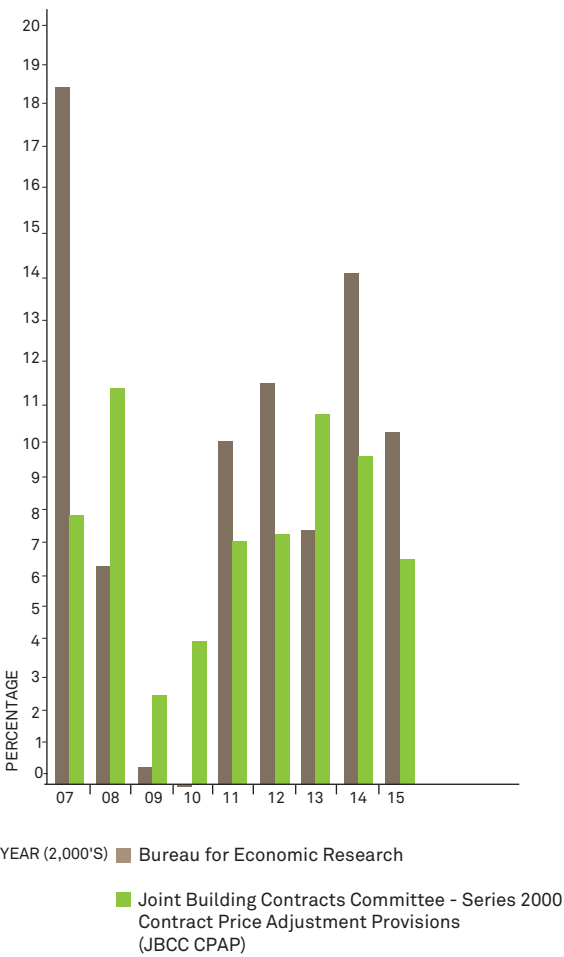
Value Added Tax (VAT)

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.

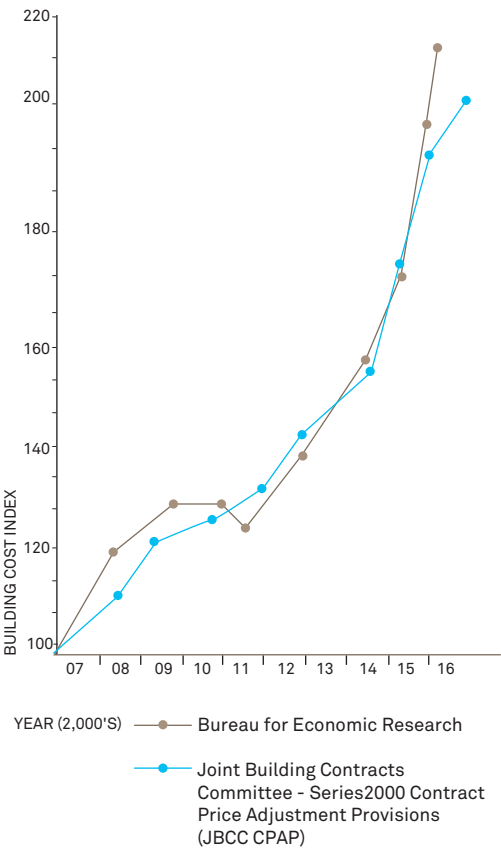
Cognisance should be taken, however, of the effect of VAT on cash flow over a period of time. This will vary according to the payment period of the individual vendor, but in all cases will add to the capital cost of the project to the extent of interest on the VAT outstanding for the VAT cycle of the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

GRAPHS: BER AND JBCC CPAP
JANUARY TO JANUARY

Building Cost % change

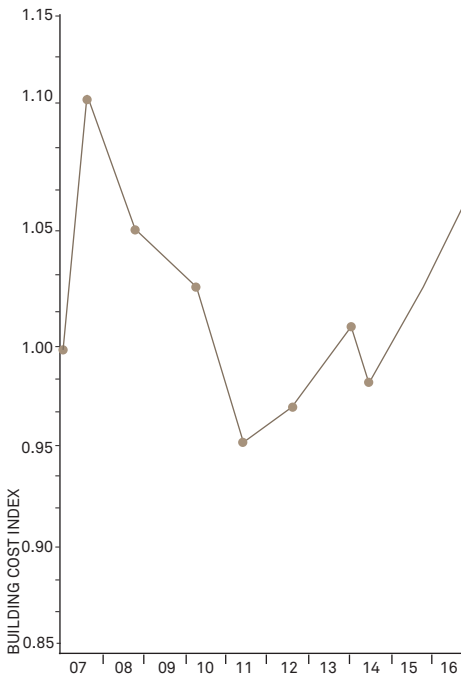


JANUARY BUILDING COST INDICES



TENDER MARKET INDICATOR

BER deflated by JBCC CPAP



YEAR (2,000'S) Note: This graph gives an indication of the tender climate. It is the result of the relationship between BER and JBCC CPAP. Refer section on tender climate, page 71 .



Method For Measuring Rentable Areas

SAPOA Methods

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 1 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 1 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 construction area is 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 atria are to be included, and all openings on other levels to form atria, are to be excluded.

Rentable area

The rentable area is the total area of the building that is enclosed by the dominant face and is 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 metres.
- Rentable area comprises useable area plus common area.
- Rentable area excludes supplementary area, which may produce additional revenue.

Useable area

The useable area is the 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.

The common area has two components:

- The 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.
- The 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

Supplementary area is any additional revenue-producing component that falls outside of the definition of rentable area. Supplementary area need 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

An atrium is 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

The entrance foyer is 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

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 plant rooms

Remote refuse rooms, electrical sub-stations, transformer rooms, central air-conditioning plant rooms 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, as far as practical, of most building types, 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 published as a quick guideline only, and should not be used in preference to the SAPOA publication, which is far more comprehensive and detailed. We acknowledge and thank SAPOA for their permission to use extracts from this publication.



8

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 for 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)	R100,000,000
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 South Africa ratings are a requirement, cash flow analyses over longer time periods have become 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.

RESIDUAL LAND VALUE

THE FORMULA

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:

$$\begin{aligned}\text{Return} &= \frac{\text{net annual income}}{\text{total capital outlay (TCO)}} \\ &= \frac{\text{net annual income}}{y + x}\end{aligned}$$

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

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

$$\begin{aligned}\text{Now } x &= \text{land value} + \text{loss of interest} \\ &= \text{future value of land}\end{aligned}$$

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	R38,150,000
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)	R47,365,000

$$\begin{aligned}x &= \frac{\text{net annual income} - y}{\text{return}} \\&= \frac{R6,000,000 - R47,365,000}{0.10} \\&= R12,635,000\end{aligned}$$

Therefore land value is R12,635,000
discounted at 10.5% p.a. over
15 months = R11,087,204 (say) 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.



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